58th ILA International Conference on Next Generation Libraries:

New Insights and Universal Access to Knowledge

CONFERENCE PROCEEDINGS



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Dr. N.S. Shokeen, Dr. O.N. Chaubey, Dr. Pardeep Rai
Dr. Pravin K. Choudhary, Ms. Hemavathi, Dr. Abhijeet Sinha

Organised by
Department of Library and Information Science
Karnatak University, Dharwad
&
Indian Library Association, New Delhi

2013



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58TH ILA INTERNATIONAL CONFERENCE
on
NEXT GENERATION LIBRARIES:
NEW INSIGHTS AND UNIVERSAL ACCESS TO KNOWLEDGE

Karnatak University, Dharwad,
February 24-27, 2013

Editor-in-Chief
Dr. B. Ramesha, Dr. B.D. Kumbar

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2013

Classification, Cataloguing and Indexing and the Information Retrieval) which have been time tested and the research on these new insights and knowledge access should dwell on such areas, which have significance with the content and organization of new generation libraries.

The theme and sub-themes of the conference are framed considering these aspects of the New Generation Libraries, and I wish this International Conference a deep success and also perpetuating the traditions of ILA and our ***Alma mater*** to serve the cause of the LIS profession and Education of our country to greater heights.

I offer my deepest sense of gratitude to the organizers having bestowed upon me as a being of this Department and also the blissful privilege of addressing the delegates through this Foreword.

Place: Bangalore
Date: 1st Feb 2013

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PREFACE

The Department of Library and Information Science, Karnatak University, Dharwad in its Golden Jubilee year, organizing 58th Indian Library Association International Conference on the theme ***"Next Generation Libraries: New insights and universal access to knowledge".*** The subject of the conference is very relevant and important as there are persistent deliberations going across the world on what would be the future of the libraries, from its contents, from the stand point of organization and the tools and techniques of providing access to varieties of knowledge resources. In this context the Organizers invited papers on relevant sub-themes and there is overwhelming response received from the LIS professionals across the country. The conference received over 200 papers and out which the editorial committee selected 137 papers which are distributed theme-wise as below.

- Best Practices in Libraries – 18
- HRM and Marketing of Library and Information Products and Services - 17
- Management and Use of Electronic Resources - 24
- Digital Library and Institutional Repositories - 09
- Application of ICT and Cloud Computing - 17
- Open Access and Open Source - 18
- Information Literacy and Library Use - 12
- Public Library and E-Governance - 10
- Web Portal and Content Management Systems - 12

Since last two decades the profile of the libraries, their contents and services are on the constant and persistent changes. The Library professionals are facing a fabulous task of managing traditional and new resources and equally there are "here today and gone tomorrow" modes of services and products that Libraries are required to entertain. The user' needs are changing and the library use patterns are also on the verge of new needs. In this context the conference choose a topic that is contemplated over again and again, whether the professionals are required to face new types of libraries under the nomenclature "Libraries without walls, Electronic Libraries, Digital Libraries, Virtual Libraries" and so on. The Libraries are embracing the technological advances with their inhibited spirit of adoption to changes ever since time of semi-automation to an era of cloud computing. This further has been

demanding new services and to manage the new information and knowledge resources to suit the changing needs of the users. The Open Access has created a new opportunity for the scholarly communication and has given ample scope for sharing, exchange and providing visibility to the research contributions. The growth of open access journals and the trend of building Institutional Repositories have also been catalyzing this initiative as a new millennium scholarly communication. The impact of ICT on libraries and the growth of web and digital resources needs to augment the users with relevant skills and the demand for information literacy are growing from a very early stage. The quality of services needs some benchmarking and need to adopt best practices. The papers included in this volume and the authors of these papers have addressed these issues in different ways. This International Conference has provided authors a suitable platform for proposing these issues for discussion by the learned delegates.

The Organizers of this conference, especially ILA & Department of Library and Information Science, Karnatak University, Dharwad, be congratulated for selection of this theme and it is time to look back and move forward on this auspicious occasion of celebrating its 50 years of yeomen service to the society in general and Library and Information Science profession in particular.

Thank you one and all

Place: Dharwad
Date: 4th February 2013.

Editors.

ACKNOWLEDGEMENTS

The Editorial Committee profusely thanks to Dr. D.V. Singh, President, ILA, Dr. Pravin Kr. Choudhary, General Secretary, ILA, Dr. O.N. Chaubey, Treasurer, ILA, Dr. N.S. Shokeen, Head of Dept. KCGPW, Ambala (Haryana) & Secretary, ILA, Dr. Pradeep Rai, Council Member ILA, Prof. C.R. Karisiddappa, Chairman, 58th ILA International Conference Organizing Committee, Karnatak University, Dharwad and Executive Council Member of ILA and Dr. B.N. Hemavathi, Asst. Professor, Dept. of Library and Information Science, Tumkur University, Tumkur for assistance rendered in editing articles. We sincerely thank Dr. A.Y. Asundi, a well known past student of this department for penning the Foreword to this conference volume. We also thank all the authors for responding to our invitation for contributing to this International Conference and enriching the professional knowledge with their scholarly papers.

We extend my sincere thanks to Editorial advisory Board Members Dr. Muttayya Koganuramath Professor & Head and University Librarian Gujarat Central University, Gandhinagar; Dr. C. R. Karisiddappa, Former Professor and Chairman; Dept. of Library and Information Science, Karnatak University, Dharwad; Prof. Masoom Raza North East Hill University, Shillong; Prof. (Dr.) Shabahat Husain, Librarian, Aligarh Muslim University, Aligarh (U.P.); Dr. T.D. Kemparaju, Professor, Bangalore University, Bangalore; Prof. Laxman Rao, Nagubandi, Professor, Rajiv Gandhi University Dept. of Library and Information Science of Knowledge Technologies, Hyderabad UGC-Emeritus Fellow, DLISc., Osmania University, Hyderabad; Prof. Preeti Mahajan Department of Lib. and Info. Sc., Punjab University, Chandigarh; Dr. D. Chandran, Professor and Head, Dept. of Library and Information Science, S.V. University, Tirupati (A.P) for their valuable suggestions and input. We extend sincere thanks to M/s Om Laser Printers, Delhi who has done tedious efforts in design, printing the volume in a presentable manner in a short span of time.

Thank you one and all, with high regards.

Place: Bangalore
Date: 7.02.2013

Dr. Ramesha & Prof. B.D. Kumbar
Chief Editors

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Applications of ICT in University Libraries in Maharashtra State: An Overview

Ishappa C Bandi **Ramakrishnegowda, K C**

Abstract

This article is all about the present use of ICT and its applications in the university libraries in Maharashtra state. Explanation about the necessity of networking & consortiums, portals, marketing, knowledge management in university libraries is highlighted in this article. This paper is also focused on how Government of India is supporting in the development of university libraries by initiatives like INFLIBNET & NKC are explained here. Finally it is concluded that all the university libraries in Maharashtra State and their user's required to act together to utilize these new ICT avenues in this modern days.

Keywords : ICT applications, University Libraries, Web Portals, NKC, INFLIBNET

1. Introduction

University libraries all over the world have their own place of importance in the scheme of higher learning. The university libraries are playing a pivotal role in shaping and nurturing the academic fraternity by providing the most specific, relevant and exhaustive information thereby proving their worth and existence and perhaps being rightly called as the heart of the university. The university libraries in Maharashtra state have gone through tremendous changes. The change in traditional document delivery services, from print to electronic, has come about quickly, and the university libraries in the state have undergone significant transformations to effectively deliver electronic resources to the academic community. Moreover, the rapid advancement of ICT has brought a revolutionary change in the information scenario giving rise to number of options to the user's community to handle varied information sources conveniently and effortlessly as a result of which e-resources have become the lively substance to the modern library's reserves in satisfying varied needs of students, teachers and with minimum risk and time.

It is evident that the university system in the state was started way back in 1857 by establishing one of the oldest universities in India and following are the Universities established under Maharashtra University Act 1994;

- University of Mumbai, Mumbai; 1857
- SNDT Women's University, Mumbai; 1951
- Nagpur University, Nagpur; 1923
- Dr. B R Ambedkar Marthwada University, Aurangabad; 1958
- Shivaji University, Kolhapur; 1962
- University of Pune, Pune; 1948
- Solapur University, Solapur; 2004
- North Maharashtra University, Jalgaon; 1990
- Swami Ramanand Teerth Marathwada University, Nanded; 1994
- Sant Gadge Baba Amravati University, Amravati; 1983
- Yashwant Rao Chavan Maharashtra Open University, Dnyangangotri; 1989

2. ICT in University Libraries

Acceptance to use ICT in libraries has revolutionized the entire perception of the university libraries in Maharashtra state especially in the past one decade in the university libraries and now they are moving towards electronic resources for which they are now getting the benefits of UGC-Infonet Digital Library Consortium. But for getting the maximum benefits of the ICT, it is imperative for the librarians working in the university setup to acquire new skills to be competent enough to work in this new environment.

3. Internet in the University Libraries

Various study available statistical data reveals the fact that there is an increasing trend of Internet users in Maharashtra state. Their number is doubling speedily. Internet is being used by a large segment of users for both their academic as well as commercial purpose. The university librarians are also advocating that internet connectivity even at the places like recreational rooms, clubs, hostels and playground and at every public place in the University campus for Maximum Utilization and feeding the information appetite of the users' community. Since technological developments are fast, call for a regular training to learn more and more new skills and competencies, which also needs an intense focus on user's information need and continuous assessment and up gradation of their skills to utilize the information.

4. Networks and Library Consortia

Resource sharing in the university libraries has become more exhaustive and prominent by utilizing the ICT applications which facilitates to establish networks at all over the world for this resources sharing. The features of e-journals have forced many university libraries to opt journals' subscription in the electronic format. Library consortia based subscriptions also helped to librarians to bargain for the best possible solutions in the present dried budget scenario. Government of India consented UGC to allow its organ, INFLIBNET, to establish a library consortium namely 'UGC-INFONET Digital Library Consortium'. This consortium is providing access facilities to e-journals and database to majority of the university libraries in India. INFONET has helped libraries to meet their users' diverse information needs. All the Library Consortia also have an objective to;

- To make available electronic resources for the members of the consortium at highly discounted rates of subscription and with the common use terms and conditions.
- It also promotes the best use of funds.
- Local storage of the information acquired for continuous use by present and future users.
- Imparting training to the users, librarians, research scholars and faculty members of the institutions on the electronic resources with an aim to optimize the usage of the electronic e-sources.
- More interaction amongst the member libraries is possible.
- It increase the research productivity in terms of quality and quantity of publications

5. University Libraries Vs Subject Gateways and Portals

Present day librarianship is booned with the Internet advancement considered as an essential technology for the research and development activities in the university system in every discipline. Huge information resources available have made it as the first choice to anyone working

in the digital environment. But one of the biggest problems people are facing while using the internet is the vast amount of junk information. To overcome this problem, a lot of efforts are being made globally. In addition to many of the workable solutions on which the professionals are working, the available solutions are the formation of subject gateways and subject portals. For example, SOSIG, now known as *Intute* is the information gateway in the field of semantic web is also going on solve the problems of garbage and provide more precision than of more recall.

6. University Libraries and Digital Technologies

Creating a digital library is the latest phenomenon being observed and advocated by the group of librarians, especially the librarians working in the academic environment. Digital technology has become the answer to the problems of preservation add new life to rare, brittle and fragile documents in addition to its potentialities of providing access to information speedily, accurately, and efficiently. The philosophy of library cooperation and resource sharing is executed in best possible manner through the digital technology as it enables creation of networked libraries.

The big university libraries like IIT, University of Mumbai, Pune University, etc and many more in India have already started positive efforts in creating a digital library of their own and having mission to put their resources in the Web enabled environment to provide access to their resources from anywhere in the world in 24X7 environment. Greenstone Digital library, E-prints Archives and DSpace are the popular software used by these libraries.

7. Marketing of LIS Products and Services

The information repackaging process involves several tasks like selection, analysis, evaluation, restructuring and repackaging of existing information and knowledge is considered as highly essential to meet the information hunger of the users with utmost satisfaction. "Knowledge is the objective of the parent organization and, thus, the expressed or established needs of users play a very crucial role" (Seetharama, 1997). Though little late, the university libraries in India have realized that if the image building is to be done, if the maximum fruits of the library services are to be taken to the doorsteps of the readers, if the problem of underutilization of numerous resources of the university libraries is to overcome, and above, if the present day libraries have to survive and sustain, there is no other way except to accept and adopt marketing as one of the strategic solutions and promotional tool for making the role of the libraries much more meaningful for the 21st century.

8. Knowledge and Participative Management

Knowledge management (KM) is one of the hottest topics of debate amongst University librarians, though; there is a dispute on the nature of job involved in the KM when performed in a library environment of the University systems. However, university libraries have also started to take care of certain issues related to specialized areas of knowledge. KM is understood to be the efforts of the organizations to identify, capture, and retain the tacit and explicit knowledge. In other words, management of intellectual capital within the organization, for which the parent organization creates and maintains a database of expertise about employees, their experiences of handling the moments and tasks, decisions taken in the adverse circumstances that, resulted into the best solutions and benefited the organization, etc. along with their complete biographical details and their contact address, etc., so that as and when the organization need their complete biographical details and their contact address, etc., so that as and when the organization need their services and valuable guidance, they can be contacted. Likewise participative management works on the philosophy of taking every one into confidence to work as a team to achieve the goals of the

organization in the best possible way. It utilizes energies in a more personally responsible manner, to achieve the goals of the organization.

9. Librarians Technical Skills

University librarians and other senior professionals working in the libraries should capable to do the work by using HTML and other languages. In addition, they should have the ability to work OPAC, and emerging technological facilities available in the library. A few worth mentioning techniques which should be developed among the university librarians are: (i) time management skills, (ii) Presentation and Communication skills; and (iii) Evaluation and Assessment skills.

10. INFLIBNET Role in University Library Development

There is no doubt that where libraries of universities and institutions of higher learning are ignored or not given due recognition, the country as a whole suffers because the standards of study, teaching and research very heavily depend upon the qualitative and quantitative service rendered by the university libraries. To promote and establish communication facilities to improve capability in information transfer and access, that provides support to scholarship, learning, research and academic pursuit through cooperation and involvement of agencies concerned. To establish INFLIBNET: Information and Library Network a computer communication network for linking libraries and information centres in universities, deemed to be universities, colleges, UGC information centres, institutions of national importance and R&D institutions, etc. avoiding duplication of efforts. INFLIBNET performs following major activities: (Bavakutty, and Azeez, 2006).

1. Provides grants to universities to automate the libraries, establishing the network facilities and create an information technology environment.
2. Developed and distributed Software for University Libraries (SOUL) which is an integrated user friendly library management software.
3. Indian Catalogue of University Libraries in India (IndCat) is Online Library Catalogue of books, theses and journals available in major university libraries in India which provides bibliographic description, location of the material in all subjects available in more than 112 university libraries.
4. To enhance the skills of university library staff for implementation of INFLIBNET programme, it conducts training programme for library staff, onsite training for member library staff, training on SOUL software, holding CALIBER convention every year and workshops for senior level staff of the university libraries are conducted.
5. It has brought out a document entitled 'INFLIBNET Standards and Guideline for Data Capturing' prepared by a task force of experts based on Common Communication Format (CCF).
6. Another very important and significant landmark in the history of higher education and development of libraries in India is the establishment of "UGCINFONET DIGITAL LIBRARY CONSORTIUM" by the UGC.

11. Role of NKC in University Library Development

The National Knowledge Commission was set up by the Government of India on 13th June 2005 with a time-frame of three years, from 2nd October 2005 to 2nd October 2008. As a high-level advisory body to the Prime Minister of India, the National Knowledge Commission was given a mandate to guide policy and direct reforms, focusing on certain key areas such as education,

science and technology, agriculture, industry, e-governance etc. Easy access to knowledge, creation and preservation of knowledge systems, dissemination of knowledge and better knowledge services are core concerns of the Commission.

The Commission envisaged the future road map for the growth and development of academic libraries by imbibing core issues such as, set up a national commission on libraries, prepare a national census of all libraries, revamp LIS education, training and research facilities, re-assess staffing of libraries, set up a central library fund, modernize library management, encourage greater community participation in library management, promote information communication technology applications in all libraries, facilitate donation and maintenance of private collections, and encourage public private partnerships in LIS development, etc.

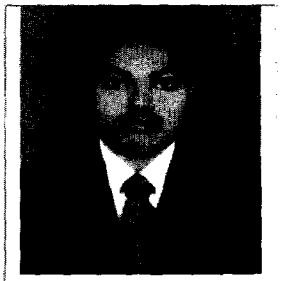
12. Conclusion

University Libraries in Maharashtra State are developing at a rapid pace by utilizing the ICT applications in their services. It is the only possibility to meet the university library users' requirements by updating services with modern technologies. A lot of credit should be given to UGC-INFLIBNET initiatives to modernize the university library services in all the Maharashtra state university libraries. Still lot of scope is there to utilize the opportunities available for university libraries to improve in their ICT infrastructure, so that to avoid any lag in to meet the user's information needs. It is important for the library professionals to update their ICT skills and educate their users to make use of these modern information sources.

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Best Practices in College Libraries Affiliated to University of Pune: *A Study*

Mangesh S.Talmale **Avinash Humbare** **Sudhir Halvegar**

Abstract

The present paper is based on the Minor Research Project submitted to Board of College and University Development (BCUD), University of Pune. It is focused on the scenario of best practices among college libraries affiliated to University Pune. The survey finding mainly covers various aspects of National Accreditation & Assessment Council (NAAC) guidelines in the view of Library and information science. The problems encountered in this process are identified possible suggestions are stated.

Keywords : Best Practices, College libraries, NAAC, ICT, Pune University

1. Introduction

India has a wide range of variation and complexity from region to region.There are geographic diversities, differences in physical environment,ethic multitude and socio-economic disparities as well as intensified demographic pressures.These factors are reflects on the various issues of the Higher Education Institutes at various levels. Indian Higher Education System has a mix of all kinds of institutions with respect to quality. Among those one can find institutions of higher standards, average and below average. University Grant Commission (UGC)and different statutory bodies are dealing with professional education. There are two National Accreditation & Assessment Council (NAAC) under UGC & National Board of Accreditation (NBA) under the All India Council for Technical Education (AICTE) to take responsibility to uplift the level of higher education. Consequently, College libraries also need to have facilities that promote effective and interactive access and use of information resources for all users. As a quality indicator the learning resources may mean more than physical facilities. A good library has good holdings of the treasure of knowledge; it stores and goes on adding to. At the same time its value is measured by its user's dependence on it and by the frequency of their visits to it. Best practices are a continuous process followed by any institution like college library.Library is considered as important component in infrastructure and learning resources like collection, services and outreaching capacity are monitored. Itsupports learning, teaching and research and development activities in institutions. Sofar, the classroom has, by and large, been the primary source of learning with library accorded, a supplementary status. According to NAAC in times ahead, one can foresee a role reversal in the increasingly learner-centric educational efforts. Now a day we can witness libraries becoming primary learning resources in many instances. In recent past, significant developments have been reported in Library and Information Services and Libraries are shouldering newer responsibilities in Higher Education.

2. Background

The University of Pune was established in the year 1949.Establishment of the University of Pune provided impetus for the growth and development of colleges and other educational institutions in the region. Initially the university had a jurisdiction extending over 12 districts of western Maharashtra. However, with the establishment of Shivaji University in Kolhapur in 1964, the jurisdiction of the university was restricted to 5 districts, namely Pune, Ahmednagar, Nashik, Dhule and Jalgaon. Out of these, two districts—Dhule and Jalgaon—are attached to the North Maharashtra Universityestablished in August 1990. In 1949, there were only 18 colleges affiliated

to the university (includes famed colleges such as the Fergusson College, the Maharashtra Institute of Technology and the Pune Institute of Computer Technology) with an enrollment of over 8000 students. Thereafter, the number of colleges increased, and in 2004, the university had 46 graduate departments, 269 affiliated colleges and 118 recognized research institutions, with an enrollment of 170,000 students for both the undergraduate and graduate courses in different faculties.

3. Review of Literature

S.M. Zabed Ahmed and Md. ZahidHossainShoeb, (2009) examined the service quality of Dhaka University Library (DUL) in Bangladesh. The study analyses the desired service expectations of the users (faculty, graduate and under graduate students). GalyaniMoghaddam, G., and Moballeghi, M. (2008) presented an overview of total quality management (TQM) in the library and information sectors and focusing on TQM implementation in the library and information sectors, the experience of libraries adopting this method are also reviewed.Luca Petruzzelliset.al., (2006) Universities have to concentrate their efforts on the improvement of quality of teaching and non-teaching services, and to investigate student satisfaction concerning recent changes. MelitaAmbroZic (2003) discusses theoretical and practical approaches to the problems of assessing library performance and especially of measuring outcomes in the developing world.

4. Objectives

- To study the basic infrastructure and ICT facilities in College libraries as per NAAC parameters;
- To analysis the safety and security facilities in college libraries;
- To find out the library services and policies provided by college libraries

5. Purpose, Scope and Methodology

The paper is based on the Minor Research Project submitted to BCUD, University of Pune and tries to understand the level of best practices servicesavailable at college libraries. Scope of this study is limited to 75 Arts, Commerce and Science College's librariesaffiliated to University of Puneand situated in Pune district. Descriptive methodology used to carry out the present study. Questionnaireprepared as per NAAC criteria'sfor Library point of viewand visiting the NAAC website for accessing the Manual for preparation of Self Study Report of Collegesand the documents on Guidelines on Quality Indicators and Best Practices in Library and Information Science.The survey was conducted during June 2009-June-2010 to collect the data. 75 questionnaires were circulated to college libraries out of which53 questionnaires were received back from the respondents. The successful respondents' rate was 70.66 % for the study. The data collected were analyzed and presented in the form of tables. Results were reported in percentages.

6. Analysis and Interpretation of the Data

Analysis and findings drawn from the data are presented in the below tables:

Table-1: Space Facilities in Libraries

Library Space	Facility Available
Safe and Comfortable	53(100%)
Well lighted	49 (92.45%)
Clean Space	53(100%)
Separate Library Building	7(13.20%)
Adequate and Appropriate seating arrangement of Reading Hall	46(86.79%)

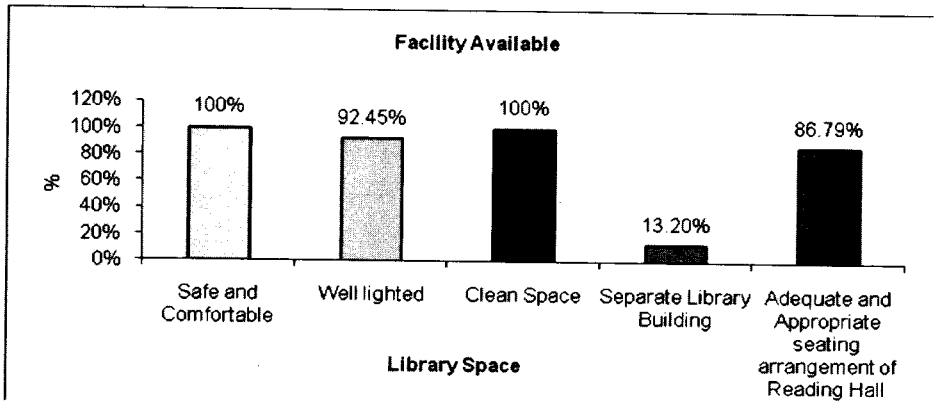


Fig-1: Space Facilities in Libraries

Table1. Shows that majority of libraries space facility that is (100%) safe and comfortableand clean space, (92.45%) well lighted, whereas (86.79%)adequate and appropriate seating arrangement of Reading Hall, while (13.20%) separate library building.

Table2: Safety and Security Facilities in Libraries

Safety and Security Facilities	Facility Available
Smoke Detection System	0%
Fire Extinguisher	11(20.75%)
Close circuit TV	0%
Inverter	9(16.98%)

Table2. Shows that majority of libraries that is (20.75%) Fire Extinguisher, (16.98%) Inverter, (0%) Smoke Detection System and Close circuit TV.

Table 3: Library Policies

Library Policies	Facility Available
Rules & Guidelines	53(100%)
Library Brochure	11(20.75%)
Library Committee	53(100%)
Prospectus	49 (92.45%)
Library Orientation	38(71.69%)
Feedback	22(41.50%)
Suggestion Box	34(64.15%)

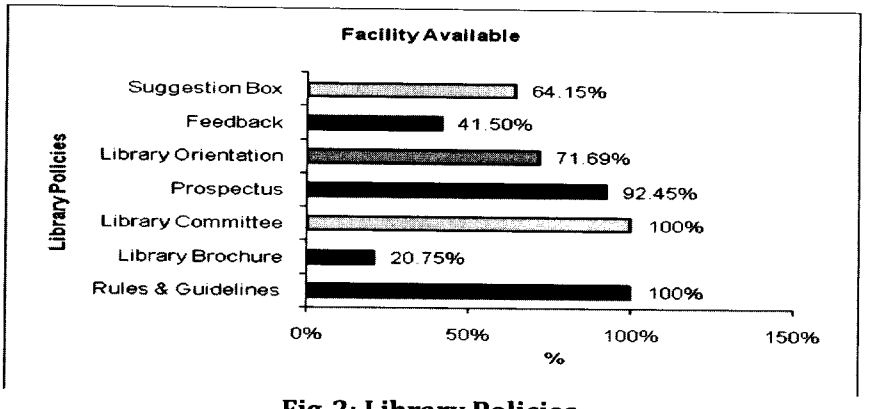


Fig-2: Library Policies

Table3: Shows that majority of libraries that is (100 %) Rules & Guidelines,Library Committee, (92.45%)Prospectus, (71.69%) Library Orientation, whereas (64.15%) Suggestion Box, (41.50%) Feedback while (20.75%) Library Brochure.

Table-4: Library Services

Library Services	Facility Available
Reference Service	49 (92.45%)
CAS	35(66.03%)
Article Indexing	3(5.66%)
Bibliography	37(69.81%)
Book Bank	37(69.81%)
Question Paper	49 (92.45%)
Inter Library Loan	36 (67.92%)
Newspaper Clipping	49 (92.45%)
Translation Services	0%
Indexing & Abstracting Services	0%
Referral Services	37(69.81%)
Library News Letters	2(3.77)%
Library Catalogues	31(58.49%)
List of Additions	31(58.49%)

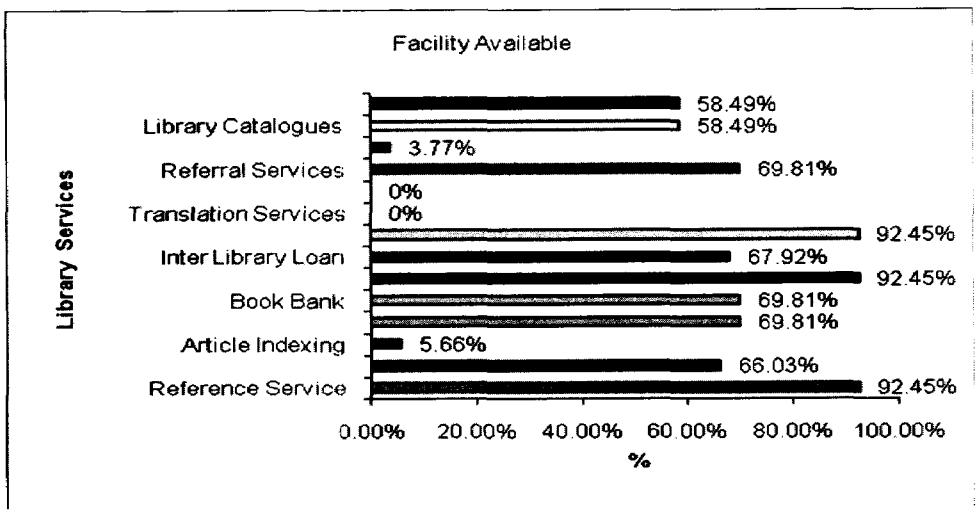


Fig-3: Library Services

Table 4: Shows that majority of libraries services that is (92.45%) Question Paper, Newspaper Clipping, Reference Service,(69.81%)Bibliography, Book Bank, Referral Services,(67.92%)Inter Library Loan,(66.03%) CAS whereas (58.49%) Library Catalogues, List Of Additions, while (5.66 %) Article Indexing and (3.77%) Library News Letters

Table-5: ICT facilities in libraries

ICT facilities	Facility Available
Internet	12(22.64%)
Library Automation Software	37(69.81%)
E-Books, E-Journals	7(13.20%)
Online Search Services	5(9.43%)
CD-Rom Search Services	3(5.66%)
Internet Resources	5(9.43%)
Xerox Facility	16(30.18%)

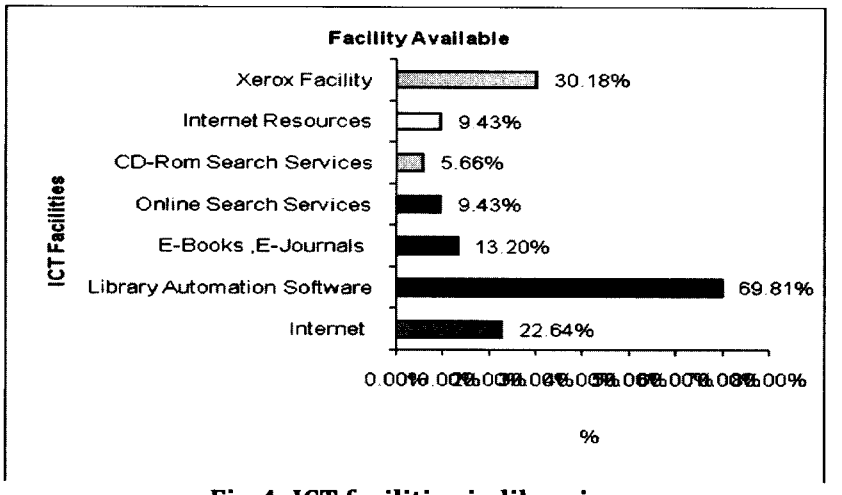


Fig-4: ICT facilities in libraries

Table 5:Shows that majority of Teachers that is (69.81%)Library Automation Software,(30.16%)Xerox Facility, (22.64%)Internet Services, whereas (13.20%)E-Books ,E-Journals while (9.43%)Online Search Services, Internet Resources,(5.66%)CD-Rom Search Services. The study concludes that college libraries affiliated to University of Pune services and facilities are rated as good in ensuring the quality. But it also revealed that some of the aspects are still to improve particularly on collection development, frequency of library service hours, awareness on e-resources and information services.

7. Conclusion

Developing best practices, analyzing and revising them at a regular interval will lead to continuous improvement in overall performance of the library and the whole institution. To enhance the collection development process, services dissemination and use of the library as a whole, appropriate planning, fore thinking, a detailed analysis of user base, objectives of the affiliating institution and its future strategies should be taken into account while planning any best practice.In fact it requires active participation, willingness, creativity and problem solving attitude from the library users.

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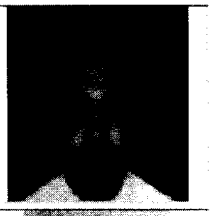
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Best Practices in Library: *A Case Study of SVC Library*

Umesh Deshmukh

Abstract

This paper discusses the practices adopted by the Shri Vyankatesh College. In the modern age this practices will be useful for the student as well as the library, for the improvement in providing quality services to the users. This paper highlights the best practices which is very useful to the development of library in a fast way.

Keywords : College Libraries, Best practices, SVC Library

1. Introduction

Library plays an important role in enhancing & sustaining the quality of higher education. Best practices are introducing new ideas, techniques in order to improve quality or to make progress. Librarian should make all attempt to over come such resistance from staff as well as user to change, once the best practices should be monitored and review continuously. Best practices should meet or Exide the need and expectations of the user as best practice may be innovative& be a philosophy, strategy, program, proceeds or practice that solve a problem, or create new opportunities. It may be potential. It is the practice which paves the wave for enhancing & existing function, & helps in effective implementation or use for the process.

2. Shri Vyankatesh Arts, Commerce and Science College, Deulgaon- Raja: A Brief Profile

Founder Chairman Late Rajendrsingh Jadhao established Shri Vyankatesh Arts and Commerce College in the year 1967 with its motto 'Shabde Vatu Dhan Janloka' i.e. let's ..... the wealth of knowledge among the people. The 'B' grade awarded by the NAAC based on its quality and education which is being given by the institution. In a span of 35 year it has taken great strides in the relm of knowledge and information. It is permanently affiliated to Sant Gadge Baba Amravati University, Amravati. It is also included under section2 (f) and 12(b) of university Grant commission and receiving lot off grants under various schemes. Shri Vyankatesh Arts, Commerce & Science college is working in Deulgaon-Raja, which is tribal and remote area. It is single senior college in Deulgaon-Raja.

3. Importance of Best practices in college libraries

A library which intends to serve its user effectively will have to organize its services keeping the mind the nature of its users. Each user community has its own characteristics, requirements behavioral pattern reading habits, distinct approach pattern and limitations on one hand information and communication, technology has brought tremendous changes in the way of best services, like internet. On the other hand the actual picture in academic libraries in rural areas is even far behind. The student communities are coming from very poor families (Economic background). Majority of the student in the college come from affiliate village having general agriculture background where they have to work on Saturday and Sunday to pay their travelling charges and other expenditure. More than 50% of the students do not come to the college regularly as they have to do farming and related works.

These students are not at all aware about other reference sources present in the library. They do not have knowledge of how to use this reference source, such as periodical, journal,

competitive exams book, reference book, and dictionary. For preparation of examination most of the students refer the notes, provided by the teacher in class rooms. At the time best practices helps to improve the college students in every academic session. Best practices are nothing but developing tailor made service, reaching beyond with available resources and delighting the users.

Library and Information Services of Higher Education institutions play a central role in enhancing the quality of academic and research environment. Library is the fulcrum of support for the entire range of academic activities on an educational campus. In today's high-tech learning environment, the library as a learning resource is taking up increasingly more academic space and time in the life of a learner. In times ahead, this will be even more so. Best Practice may be innovative and be a philosophy, policy, strategy, program, process or practice that solves a problem or create new opportunities and positively impact on organizations. Institutional excellence is the aggregate of the best practices followed in different areas of institutional activities. In general, the use of technology and innovative ideas lead to evolve best practices in library environment

4. Observation of other library practices by institutional visits

The goal of the practice was to refresh the library staff members and educate them about the prevailing work practices in other college/institutional libraries. The library staff member are taken for a one-day visit to other College/ Institutional libraries to study their functioning, the purpose being to refresh them and also make them aware about the best practices followed elsewhere. There is qualitative improvement in the services offered to the students by the staff who have become enthusiastic and resourceful.

- **Resources Required**: Library staff members who are open-minded and eager to know and learn the best practices followed in other libraries. Financial support from the management to organize such visits
- **Goal of the practice:** The Goal is to motivate professional staff to enhance their skill and expertise in conventional and e-library associated services and operations
- **The process**: Staff members are given the opportunity to familiarize and expertise with library automation, e-library services by arranging in-house and external training programmes By rotation of staff at various sections, on - job training is also given. Staff Development programmes organized on the areas such as Gardening, Yoga, Health and Team building
- **Impact of the practice:** The morale of the staff has been increased due to the training and expertise in recent areas of library operations. E-skills such as web hosting, automation have been acquired by the professional staff. As the outcome, the quality of library services and usage has been enhanced
- **Resources required**: Training of the staff in use of new systems and techniques has to be arranged. Funds are required with the support of management

5. Maintenance of Service Areas

To maintain cleanliness inside & and outside the library and provide suitable atmosphere for reading and searching Library is a place where many people visit to read, consult and borrow reading materials. It is necessary the atmosphere in the Library is inviting with cleanliness of areas in and outside of the library. Maintenance of calm and neat atmosphere in the reading and stack areas is a must for concentrated reading and searching of materials. IGM Library concentrated to achieve this to provide the users clean and green environment including dust free environment in the stack and reading areas.

Library Users are appreciative of the library efforts in keeping the entrance, reading and stack areas neat and clean. Green lawns in front and also in the courtyard within the library are a place of attraction for many users for reading in the evening and night. The lawn in front of the library is also used for academic group discussions on various topics by the faculty and students. Outsourcing the cleaning and mopping activities including maintenance of toilets. Dusting and Shelving of reading materials promptly on regular basis. Maintenance of reading tables and chairs etc.

Special Deposits Scheme: The objective of the practice is :

- To provide facilities of the learning resources center (Library) to outsiders.
- To ensure optional use of the collection and services.
- To generate additional financial resources to the learning resources Center and thereby to increase the number of services as well as user satisfaction

6. Effectiveness of the Practice

The learning resources Center started a Special Deposit Scheme (SDS) in 2011 to provide an opportunity to off campus users (Specially economically backward classes) to avail the facilities of the library resources and reading room at close distance and affordable costs. Members of SDS have benefited in getting reading facilities closer to their homes, as a consequence, many could successfully clear various competitive exams like Talathi, Gramsevak, Clerical Exam, SET & NET and University affiliated courses. Resources generated between 2011-2012 have been extremely helpful in building up infrastructure of the library.

- **Student Participative Programme:** The students are imparted knowledge about the library and Development of a positive outlook and attitude in students and awareness about the value of a library and its services. In addition, the maintenance staff is benefited by the assistance of students.
- **Earn while learn programme:** The objective of the practice is Students to work in the Library 15 hours a week.*(Shika Aani Kamva Yojna).*
- **The Process:** Library has several part-time jobs for the students to work in the Library under earn while learn program. The Student, who do not have any financial assistance, are selected to work in various sections of the library.
- **Effectiveness of the Practice:** Several students get financial support to meet their expenditure during their studies in the University. The students expressed that the jobs in the library are interesting and useful to know the reading materials in their area of interest. They are able to understand the behind the scene works in the library, which is not visible to the users. This has improved the relationship between the library staff and the users in understanding the intricacies of services the library staff provide them.
- **Library book exhibition**: To make awareness among the students on the latest books available in their subjects. Further the book selection process is possible for the faculty members and the students are interested to buy books for their information needs.

  Extended library opening hours:

  To provide uninterrupted reading facilities to the users in a conducive atmosphere.

  Those who can't visit the library during the day-time can make use of the Library in the

evening hours. This process is carried out by proving two reading halls having reading capacity of 500 readers (9 a.m. to 9 a.m.). Textbook section (8 a.m. to 10 p.m.). Outer Reading hall is open 24X7. Readers can bring their own reading material.

- **Impact of the practice:**

  Textbook consultation has increased

  Hall remains open with 100% occupancy

  Useful for students preparing for various competitive examinations

  Very fruitful for readers who are unable to visit the library during daytime

- **Extended hours of service:**

To keep the Library Hours to be 7 days a week and 16 hours a day to enable the users to exploit the reading materials. Library is kept open for 16 hours a day i.e., 8.00 am to 12.00 midnight during week days. Students, Research Scholars and Faculty members are busy during the normal working hours. Most of the students staying in the Campus and day scholars need the facility after their class and lab works

- **Impact of the practice:**

Number of students using the Library facilities have expressed that they are able study in the evening and also after taking Dinner hours. They want this facility to be extended 24 hours a day. Library is exploring the possibility to meet their demand. Users are happy that the library database and digital collection is available 24 hours a day and 7 days a week

- **Resources required:** Reorganization of staff duties, Organization of shift, holiday duties on rotation basis to all the staff members, Strengthening the security of reading materials.
- User Education (Information literacy programme):
- To orient the newly enrolled library user to the facilities and services provided by the library.
- To raise awareness about the services.
- To optimize usage of the library.
- To provide guidance on accessing electronic databases (infonet) to faculty and scholars.
- To acquaint the new students in understanding the services the library provides them.
- To enable the students to exploit the information resources available in the library to supplement
- **Initiation to fresher (Information Literacy Program):**

Staffs man the reference desk and meet the members who walk into the library and gather details of information needs and take them to the process of retrieving information from the library. Information on search/query is collected on a proforma designed by the library. Formal training on using Internet to access INFONET databases is arranged every fortnight at the library for the benefit of faculty and scholars.

Feedback is obtained to evaluate and enhance quality of information services and products.

- **Resources required:** Staff resources (both in terms of skill and time) internet access,

external experts (trainers) and finally it helps in precisely enunciate the information needs of the users

- **Goal of the practice:** their learning process to support class room teaching.
- **The Process:** program according to the time-table drawn by the library. First 10 days, after they are admitted to the courses, a formal request is made to the Deans / Heads of Schools and Departments. to encourage the students to attend the orientation program as per schedule. Students are explained about the resources, facilities, services the library provides them. They are taken round the library apart from training them in searching the library database, e-journals, e-mail and Internet browsing etc. The schedules are drawn based on the subject/discipline to go into the details in 90 minutes duration.
- **Impact of the process:** Students find it useful to know about the resources available in their discipline. They know specific locations of different types of materials and the privileges the library provides them. The hands-on training in using the e-resources, OPAC etc is appreciated.
- **User orientation (Information literacy programme):**
- **Goal of the Practice:** Creating awareness on library resources, facilities and services among new users and thus to ensure optimum use
- **The Process:** This is orientation programme to freshers who have joined the college during the academic year. Instruction and presentation on use of catalogue and familiarization with organization of collection, type of resources available and range of services provided is highlighted. Information on rules and membership enrollment is provided. Students are taken on conducted library tours in groups to familiarize with various sections of the library.
- **Impact of the Practice:** Encourage students to use the library by motivation. Inculcate reading habits and self study among the students particularly undergraduate students.
- **Library use statistics**
- **Goal of the Practice:** To gather feedback on the use of facilities and services. To enable to assess/ increase the quality of services delivered by the library.
- **The Process:** Data is captured through registers maintained at all services points. Main register is kept at the entrance to capture data on footfalls in the library on day-to-day bases. The data captured is analyzed periodically. The findings will then be fed into the decision making process. It is found that 300 users visit every day and 35 – 40% of these are from outside the University. Internet, periodical and theses units have the maximum usage as evident from the statistics.
- **Impact of the Practice:** Helps in optimum deployment of manpower and other resources. It also helps in assessing the life cycle of information products or services. Helped in enhancing the he quality of the services like literature search and digital repository
- **Resources required:** Maintenance of user register, staff time in terms of monitoring, recording and analysis of use data

  Remarks, if any: Consistency in observation and compilation of use data would help in precise decision making in delivering service.

Library best user award

- **Goal of the Practice:** To attract more students to visit the library and use the resources
- **The Process:** Data is gathered through visitor register maintained in the library. Usage data is compiled through circulation of library items. Based on the above data and the observations of the librarian one best user award are given to the student who has made maximum use of the library. Cash/book in the form of award is given to best user from the each discipline.
- **Impact of the Practice:** Increase in frequency of visits to the library and Increase in the use of library reference materials.
- **User Feedback Practice thru suggestion boxes**
    - **Goal of the practice:** To maintain suggestion Box to get User feed back on various services provided to them. To evaluate the feedback forms or letters to improve library services. Streamlining or focusing the services with modifications, if any to meet the User needs
    - **The Process:** To maintain suggestion Box to get User feed back on various services provided to them. To evaluate the feedback forms or letters to improve library services. Streamlining or focusing the services with modifications, if any to meet the User needs.

      Library is a service center to support the teaching, learning and research needs of the users. Apart from providing regular and routine services, it is necessary to provide new and improved services. It is necessary to get feedback on the regular and new services from the Users to streamline or modify to suite to the requirements of the end users. The feedback forms or letters are opened every day by the Reader Services Section to evaluate them to take further decisions in the matter.
    - **Impact of the practice:** User satisfaction levels have increased. The informal feedback from the users in the form of dialogue also helped to correct or modify certain procedures that helped them. User interaction is encouraged by all the sections on informal basis and this has improved the functioning and activities in the library.
    - **Resources required:** A feedback box near the entry point of the library. The Reader Services Section to open this box regularly to take decisions at their level or at a staff meeting based on the issues. Regularly scheduled meetings of Section Heads to discuss the issues.
    - **Resources required**: A feedback box near the entry point of the library. The Reader Services Section to open this box regularly to take decisions at their level or at a staff meeting based on the issues. Regularly scheduled meetings of Section Heads to discuss the issues.

Best Practices for College Libraries:

Listed below are some of the best practices that can enhance the academic information environment and usability.

- Computerization of library with standard digital software.
- Inclusion of sufficient information about the library in the college prospectus.
- Compiling student/teacher attendance statistics and locating the same on the notice board.
- Displaying newspaper clippings on the notice board periodically.
- Career/Employment Information/ Services.
- Internet Facilities to different user groups.
- Information literacy programs.
- Suggestion box and timely response.
- Displaying new arrivals and circulating a list of those to academic departments.
- Conducting book exhibitions on different occasions.
- Organizing book talks
- Instituting Annual Best User award for students
- Organizing competitions annually
- Conducting user surveys periodically

7. Conclusion

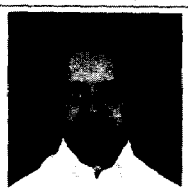
Best practice in simple term known as the practice which pave the way for enhancing the existing function and help in effective implementation or use of the process. Some of the highlighted practices here are well accepted practices experimented in different library environments in optimizing the use of library and information services. Use of technology in designing and delivering the information products and services is always made good results. Automation of all in-house operations in academic libraries with bar coding, user identity and web- opac facilities is a best practice in totality of library services. It has to be encouraged for wider adaptation of all higher education institutions. Hence adopting new techniques and tools in imparting user education may be of best practice in extent of use of library services. Developing digital repositories with subscribed subject content, open sources and institutional information and customizing as to the internal requirements with remote access is one of the globally adopted best practice in large libraries. Disseminating information through library website/ homepage in a networked environment is made possible due to the advent of technology and this has to be adopted in our academic libraries. Some of the practices mentioned in this document such as in- service training, extended library hours, segregation of less used collection, use of students in library services through earn while learn schemes are feasible for many libraries to adopt in enhancing the quality of the services.

The documentation on the best practices followed in the selected libraries will initiate other libraries to opt for the ideal way of managing the libraries and services of academic institutions. With the global village concept, the academic libraries need to orient to the highly qualitative information collection and services. The current networked environment enables the libraries to outreach any users at remote locations. Thus the libraries need to be dynamic and extend their services beyond the traditional ones, which were confined to book and other print collections. The best practices outlined in the document will be reviewed periodically and the up to date policies and practices will be framed. We do hope that this basic document would initiate the best practices in the Indian academic libraries.

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Collection development best practice in academic library: *A case study of UASD*

Maltesh Ningappa Motebennur **Nanda .S. Patil**

Abstract

The paper highlights the collection development the best practices in the state University of Agricultural Sciences, Dharwad Library. It also looked into the best book selection policy, preparing comprehensive book list by the departments concerned by going through various book selection tools and reviews. Sending the list by e-mail and surface mail as well, to the selected suppliers and publishers, who accepted our terms and conditions. Organising campus book exhibitions yearly twice or whenever time demands. Books will be spot selected by all the department faculty members along with researchers, students and the concerned head. The paper throws a light on selection of tools for various competitive examinations and a separate collection development practice in the academic library is a model.

Keywords : Collection development, Book selection tools, Book selection policy, Competitive examinations

1. Introduction

University of Agricultural Sciences Dharwad is a premier institution in the field of Agricultural and allied Sciences; it was established in the year 1947 as Agricultural College affiliated to Gandhi Krishi Vijyan Kendra (GKVK), Bangalore, Karnataka. In the year 1986, as a independent Agricultural University. The University is contributing to the overall agricultural development of the state by way of developing quality professionals in the areas of Agriculture & Allied Sciences, conducting quality research, cutting edge technologies and capacity building of farmers to facilitate adoption, besides providing consultancy and advisory support to the farmers, Government, NGOs & other organizations involved in the agricultural development. The University is progressing steadily with administrative, financial & technical support from the Government of Karnataka, ICAR, Government of India and various National & International Funding Agencies. The kind guidance received from our Chancellor, Pro-Chancellor, Board of Management and the various Statutory Bodies such as the Academic Council, Finance Committee, Board of Studies, State Level Research Council, and State Level Extension Council propelled the activities of the University to fulfil the aspirations of the students, farming community, Government and other stake holders.

2. The University Library

University of Agricultural Science, Dharwad University Library, (HQ)

The University Library functions at Head Quarter and Libraries in other teaching campuses are located at Bijapur, Sirsi and Hanumanamatti. Diploma (Agri) colleges have been started at Dharwad, Bijapur, Sirsi, Jamkhandi, Akkialur and Hukkeri. In addition the subsidiary library service is extended to 30 ARS and 5 KVKs of UAS Dharwad for the benefit of the researchers and scientists.

The services of the University Library is utilized by the students and staff of Agriculture College and college of Rural Home Science, Dharwad as well as the scientists and extension personnel of the Main Agricultural Research Station, Schemes, Projects, and KVKs located on the Krishinagar Campus, Dharwad.

At present the library has 1770 members comprising 346 staff, 94 research scholars, 257 PG Students, 1050 UG students and 23 Diploma students. There are 442 current print journals, 1,04,363 books including journal back volumes, 5844 gifted books, 4708 reports, 10,513 theses and 7970 pamphlets in the University Library.

The total budget for the year 2011-12 for University library including all campus libraries is Rs. 22 lakh for purchase of books and Rs.60 lakh for subscribing journals. In addition ICAR Sanctioned Rs.175 lakh for purchase of text books to University Library and other campus libraries.

Keeping in view the modernization of libraries, computerised library services and Internet service to the students and teachers community were started from 18.11.2003 along with an excess to CD ROM Databases and CAB CD. Under this activity Online Public Access Catalogue (OPAC) as well as computerisation of the circulation section is implemented, which is a landmark in library services. Internet, Online Journals and CD ROM Database services is established and put to use at departmental level in the main campus. CD ROM Database facility has become an instant handy tool for the researchers to carry out the research activities. Digitization of theses abstracts and entire theses are under progress. The University Website is updated with many new services from time to time. Photocopying facilities are available in all teaching campus libraries.

Through CeRA (Consortium for e-Resources in Agriculture), library is providing the accessibility for research articles published in various journal with full texts and abstracts for the benefit of researchers on demand.

Presently the University Library has an accessibility of more than 3000 online journals with full text. Nearly 49 e-books have been purchased in advance services for the benefit of students, researchers, faculty and scientists. Internet facility has been provided through WiFi at main campus along with the e-book readers are introduced for the benefit of e-library.

The library at different campuses is being utilized by students, teachers, scientists and other staff of various establishments like Colleges, Research Station, Extension Education Unit, Krishi Vijnan Kendra etc. Various aspects of working of the library at different campuses during the year under report are given below. The University Library is unique by its collection ranging from all the fields and branches of Agriculture Sciences, Animal Sciences, Horticulture, Home and rural Science including food and nutrition, human resources and management, fashion designing and apparel technology and forestry.

Table1. University of Agricultural Sciences, Dharwad Library Usage and Resources for the year 2007-08 (source: UASD annual report 2007-08)

	Details	Dharwad	Raichur	Bijapur	B'Gudi	Arabhavi	Bidar	Sirsi
1. Membership	1. Staff	380	127	55	32	64	3	42
	2. Students	817	412	242	160	184	25	89
2. Usage	1. Books borrowed	20402	21100	13529	3345	27184	4763	14745
	2.Usage of Books/Back Volumes/Current Journals	153100	-	39877	10535	121450	1432	84672
3. Collection added to Library	1.Books	2911	1187	216	960	834	1306	1117
	2.Gift books	75	35	-	351	-	-	-
	3.Thesis	583	38	-	-	337	-	12
	4.Reports	99	376	-	-	-	-	-
	5.Phamphlets	100	386	-	-	-	-	-
	6. Current Journals subscribed	424	190	27	32	61	-	40

Table 2. University of Agricultural Sciences, Dharwad Library Usage and Resources for the year 2008-09 (source: UASD annual report 2008-09)

Details		Dharwad	Raichur	Bijapur	B'Gudi	Arabhavi	Bidar	Bagalkot	Sirsi
1. Membership	1. Staff	389	130	61	32	66	8	3	46
	2. Students	903	398	244	176	214	45	29	87
2. Usage	1. Books borrowed	20852	25160	2913	3060	20370	2400	2376	14259
	2.Usage of Books/Back Volumes/Current Journals	291201	165700	49428	19174	77988	4160	4752	40681
3. Collection added to Library	1.Books	2151	1346	312	989	719	1857	1517	202
	2.Gift books	138	113	-	289	-	-	-	32
	3.Thesis	217	28	-	-	06	-	-	10
	4.Reports	163	-	-	-	-	-	-	-
	5.Phamphlets	70	-	-	-	-	-	-	-
	6. Current Journals subscribed	429	190	27	22	65	-	-	44

Table 3: University of Agricultural Sciences, Dharwad Library Usage and Resources for the year 2009-10 (source: UASD annual report 2009-10)

Details		Dharwad	Bijapur	Sirsi
1. Membership	1. Staff	405	56	34
	2. Students	983	264	114
2. Usage	1. Books borrowed	24259	3471	13711
	2.Usage of Books/ Back volumes /Current Journals	544755	47049	88163
3. Collection added to Library	1.Books	2047	292	417
	2.Gift books	285	173	22
	3.Thesis	144	-	06
	4.Reports	162	-	15
	5.Phamphlets	48	-	-
	6. Current Journals subscribed	428	33	41

Table 4: University of Agricultural Sciences, Dharwad Library Usage and Resources for the year 2010-11(source UASD annual report 2010-11)

Details		Dharwad	Bijapur	Sirsi
1. Membership	1. Staff	352	55	37
	2. Students	1264	287	170
2. Usage	1. Books borrowed	26577	5631	14994
	2.Usage of Books/Back volumes/Current Journals	577576	79400	97902
3. Collection added to Library	1.Books	2769	1330	1033
	2.Gift books	182	22	52
	3.Thesis	180	-	6
	4.Reports	63	-	-
	5.Phamphlets	31	-	-
	6. Current Journals subscribed	439	30	40

Table 5. University of Agricultural Sciences, Dharwad Library Usage and Resources for the year 2011-12 (source: UASD annual report 2011-12)

Details		Dharwad	Bijapur	H'matti	Sirsi
1. Membership	1. Staff	346	58	40	34
	2. Students	1424	414	50	212
2. Usage	1. Books borrowed	27739	7325	210	11466
	2. Usage of Books/Back Volumes /Current Journals	612150	110168	150	104370
3. Collection added to Library	1. Books	6100	2284	3083	3247
	2. Gift books	98	-	-	-
	3. Thesis	195	-	-	14
	4. Reports	181	-	-	-
	5. Phamphlets	84	-	-	-
	6. Current Journals subscribed	488	22	-	40

3. Conclusion

From the above tables it shows that, from the year 2007to 2012 the University of Agricultural Sciences, Dharwad library usage statistics and the number of books and journals added to the library and its usage. The users of this academic library benefited a lot by its service and its unique collection, being the premier institution in the field of agricultural and allied science, the main highlight of its usage is the grassroots level users the farmers are getting indirect help from new high yielding and improvised crops, and quality research from the researchers or scientists. This institution has good record of producing good number of IAS, IPS and IFS rank holders. A separate students' remedial couching cell has been started to get all the information on different competitive examinations such as JRF, ICAR, NET, TOFELL, MAT, CAT, GMT and many more. The students who aspire to such competitive exams can be benefited by its unique collections even CD ROM data bases, e-books and the e-readers, will be the best practices adopted in the academic library.

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Comparative Study of Information Sources in Business & Management related Online Full Text Databases

Pradeep.P.Kavi **Ramesha**

Abstract

Three commercially available Management/Business related online full text databases i.e EBSCO BSC, ABI-Inform Complete from Proquest and Infotrac Management Collection from Gale-Cengage have been analysed in terms of coverage of information sources. The various parameters analysed among the 10 parameters include common periodicals (duplicate) between the databases, coverage in type of information sources indexed i.e., Journals, Magazines, Theses & Dissertations, Case Studies, etc. The analysis gives a 'inside view' of the databases so that any institution wishing to subscribe to Business and Management related online full text databases will get useful information for decision making.

Keywords : E-resources, Database aggregators, Business and Management Databases, Comparative study.

1. Introduction

Spectacular developments in Information and Communication Technologies (ICT) have ushered an age of Online databases for storage and retrieval of information. Gone are the days of CD-ROM based bibliographic databases. Today, with the developments in Internet and database technologies developments of databases is the order of the day. Today, several thousands of databases are available from various database aggregators and publishers. Organizations subscribe to databases which are related to their domain. However, the task of choosing databases has become a difficult task as there are many databases available in a particular domain. For optimum coverage, organizations end up subscribing to many databases. Database aggregators claim their coverage by giving big numbers. However, on closer evaluation, we find that the number contains many Periodicals which are covered in more than one database (duplication), varied coverage in terms of Peer reviewed journals, Full text, bibliographic, magazines, newspapers, theses & dissertations etc. Keeping these in mind, the paper aims to compare three commercially available Online databases in Business related disciplines i.e. EBSCO Business Source Complete, ABI-Inform Complete from Proquest and Infotrac Management collection from Gale-Cengage.

2. Methodology

- The list of Periodicals covered is downloaded as MS Excel file from the corresponding database website.
- The list is standardised (Title, Publisher, ISSN No, Database name, Type of Information source) and all other fields are deleted.
- Comparison and analysis is done by using features in MS Excel software and Linux commands

3. Identification of Duplicate Periodicals:

3.1. Steps in identification of duplicate entries:

Step 1: Downloading the list of periodicals and standardising the list

The list of periodicals covered in Ebsco BSC, Proquest ABI-Inform complete and Gale-

Cengage Infotrac databases was downloaded from their corresponding websites as MS Excel files. The list was edited to include only four field's i.e. Title, Publisher, ISSN No and Database name. The remaining fields were deleted.

3.1.2. Problems encountered in identifying duplicate periodicals:

Problem 1: Periodical titles are not entered exactly the same way in different databases list. Hence, comparison between titles was ruled out.

Example of differences

1. These two are duplicate periodicals, but the way the titles have been entered in different database is different.

Title	Publisher	ISSN No	Database name
FW	Financial World	0015-2064	Ebsco
Financial World	Financial World Partners	0015-2064	Proquest

2. Another example of how the same title is entered in EBSCO BSC Database

Title	Publisher	ISSN No
Journal of the American Society for Information Science	John Wiley & Sons, Inc.	0002-8231
Journal of the American Society for Information Science (1986-1998)	Wiley Periodicals Inc.	0002-8231

Looking into the above, the ISSN No which is unique for any periodical has been used for comparison.

Problem 2: Multiple entries for same title in same Database

There are many entries in EBSCO BSC database and Proquest ABI-Inform database that lists a periodical as many as two or three times with same ISSN No. For example, the title 'Business and Society' has been listed thrice in EBSCO database alone as mentioned below:

EBSCO BSC Database		
Title	**Publisher**	**ISSN No**
Business and Society	Sage Publications, Inc.	0007-6503
Business and Society (1986-1998)	Sage Publications, Inc.	0007-6503
Business and Society (pre-1986)	Sage Publications, Inc.	0007-6503

The task of identifying duplicates becomes even more difficult as the same periodical has been listed thrice in the same database. The ISSN No 0007-6503 appears three times as if there were three duplicate entries which is misleading. Hence, in spite of using Linux command to identify duplicate entries, manual cross checking is necessary for each of the duplicate entries.

3.1.2. Step 2: Identification of duplicate periodicals between EBSCO BSC and Proquest ABI-Inform Complete database

The list of periodicals from these two databases was merged and only the ISSN No of the merged file is sorted, extracted and copied to a new text file using MS Excel. This text file which

contains ISSN No's of both the databases is copied to Fedora Linux operating system for identification of duplicates. On the Linux command prompt, uniq command is used to identify and list out only duplicate ISSN No's and write it to a new file 'duplicate-ebs-proq.txt'. The command is

$ uniq –d issn.txt > duplicate-ebs-proq.txt

The Linux Uniq command

The **uniq** command reads the input file and compares adjacent lines. Any line that is the same as the one before it will be discarded. In other words, duplicates are discarded, leaving only the unique lines in the file. Using the –d option, it outputs only the duplicate lines.

3.1.3. Step 3: Merging of Files:

Now, the file containing the duplicate ISSN No's file is merged with the main MS excel file containing the merged list of Ebsco BSC and Proquest ABI-Inform in the ISSN No column. Also, a new column with the word 'Duplicate' is added along with each duplicate ISSN No so as to easily identify when scanning manually. The merged file is sorted based on ISSN No.

3.1.4. Step 4: Scanning of file to identify duplicate periodicals

This MS Excel file is scanned manually checking for the appearance of the word 'Duplicate' using the 'Find' option in MS Excel. It should be noted that each and every time the word Duplicate appears, the title is not necessarily a duplicate entry because the same title is entered two times in the same database as discussed in Problem 2. Now, we are able to identify correct duplicate entry as we have added the database name in another column.

Example of wrong duplicate title:

SL.No	Title	Publisher	ISSN.NO.	Duplicate	Database
717	The American Behavioral Scientist (1986-1994)	Sage Publications, Inc.	0002-7642		Proquest
718	The American Behavioral Scientist (pre-1986)	Sage Publications, Inc.	0002-7642		Proquest
719	The American Behavioral Scientist	Sage Publications, Inc.	0002-7642		Proquest
			0002-7642	Duplicate	

The above periodical has been identified as duplicate, however on closer examination we see that the title 'The American Behavioral Scientist' has been entered three times in Proquest database. Hence, this is not a duplicate entry.

Example of correct duplicate entry in two different Databases

SL.No	Title	Publisher	ISSN.NO.	Duplicate status	Database
56	Commercial Law Journal	Commercial Law League of America	0010-3055		EBSCO
919	Commercial Law Journal	Commercial Law League of America	0010-3055		Proquest
			0010-3055	Duplicate	

The above example shows that the title 'Commercial Law Journal' is covered in both databases EBSCO and Proquest. Hence, this is correct duplicate title. Note that the third row shows the duplicate ISSN No and the word 'Duplicate' which was deliberately added and merged with ISSN No

field and sorted to get this list. All such correct duplicates are copied and pasted to a new MS Excel file. List of such titles is given table number 1 and 2 in next Section 3 Analysis and findings.

4. Identification of Peer Reviewed Periodicals

The list of periodicals downloaded from EBSCO & Proquest website is made available as MS Excel file. One of the fields (column) is 'Peer Review'. To find out the number of Peer review periodicals, the 'Filter' option has been used to list only the Peer reviewed periodicals. Their number is given in table number 3 in next Section 3 Analysis and findings.

4.1. Identification of periodicals with Full text, Bibliographic and other type of information sources

The list is generated using the filter command in MS Excel. The number is given table number 3 in next Section 3 Analysis and findings.

4.2. Analysis and findings

Table 1: List of common periodicals between Ebsco BSC and Proquest ABI-Inform database. Totally, there are 82 periodicals.

Sl. No.	Title	Publisher	ISSN.NO
1	Administrative Theory & Praxis	M. E. Sharpe Inc.	1084-1806
2	Advances in Economic Analysis & Policy	Berkeley Electronic Press	1538-0637
3	Advances in Macroeconomics	Berkeley Electronic Press	1534-6013
4	Advances in Theoretical Economics	Berkeley Electronic Press	1534-5963
5	Advancing the Consumer Interest	American Council on Consumer Interests	1044-7385
6	American Business Review	University of New Haven	0743-2348
7	American Documentation	John Wiley & Sons, Inc.	0096-946X
8	American Enterprise	American Enterprise Institute for Public Policy Research	1047-3572
9	American Journal of Business	Emerald Group Publishing,	1935-519X
10	Arkansas Business & Economic Review	University of Arkansas	0004-1742
11	Australian Journal of Management	Australian Graduate School of Management	0312-8962
12	Behavioral Science	John Wiley & Sons, Inc.	0005-7940
13	Brookings Papers on Education Policy	Brookings Institution Press	1096-2719
14	Brookings Review	Brookings Institution Press	0745-1253
15	Business & Economic Review	Division of Research	0007-6465
16	Business Forum	California State University,	0733-2408
17	Canadian Journal of Administrative Sciences	Blackwell Publishing Ltd.	0825-0383
18	Commercial Law Journal	Commercial Law League of America	0010-3055
19	Contributions to Economic Analysis & Policy	Berkeley Electronic Press	1538-0645
20	Contributions to Macroeconomics	Berkeley Electronic Press	1534-6005
21	Contributions to Theoretical Economics	Berkeley Electronic Press	1534-5971
22	Economic & Financial Review	Federal Reserve Bank of Dallas	1526-3940

23	Economic Bulletin	Springer Science & Business Media B.V.	0343-754X
24	Economic Development Review	International Economic Development Council	0742-3713
25	Economic Review - Federal Reserve Bank of Atlanta	Federal Reserve Bank of Atlanta	0732-1813
26	Economic Review - Federal Reserve Bank of Cleveland	Federal Reserve Bank of Cleveland	0013-0281
27	Economic Review - Federal Reserve Bank of Dallas	Federal Reserve Bank of Dallas	0732-1414
28	Emergence : Complexity and Organization	ISCE Publishing	1521-3250
29	Engineering, Construction and Architectural Management	Emerald Group Publishing,	0969-9988
30	European Business Forum	Caspian Publishing Limited	1469-6460
31	European Business Journal	John Wiley & Sons, Inc.	0955-808X
32	Family Economics and Nutrition Review	Superintendent of Documents	1085-9985
33	Financial Management	Blackwell Publishing Ltd.	0046-3892
34	Financial World	Financial World Partners	0015-2064
35	Frontiers of Macroeconomics	Berkeley Electronic Press	1534-6021
36	Frontiers of Theoretical Economics	Berkeley Electronic Press	1534-5955
37	Functional Foods & Nutraceuticals	Penton Publishing	1470-0336
38	Health Care Financing Review	HCFA ORDS Publications	0195-8631
39	International Executive	John Wiley & Sons, Inc.	0020-6652
40	International Journal of Business Studies	International Journal of Business Studies	1320-7156
41	International Journal of Organization Theory and Behavior	PrAcademics Press, Florida Atlantic University	1093-4537
42	IPA Review	Institute of Public Affairs	1030-4177
43	Journal of Air Transportation	University of Nebraska	1544-6980
44	Journal of American Academy of Business, Cambridge	Journal of American Academy of Business	1540-1200
45	Journal of Applied Management Studies	Taylor & Francis Ltd.	1360-0796
46	Journal of Building Appraisal	Palgrave Macmillan	1742-8262
47	Journal of Career Development	Springer Science & Business	0894-8453
48	Journal of Digital Asset Management	Palgrave Macmillan	1743-6540
49	Journal of Economic Issues	M. E. Sharpe Inc.	0021-3624
50	Journal of Information Technology	Palgrave Macmillan	0268-3962
51	Journal of Interactive Marketing	Elsevier Science Ltd.	1094-9968
52	Journal of Investment Compliance (Euromoney)	Euromoney Institutional Investor PLC	1528-5812
53	Journal of Leadership & Organizational Studies	Baker College	1548-0518
54	Journal of Money, Credit, and Banking	Ohio State University Press	0022-2879
55	Journal of Occupational Behavior	John Wiley & Sons, Inc.	0142-2774
56	Journal of the American Society for Information Science	John Wiley & Sons, Inc.	0002-8231
57	Kiplinger's Personal Finance Magazine	Kiplinger Washington Editors Inc.	1056-697X
58	Leadership in Action	Wiley Periodicals Inc.	1093-6092

59	Management of Personnel Quarterly	John Wiley & Sons, Inc.	0025-1852
60	Management Review	American Management Association International	0025-1895
61	Multinational Monitor	Corporate Accountability Research	0197-4637
62	Nation's Business	US Chamber of Commerce	0028-047X
63	Natural Grocery Buyer	Penton Publishing	1547-3503
64	New England Economic Review	Federal Reserve Bank of Boston	0028-4726
65	Nonprofit World	Society for Nonprofit Organizations	8755-7614
66	OECD Papers	Organisation for Economic Cooperation & Development	1609-1914
67	Policy & Management Review	Southern Public Administration Education Foundation	1527-7305
68	Presidents & Prime Ministers	EQES, Inc.	1060-5088
69	Public Interest	National Affairs, Inc.	0033-3557
70	Public Relations Quarterly	Public Relations Quarterly	0033-3700
71	RAE - Eletrônica	Fundacao Getulio Vargas	1676-5648
72	Research in Healthcare Financial Management	International Society for Research in Healthcare Financial Management	1524-1521
73	Service Management	CMP Information Ltd.	0953-9212
74	Sloan Management Review	Sloan Management Review	0019-848X
75	Spanish Economic Review	Springer Science & Business Media B.V.	1435-5469
76	Spectrum: Journal of State Government	Council of State Governments	1067-8530
77	The Rand Journal of Economics	Rand Corporation	0741-6261
78	Topics in Economic Analysis & Policy	Berkeley Electronic Press	1538-0653
79	Topics in Macroeconomics	Berkeley Electronic Press	1534-5998
80	Topics in Theoretical Economics	Berkeley Electronic Press	1534-598X
81	U.S. News & World Report	U.S. News and World Report	0041-5537
82	Urban Studies	SAGE PUBLICATIONS, INC.	0042-0980

Table 2: List of common periodicals between all three databases – i.e. Ebsco BSC, Proquest ABI-Inform Complete and Gale-Cengage Infotrac. Totally, there are 23 periodicals.

Sl. No.	**Title**	**Publisher**	**ISSN No**
1	American Journal of Business	Emerald Group Publishing, Limited	1935-519X
2	Arkansas Business and Economic Review	University of Arkansas, Bureau of Business and Economic Research	0004-1742
3	Australian Journal of Management	Australian Graduate School of Management	0312-8962
4	Business Forum	California State University, Los Angeles	0733-2408
5	Economic & Financial Review	Federal Reserve Bank of Dallas	1526-3940
6	Economic Review - Federal Reserve Bank of Atlanta	Federal Reserve Bank of Atlanta	0732-1813

7	Economic Review (Cleveland)	Federal Reserve Bank of Cleveland	0013-0281
8	Emergence : Complexity and Organization	ISCE Publishing	1521-3250
9	Engineering, Construction and Architectural Management	Emerald Group Publishing, Limited	0969-9988
10	European Business Forum	Caspian Publishing Limited	1469-6460
11	European Business Journal	John Wiley & Sons, Inc.	0955-808X
12	Financial Management	Blackwell Publishing Ltd.	0046-3892
13	Journal of Applied Management Studies	Taylor & Francis Ltd.	1360-0796
14	Journal of Digital Asset Management	Palgrave Macmillan	1743-6540
15	Journal of Investment Compliance (Euromoney)	Euromoney Institutional Investor PLC	1528-5812
16	Journal of Leadership & Organizational Studies	Baker College	1548-0518
17	Journal of Money, Credit & Banking	Ohio State University Press	0022-2879
18	Management Review	American Management Association	0025-1895
19	Multinational Monitor	Corporate Accountability Research	0197-4637
20	Nation's Business	U.S. Chamber of Commerce	0028-047X
21	New England Economic Review	Federal Reserve Bank of Boston	0028-4726
22	Public Relations Quarterly	Public Relations Quarterly	0033-3700
23	Sloan Management Review	Sloan Management Review	0019-848X

Table 3: Composition of Databases

Sl. No.	Database/Parameter	Ebsco BSC	Proquest ABI-Inform	Gale-Cengage Infotrac
1	No of Peer reviewed periodicals	1961	1735	541
2	No of Titles with full text	3755	2046	1419
3	No of titles with only bibliographic details	1164	685	550
4	No of Journals	621	1733	1441 (magazines plus Journals)
5	No of Magazines	856	161	NA
6	No of Newspapers	6	44	45
7	No of Theses & Dissertations	2	35,000	0
8	No of Industry reports	19247	4806	171
9	No of Company reports	17651	0	0

As discussed in the previous sections, an attempt has been made to compare the composition of three databases in Management related online full text databases. The data obtained after analysis in the form of tables have been listed in Section 3 (Analysis and findings) and gives an 'inside' view of the databases.

4.3. Number of Periodicals Common in the Databases (duplicate)

Table 1 in Section 3 lists the common periodicals between Ebsco BSC and Proquest ABI-Inform database. Totally, there are 82 periodicals. Ebsco and Proquest are basically database aggregators i.e. they get licence from the publishers to scan and index the full text of articles for a fee. This fee they recover by building huge database and sell the product with a bundled price for the thousands of periodicals and other information sources.

Now, an organization which subscribes to both Ebsco BSC and Proquest ABI-Inform database would be paying unnecessarily extra money for these 82 periodicals as they are covered in one database. Also, whenever searches are conducted on both the databases, the periodicals which are covered in both the databases would be retrieved showing duplicate records. Users will have to identify and eliminate these duplicate records.

In light of the above, the two points i.e. both from cost and time involved in the duplicate coverage, the database aggregators would do well to remove these periodicals from their package. Either of the aggregator should voluntarily agree to remove the duplicates both from the point of user benefit and business ethics. Table 2 in Section 3 lists the common periodicals between all the three databases – i.e. Ebsco BSC, Proquest ABI-Inform Complete and Gale-Cengage Infotrac. Totally, there are 23 periodicals. Table 3 in Section 3 lists the composition of the three databases with regard to 9 parameters.

4.3.1. Number of Peer reviewed periodicals covered:

Ebsco database includes highest number of Peer-reviewed periodicals with 1961 followed by ABI-Inform from Proquest with 1735 and Cengage Infotrac with 541 periodicals.

4.3.2. Number of periodicals with full text coverage

Ebsco contains maximum number of Full text titles with 3755 followed by ABI-Inform Proquest with 2046 and Cengage Infotrac with 1419 periodicals.

4.3.3. Number of periodicals with Bibliographic data

On the coverage of bibliographic information only, again Ebsco includes the maximum with 1164 periodicals followed by ABI-Inform Proquest with 685 and Cengage Infotrac with 550 periodicals.

4.3.4. Type of literature covered – Journals

On the type of literature (Journals) covered, ABI-Inform Proquest includes the maximum with 1733 followed by Ebsco with 621 journals. Cengage-Infotrac list does not specify whether a title is a Journal or magazine, hence, it was not possible to identify the break up.

4.3.5. Type of literature covered – Magazines

On the number of Magazines covered, Ebsco leads with 856 followed by ABI-Inform Proquest with 161.

4.3.6. Number of Newspapers included

On the number of Newspapers, it is surprising to note that Cengage-Infotrac contains the maximum number with 45 followed by ABI-Inform Proquest with 44 and Ebsco with just 6.

4.3.7. Number of Theses & Dissertations included

One of the important parameter is the Theses & Dissertations, ABI-Inform Proquest leads with 35,000 followed by Ebsco with just 2. It should be noted that the major strength of ABI-Inform Proquest database lies in Theses & Dissertations collection. Cengage Infotrac databases do not include any Theses & Dissertations.

4.3.8. Number of Industry Reports included

Ebsco contains a whopping 19,247 industry reports followed by ABI-Inform Proquest with 4806 and Cengage Infotrac with 171.

4.3.9. Number of Company Reports included

Only Ebsco database includes Company reports with as many as 17,651. It is surprising that other two databases do not include any Company reports. In Business information, Company related information itself form a separate category of databases like Capitaline and Prowess from CMIE. However, these being local databases on global view, Ebsco is the only provider of this sort of information in their database.

5. Limitations of the study

- Given the large number of titles (1000+) in each database, only three main databases in Management discipline have been included in the study. Hence, the analysis presents only a partial picture.
- As database aggregators/Publishers keep adding and removing periodicals, the study is relevant as of today.
- The study is limited to analysis of information sources covered and not the features provided by the databases.
- More databases can be included for a comprehensive study in the future

6. Major Findings, Suggestions and Conclusion

As discussed in the last section, the composition of the three databases with regard to 10 parameters has been analysed. Based on the analysis, the following major conclusions were drawn:

Coverage: No single database can be said to cover all the literature adequately. There are major differences. For example, if ABI-Inform Proquest is good in Theses & Dissertations, Ebsco is good in Industry and Company Reports. Hence, if an organisation wants both the information sources, it has to subscribe to both the databases. However, small Business schools need not subscribe to all the databases. They can choose any of the databases after going through the comparison table 3 in Section 3. Ebsco BSC includes the highest number of peer reviewed periodicals with 1961 followed by ABI-Inform from Proquest with 1735 and Cengage Infotrac with 541.

Duplication: There are 82 periodicals common between Ebsco and Proquest database. Also, there are 23 periodicals common between all the three databases. Whenever an organisation wants to subscribe to more number of databases for better coverage, they end up subscribing to duplicate periodicals. The database vendors never give a clear picture of percentage of duplication. This analysis gives a clear picture along with the list of such periodical titles.

Newspapers: The study shows a surprising result as Cengage Infotrac which is a small database compared to Ebsco and Proquest includes the maximum number of Newspapers with 45 followed by Proquest with 44 and Ebsco with just 6. The biggies need to look into this aspect and try to include more Newspapers.

7. Suggestions

- The database vendors should voluntarily come forward and remove periodicals covered in

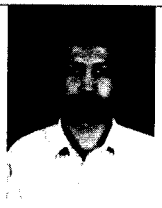
another database. This will save the cost and also solve the problem of retrieving duplicate article at the time of searching.

- Database vendors should give more emphasis on inclusion of scholarly peer reviewed journals. Because, ultimately, the role of database aggregator is to give more journals at lower price. Sadly, they seem to include other information sources like trade journals and show big numbers.
- While the cost of databases is increasing over the years, the coverage has not kept up with the rise. The database vendors should make extra efforts to include more information sources like Conference Proceedings, Case Studies, and Industry Reports which are more in demand.

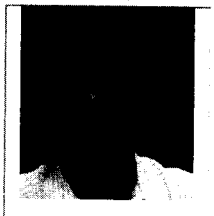
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Exploration of Statistical Applications Used to ensure better Library Usage at SDM College, Ujire: *A case study*

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Abstract:

The authors of this paper attempts to debate and discuss the method of utility assessment made at SDM College, Ujire regarding the student visit to the library and the outcomes of such an initiation in the campus as one of the best practices. It discusses the implications of such statistically collected data upon the readership at different points of time. It highlights one of the best practices the Library internalized in maximizing the readership and utilization of the availed learning resources by making the statistics public in the notice boards.

Keywords : Higher Education, Learning Resource Centre. Best Practices

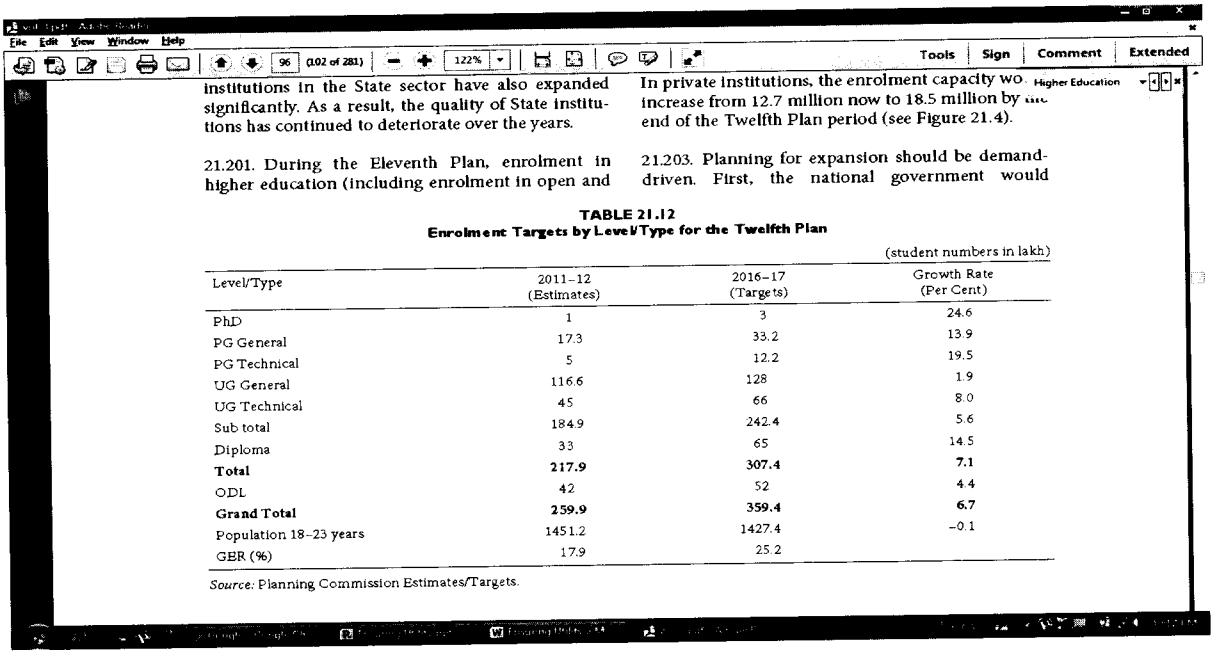
1. Introduction

In the expansion period [Twelfth Five Year Plan Report], Education sector is highly looked up in the country for the quality standards. Higher Education Institutions in India are meeting the quality standards set by different nodal agencies such as Ministry of Human Resource Development [MHRD], University Grants Commission [UGC], National Assessment and Accreditation Council [NAAC], ISO, AYUSH, AICTE and they receive timely guidelines and suggestions by different commissions set such as Knowledge Commission of India, Innovation Commission of India etc. in reforming their standards. The Twelfth Plan advocates a paradigm shift in funding from demand-based grants and input based budgeting to normative and entitlement-based grants and outcome-based budgeting.

Reading is considered to be a best practice. Hence, Library as a storehouse of knowledge is a Heaven for all learning enthusiasts. As a hypothesis of the paper, we state that, the qualitative improvements in HEIs may sound meaningful only with the quantitative growth marked up with the optimum utilization of learning resources.

Education sector is given due importance in the planning of the economic policies for the past few plans[2]. For example, year by year, allocation made to this sector has dramatically increased. The present 12th plan states "In the light of past experience and considering the inter-linkages between expansion, equity, and excellence, a new strategic framework is required to pursue the objectives of the Twelfth Plan. This would involve cultural, strategic and organizational changes impacting on all aspects of higher education ranging from access and equity to governance, funding, monitoring and regulation, institutional structures, curricula and teaching–learning processes".

While presenting the enrollment targets during the 12th plan period the Planning Commission of India makes the following estimation.



institutions in the State sector have also expanded significantly. As a result, the quality of State institutions has continued to deteriorate over the years.

21.201. During the Eleventh Plan, enrolment in higher education (including enrolment in open and

In private institutions, the enrolment capacity wo... increase from 12.7 million now to 18.5 million by ... end of the Twelfth Plan period (see Figure 21.4).

21.203. Planning for expansion should be demand-driven. First, the national government would

TABLE 21.12
Enrolment Targets by Level/Type for the Twelfth Plan

(student numbers in lakh)

Level/Type	2011–12 (Estimates)	2016–17 (Targets)	Growth Rate (Per Cent)
PhD	1	3	24.6
PG General	17.3	33.2	13.9
PG Technical	5	12.2	19.5
UG General	116.6	128	1.9
UG Technical	45	66	8.0
Sub total	184.9	242.4	5.6
Diploma	33	65	14.5
Total	**217.9**	**307.4**	**7.1**
ODL	42	52	4.4
Grand Total	**259.9**	**359.4**	**6.7**
Population 18–23 years	1451.2	1427.4	–0.1
GER (%)	17.9	25.2	

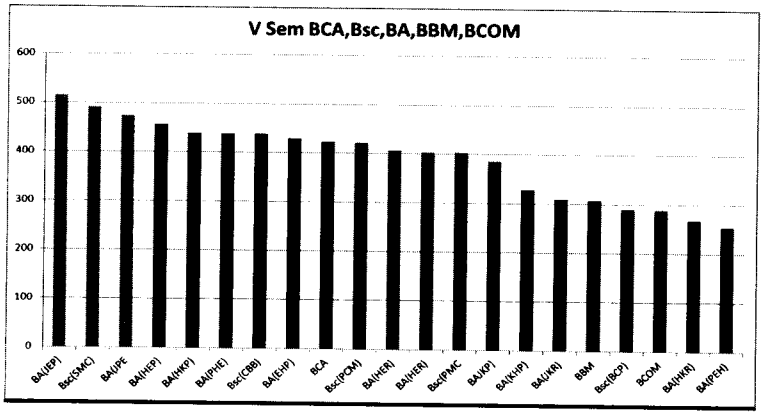
Source: Planning Commission Estimates/Targets.

Overall, an outlay 1,10,700 crore for higher education is proposed for the Twelfth Plan. This is merely 30 per cent more than the outlay in the Eleventh Plan, even though it is more than two and a half times the actual expenditure in the Eleventh Plan. Such a significant increase is justified because of the increasing demand for quality higher education. In order to achieve this objective, it had developed 'The Twelfth Plan strategy'. One such strategy the plan suggests is to have effective governance at different levels. At the bottom level, it highlights 'Institution Level Governance'. Based on the lessons learnt from the Eleventh Plan, the Plan is of the view 'Academic institutions primarily rely on individual initiative and creativity to develop their unique institutional culture and tradition over a long period of time. Principles of academic freedom, shared governance, meritocratic selection, promotion of diversity and institutional accountability are defining features of a well-governed academic institution... Empirical evidence suggests that better-run institutions are highly autonomous, especially when autonomy over academic matters vests with faculty. Autonomy in the areas of finance, organisational structure, operations and staffing is also important, but should be consistent with internal systems of evaluation and accountability and tied to the mission of the institution.'

The central Library at SDM College, Autonomous, Ujire houses more than eighty thousand collections [83,303 as on 31 December 2012] and the number is growing consistently. The student strength of the College is nearly Two Thousand Seven Hundred. It offers UG as well as PG Programmes with twenty eight Departments and more than one hundred and sixty teaching and nearly a hundred non-teaching staff in the campus.

Two years ago [July 2010], when a survey was conducted, the library utilization was reported to be as low as 3.5 hours per month by individual students. With in-house developed software, we could avail statistics regarding the student's entry and exit timings and thereby calculate the total number of hours spent in the library by the individual students. Later the data collected during a month is analyzed further. The data is further drawn based on class and section-wise utilization; hence, identified the classes which utilized the library for maximum and the minimum duration in the month. A graph prepared indicating the utilization is displayed on the notice board [**Figure 1.1**]

Figure 1.1: Library Utilization Index [Students] From 1 July to 31 July 2010



At the outset several attempts were made to realize the reasons for such a low turnout in the library. A survey conducted reviled number of limitations we had in the system which led to the condition. Henceforth, under the IQAC, a vibrant Learning Resources Committee was constituted for bettering the circumstances. There were several discussions at different levels and capacities regarding enhancing the utilization of the learning resources, especially the library. Major decisions taken were

- Extend the library hours
- Enhance the technical facilities
- Fixing the minimum usage per month and per semester
- Identifying the best library users every month
- Student participation in Library improvement
- Student recommendation of books to the library
- Student representation in the library committee
- Providing extensive non book collections in the library
- Making skill enhancement as a compulsory component in the syllabi.
- Availing the books on open accession

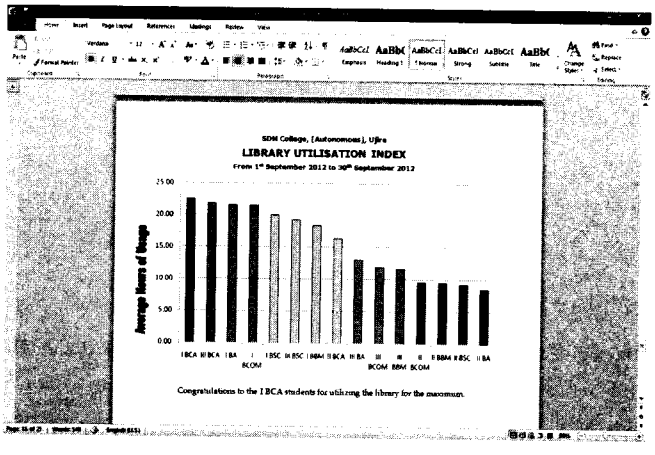


Figure 1.2

After several such direct as well as indirect initiation utilization index is seen at a greater height. Figure 1.2, 1.3, 1.4 illustrate the library utilization for the month of September, October and November 2012

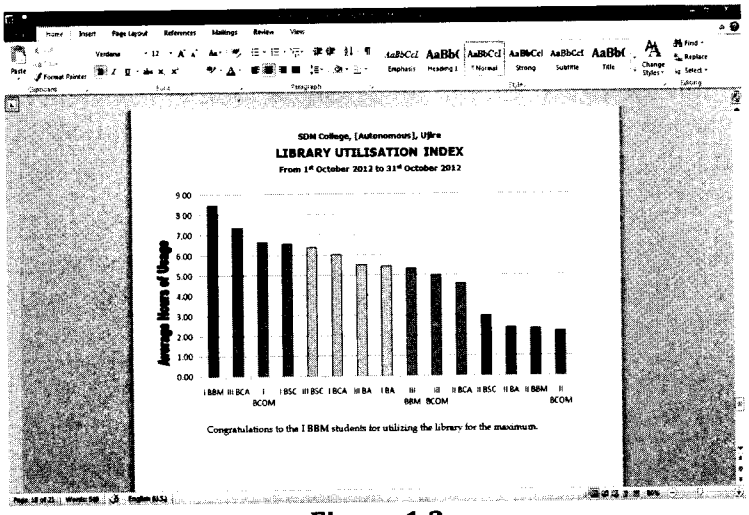


Figure 1.3

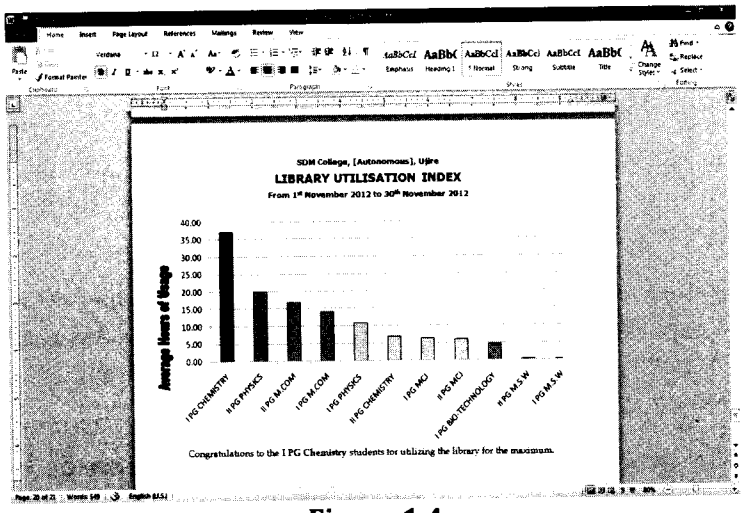


Figure 1.4

At present, the library is mostly filled with readers and we are happy for the best utilization of the learning resources. Many students have overtaken the minimum bar of the library utilization set by the institution and became models to others. Hostels and the Paying Guests have realized the spirit behind the extension of library timings and joined hands with the institution in permitting them to read in the library. The institutional activities such as Student Research Projects, Student Faculty, Student Seminars, and Certificate Courses provided additional inputs to the students and kindle the readership amongst the students.

Figure 2.1

Figure 2.1 illustrates the First Semester utilisation of the library by the students. The First semester, spreads in the months of July, August, September and October. In October, Students face their Semester end exams and most part of the November will be under vacation.

Figure 2.2

Observing Figure 2.2, one could make out the composition of the utilisation of the library in the first semester. The maximum inflow of students is observed in September and minimum in

October. On an average 2,700 students of the college used the library for more than 42 hours in one semester on an average of 11 hours per month. Hence, it is for sure that many students have taken the regulations brought in the instruction in its true spirit and utilized the learning recourse to a great extent. At the backdrop one must also note that, this has been achieved in spite of the students being absent from the campus for sports, NCC, NSS and other co-curricular and extracurricular activities.

In the odd semester of 2012, the library was without any students for a brief period of 1.34 minutes on Tuesday, 17 July 2012 and on Friday, 24 August 2012 the library was crowded with 2046 students using the library between 8:30 a.m. and 10:30 a.m. An inquisitive look into the Library Utilisation Index provided us a better picture of the learning resources and the learner approach towards them.

Volume is one of the primary aspects drawn based on the data collected. It indicated how many students used the library for how long. It also presents the information class wise. Hence it is possible to identify the advanced users and the others. As result numbers of activities are initiated to bring in a healthy competition amongst the classes. It also worked as a major information pool to the mentors of the class to know the reading habits of the students. When the information was made available in the student user dossier online, even the parents now come to know the readership of their children from different places.

Trend is the next bit of information availed from the databank. As a result the management came to know the months in which there were heavy and scanty rushes in the Library. This enabled us to mobilize adequate library staff and the schedule their services.

Composition is very important information we receive from the databank. The information gathered based on the aspects of gender, class, section facilitates the management to take timely action in extending the facility in a better manner. This has led the team of Library Committee to extend various user friendly services in the Library.

The statistical analysis of the user index also promotes heuristic learning amongst the students and their learn ability aspects. The college, now, after introducing the system for three academic years is now planning to assess the academic and non-academic impacts of the innovation. It also tries to figure out the development amongst the identified 'Best Library Users' at times.

Conclusion

Best practices are the practices which pave the way for enhanced functioning with sustenance. Use of technology in designing and delivering the information services in a library has always yielded good results. Automation of all in-house operations in academic libraries with bar-coding of the collections, user identity facilities is a best practice in totality of library services. Documenting the developments in the Library further proves advantages in motivating the learners to use the resources optimally. Hence, in the present context of HEIs the availed learning resources in book and non-book form or expansion of the building or extension of computer or any other modern techniques [representative of quantitative growth] will prove meaningful only if they are utilized by the learners optimally. Statistical applications used alongside the other best practices of the library have indeed paid dividends to the College over a period of time. It concludes that the best practices are not onetime solutions, but are ongoing processes.

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Future of University Library Services

Shivajirao, Gurav Dhananjay

Abstract

University library should offer a number of library, documentation and information services to their users. Today many university libraries are providing new services implementing the new technologies in the libraries. We can don't close totally traditional library services but with the help of new technology libraries must improve the old services. In modern university libraries there are new technology used includes internet, OPAC, web 2.0, web 3.0, social networking, etc. So university libraries provide adequate and satisfies services and also introduce the new services to the users.

Keywords : Internet, library services, social networking, etc

1. Introduction

The library is the primary and significant requirement for any educational institution and library is the centre of any academic setting. Libraries supplement the instructional work of classroom and carry forward the ideas of education. Real education can only be achieved through the libraries. Thus the libraries are the providers of informal education, guiding the learners to search vast range of material available. The libraries are gradually brought recognized for their academic services and they are occupying prominent position in educational programmes, through the World.

2. University Libraries

The role of university library is to support the teaching, learning and research activities of the university and it is an important component of a university set up. Dr. Radhakrishnan, Chairman of University Education Commission (1949) described the role of university library in the following terms: "The library is the heart of all the university's work, directly so as records its research work and indirectly as regards its educational work, which derives its life from research work. Scientific research needs a library as well as laboratories, while for humanities research the library is both library and laboratory".

3. Present State the of University Library Services

The university library should offer a number of library, documentation and information services to the various users like, P.G. students, research scholars, and faculty members, etc. At present university libraries provides following services.

3.1. Library Services

- **Lending:** Under this service the books are issued to all registered users of the library, like P.G. students, research students, faculty members and others. The issued books are also returned from the users and library staff keeps the books at their original places in the racks.
- **Reference:** Reference service is provided to all registered users of the library as well as the visitor users with the available reference sources in the libraries. In many universities there is special collection of theses, dissertations and reports, etc.

- **Reading Room:** Reading room facility is provided to the all students whom admitted to the various departments of the university with separate reading hall for so many hours open according to the requirements of the users.
- **Assistance in the use of the Library:** University libraries provide assistance in use of library and different sections to the every user.
- **Display of current additions or preparation of lists of current accessions**

  In university libraries there is display of new arrivals of books and also lists of current accession of new books.

4. Current Awareness services

- **Current contents of journals:** Libraries are providing the current contents of journals with subject wise list to the users for saving the time.
- **Alerting services to important literature in select fields:** Under this service an individual reader can provide new information in his subject field or important literature in selected fields and try to alert the users.
- **Selective Dissemination of Information (SDI):** The users of library are informed with the latest developments in their subject fields and also taking feedback from this service.
- **Newspaper clipping:** In this service the users are providing subject wise news items from daily newspapers and maintain back files with year wise arrangement.

5. Bibliographic services

- **Literature search:** In this service users provide help to find out his required information in his specific subject area.
- **Compilation of bibliography on specific topic:** This service provides bibliographical details of specific book, author or publisher, etc.
- **Index to current literature:** The index guides the users to documents and other things, so it can provide useful information in highly compact form about a person, or a specific topic.

6. Other services

- **Document supply services:** In this service the user will supply the full text of information according to their requirements. The full texts can be sent to the users as photocopies of the journal articles or electronic form.
- **Reprography services:** This service provides the users to take a photo copy of required material under the conditions.
- **Translation services:** This service provides the researchers required information from other languages which they are not known.
- **Computer based information retrieval services:** In recent time's libraries providing computer based information retrieval to the users with the help of searching the databases, e-resources and others.
- **OPAC service:** University libraries provide the OPAC service through given a link on

library home page. It is very useful to the users of the library to search particular information or a document.

- **Library intranet portal:** On library homepage this facility is provided to get the latest information about the various activities of the library and given links to the other useful web addresses.

7. Specialized services

- **User education:** Under this service the users are informed about library resources, the ways to locate resources and use of resources.
- **Exhibition and special displays:** Libraries are arranging exhibitions and special collection of displays for catching the attention of the users towards the library reading resources.
- **Special lecture and demonstrations:** Libraries are arranging special lectures of different subject experts on selected events and it is the part of to attract the users towards libraries.
- **User oriented seminars, workshops, etc:** Libraries are arranging various seminars, workshops and awareness programmes for the benefits of the users.

These services ought to be planned keeping in view the general demand for such services and the capability of the library in offering these services.

8. Present and Future University Library Services envisaged

Parallel to the traditional library services, the library automation should facilitated value-added services such as internet, access to e-resources, e-journals, e-books, web 2.0, and web 3.0 and use of social networking, etc.

- **Book circulation by utilizing the RFID system**: Present situation every university libraries collection is growing day by day and also increasing the range of users. Various university libraries are provides the open access system in stack areas to the users. So according to the increasing range of users library can be utilize the RFID technology for automatic issuing and returning of books. The RFID is the latest technology to be used in library for book identification for self checkout and for sorting and conveying of library books and also theft detection.
- **Creating institutional repository (IR) of research outputs and rare collection:** IR is one of the most promising developments that utilize new web technologies to offer a viable and sustainable alternative to the scholarly publishing. The repositories also serve as a comprehensive publications database of the parent organization. The aim of IR is to aid the management and dissemination of the scholarly electronic resources produced by academics. The various university faculty members are published research articles in various journals, conferences, seminars, etc. We should collect these articles from them and create a repository using open source software. It will be advantageous to the students and research scholars for developing the future research.

  In various university libraries there are number of rare books, manuscripts and other rare reading material are available. So university libraries will be digitized these documents with the help of scanner and stored in a computer and create a database and giving access to the users with a link to the library web site.
- **Reservation and renewal of documents via e-mails and sms:** Many users are personally coming for issuing and renewal of documents in the library. According to the fourth law of

library science the users and library staffs time must be saved with using e-mail and sms facility. Under this service a user can send an e-mail or sms to the concerning account and it can be updated and sending the confirmation for above by the library staff.

- **E-clipping service:** The university libraries provide the newspaper clipping service with cutting the newspapers. For providing this service there are various steps are required like cutting of news items, pasting it on plain papers, write the names of newspapers and dates on it and lastly filing of clippings with date wise. For better preservation and save the time selected news items will be scanned with the help of scanner and create a database of various files of news items and giving the link to library website. This can save manpower, cost and as well as space.
- **Machine Translation service:** Traditional method of providing translation service is to become a mediator between the user and the translation centers. The researchers don't know about the facilities of translation centers. In India there are various translation centers are available, like NISCARE (National Institute of Science Communication and Information Resources), NCERT (National Council of Educational Research and Training), Central Hindi Directorate, etc. For providing effective use of this service libraries can collect foreign languages literature catalogues apart from English language. So this can be very useful to the researchers to know the other language literature concerning their research activities.

  Human translation is both a costly and slow process. So some machine translation systems have been developed. Pickens' Translator's Handbook informs us about the following systems – SYSTRAN, LAGOS, WEIDNER, ALPS, SPANAM, METAL, TITUS, TAUM, CULT, VINIT, SMART, GETA AND SUSY.
- **E-reference service:** University libraries provide electronic reference service with the help of the internet. The library staff must help to users to find out authentic information by searching various web sites. There are various e-resources freely available on the internet. It can save the time of users and providing them latest information in there subject field.
- **Publicity of library facilities:** Many users of the libraries don't know about various services are provided by the library. So effective use libraries they must create publicity about the library facilities by advertising information on website, circulating different pamphlets about library facilities to affiliated colleges and various university departments, etc.
- **Collecting the demands and suggestions for purchasing the books and other reading materials:** Taking the suggestions or demands from students, research students and also faculty members via e-mails, SMS or mobile phones of concern persons, so it can provide to develop sound collection on various subjects as well as trying to satisfy the users.
- **Content pages of current journals:** Library will provide subject wise content pages of current journals by e-mails of interested users according to their needs.
- **Information of new arrivals of books on library home page:** To know the library users about the new arrivals of books in the library, given a link on library home page.
- **Create a Helpline Desk**: Under this service user can contact library professional staff via e-mails for any assistance or query regarding library services or any other information.
- **Help to develop personal library:** Libraries should provide some grants to university employees, teachers of departments and also affiliated college teachers to purchase the books and develop their personal library.

- **Use of Social networking tools:** Social networks are perhaps the most promising and embracing technology. Most social network services are internet based. These provide means for users to interact such as e-mail, instant messaging, blogging, streaming media and tagging.

9. What needs to be done to introduce these services in university libraries?

- Training of new technology to library professional staffs-
- Make provision of required funds from university authorities-
- Selection and Purchasing of new software and hardware technology – if required
- Strong management and positive will power of the authorities as well as library staff

10. Conclusion

The university library has an important role in higher education by providing proper services to the users. The libraries must plan to use improved technology as and when necessary for future. Today there are many university libraries providing traditional services as well as new services with the help of library automation. University libraries must implement new services and also improve traditional methods of providing services to the users.

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Information Gathering through Search Engine by Faculty Members at Guru Ghasidas University, Bilaspur, Chattisgarh: *A Study*

Brajesh Tiwari **Ashwani Kumar**

Abstract

This study examines the awareness of search engine at Guru Ghasidas University, Bilaspur, (A Central University), Bilaspur, Chattisgarh including preferred search engines, location, search techniques, satisfaction level and problems. The study describes in brief, the search engine and their types, etc. The objectives, scope, research methodology of the study are clearly expanded. The data analysis and interpretation are given on total number of responses, purposes of using search engine, way to use of search engine etc. by Faculty member.

Keywords : Information Needs, Information Gathering Habits, Information Seeking behaviour

1. *Introduction*

The information needs by the use of search engine essentially refers to the strategies and actions undertaken to locate discrete knowledge elements. It is concerned with interactive utilization of the search engine. Information needs is a human process that requires adoptive and reflective control over the afferent and efferent actions of the information seeker. Due to the technological development more particularly the web and internet made access to world information with a clicking mouse. The web technology offers many search engine and services which are scattered across the globe. On the web almost all search engine are free of cost. The cast based resources can't be offered developing and under developing countries.

2. Search Engine

The search engine is designed to search for information on the World Wide Web and FTP servers. The search results are generally presented in a list of results and are often called hits. The information may consist of web pages, images, information and other types of files. Some search engines also mine data available in databases or open directories. Unlike web directories, which are maintained by human editors, search engines operate algorithmically or are a mixture of algorithmic and human input. Search engines are generally searches the web for a specific query. Search engines are designated as computer programs that searches websites asked by the user related to his/her specific query. Search Engines generally finds, sorting and classifying information related to specific query. For Example Google and Exite are two best examples of search engines. Search engines are categorized into various types as described below

2.1. Primary Search Engines

Primary search engines are basically such type of computer programs known as by the name of web crawlers or spiders, web wanderers and web worms to traverse the web and scan websites for specific queries like words, paraas or the whole site by using this to generate database of web-pages.

For example Google (http://www.google.com). MSN Search (http://www.msn.com) Alta Vista (http://www.altavista.com) Are best examples of primary search engines.

2.2. Meta Search Engines

These search engines are also known by the name of mega indexes. They do not consist their own databases on the other hand they have to excess other primary search engines. Meta search engines generally conducted their searches either on a single primary search engine or number of primary search engines simultaneously and presented the results in a single package. Such type of search engines are also known by the name of multithreaded search engines.

For example Glaxy, Ask Jeeves, Meta Crawler and Meta Search are examples of Meta search engines.

2.3. Hybrid Search Engines

Such type of search engines presents both types of results crawler based results as well as human powered listings.

For example MSN search engine

3. How Search Engine works:

A place, on the Net, where one goes to find sites about specific information. When you have a Web site and you want people to be able to find it you must go to the search engines and submit your site to them so they will list it. After you submit your site to them it still may take as long as 3 months before they list it. You may need to re-submit your site every couple months depending on the rules of the search engine. Read each of their rules before submitting

4. Institutional background at a glance

Guru Ghasidas Vishwavidyalaya is a Central University of India, located in Bilaspur C.G. State, established under Central Universities Act 2009, No. 25 of 2009. Formerly called Guru Ghasidas University (GGU), established by an Act of the State Legislative Assembly, was formally inaugurated on June 16, 1983. GGU is an active member of the Association of Indian Universities and Association of Commonwealth Universities. The National Assessment & Accreditation Council (NAAC) has accredited the University as B+ . Situated in a socially and economically challenged area, the university is appropriately named to honor the great Satnami Saint Guru Ghasidas (born in 17th century), who championed the cause of the downtrodden and waged a relentless struggle against all forms of social evils and injustice prevailing in the society. The University is a residential cum affiliating institution, having its jurisdiction spread over Bilaspur Revenue Division of the state of Chhattisgarh.

5. Review of related literature

The literature of information seeking behaviour of users available is greatly broad ranging. An attempt has been made to cover number of works that go beyond discussions of the information seeking behavior itself and its direct applications to closely related topics such as information needs.

Samuel (2005) studied the extent of faculty members' usage of Internet services for instructional purposes. It was found that most of the faculty members used Internet for their writing and publication of journal articles, searching for relevant instructional materials, accessing of reference materials and the use of internet in different courses. Patitungkho and Deshpande (2005) studied the Information Seeking Behavior of Faculty members of Rajbhat Universities in Bangkok. Thirty seven percent of faculty members use Internet daily, 52% use for education

purposes and 76% use Internet at home. E-mail was most frequently used for communication. Most frequently used search engine was Google. A.Henry (2005) performed a qualitative study in a rural school setting in the north east with seven middle school level teachers. It was revealed during the study that searching and locating the information on Internet requires not only literacy but problem solving skills as well.

Asemi (2005) also made an attempt to find out information searching habits of Internet users. It was found out that almost all the respondent's use Internet. Most widely used search engines were Google and Yahoo. Kanamadi and Kumbar (2007) have attempted to explore the impact of information technology innovations on Resources and services of Management Institute Libraries in Mumbai. It was revealed that users prefer to search electronic resources before they do a manual search of print versions.

6. Objective of Study

1. To examine the information needs of Faculty member through search engine.
2. To investigate the awareness about search engine among Faculty member of Guru Ghasidas University, Bilaspur.
3. To expose the frequency of searches carried out by various type of search engine.
4. To examine search techniques used by Faculty member.
5. To know the location to access the information through search engine by respondent.
6. To understand the purpose for which the Faculty member use search engine.
7. To find out the problems faced by users while using search engine.

7. Methodology and Data Collection

The questionnaire method was used to collect relevant data. It was decided to focus on the faculty member of Guru Ghasidas University, Bilaspur. Keeping in view the objectives of the study, it is found that nearly 200 Faculty member are working in the G.G.V., Bilaspur. Total 119 questionnaires were randomly distributed among 200 Faculty members at G.G.V. Bilaspur. Except questionnaire method, personal interviews method, observation methods were also used to collect essential information to supplement to the questionnaire method to expose more clarity to the data which are more essential and analysis and interpretation of data.

8. Analysis and Interpretation of Data

Table1- Sample and Rate of Response

Types of Users	No. of Questionnaire distributed	No. of Questionnaire received	Percentage (%)
Faculty member	119	87	73.10

A total no 119 structured questionnaires were distributed among Faculty member at Guru Ghasidas University, (A Central University), Bilaspur. Total 87 questionnaires were returned back. All received sample questionnaires were analyzed statistically. (See table 1)

Table 2-Awarness about search engine

Users	Awareness of search engine			
	Yes	%	No	%
Faculty member	81	93.10	6	6.89

The question was asked in the context of awareness about search engine. The analysis of the responses is tabulated in table-2. It is observed, that the maximum Faculty members i.e. 93.10% of Faculty member have good awareness of search engine.

Table 3-Frequency of Search engine

Frequency of Use	Faculty member	%
Daily	39	44.82
Once in a week	19	21.83
Twice in week	13	14.94
Once in Month	9	10.34
When they feel/Occasionally	7	08.04

It is observed from the table-3, that 44.82% of the Faculty member use the search engine daily, and followed by 21.83% once in week, 14.94% twice in weak, 10.34% once in month and 08.04% of respondents use the search engine when the feel/occasionally.

Table 4- Purpose for using search engine

For preparing class lectures	53	60.91
For updating knowledge	12	13.79
For guiding researchers	10	11.49
For writing and presenting paper	7	08.04
Others	5	05.74

The Faculty members were asked a question about the purpose for which they use search engines. It is observed that 60.91% of the faculty members use search engine for the purpose of preparing class lectures, followed by 13.79% for updating knowledge, 11.49% For guiding researchers, 08.04% for writing and presenting paper and 05.74% of respondents use the search engine for other purposes. Faculty member use search engine at various places like library, department, computer center, home and cyber cafe / other places.

Table 5-Location access to information through search engine

Location	Faculty member	%
Department	56	64.36
Library	33	37.93
Home	21	24.13
Cyber Cafe/ Other Place	10	11.49

The analysis of data in table 5 depicts that 64.36% of Faculty member prefer to use the search engine at their departments followed by 37.93% in Central Library, 24.13% access it in their Home, and 11.49% of faculty members use the search engine at cyber cafe/other places.

Faculty member use various types of search engine like, Google.com, Yahoo.com, Rediff.com, MSN.com, opera.com and others.

Table 6: Preferred types of search engine to access information

Types of Searches	Faculty member	%
Google.com	82	94.25
Yahoo.com	79	90.80
MSN.com	61	70.11
Opera.com	58	66.66
Rediff.com	57	65.51
Alta Vista.com	33	37.93
Excite.com	3	3.44
Hunsa.com	**2**	**2.29**
Kapook.com	--	--
Others	**11**	**12.64**

It is observed from table-6 that, 94.25% of Faculty member mostly prefer to use the google.com as search engine, followed by 90.80% yahoo.com, 70.11% MSN.com, 66.66%, opera.com, 65.51% Rediff.com and 12.64% of Faculty member prefer to other type of search engine.

Table 7: Status of Search Techniques

Search Techniques	Faculty member	%
Keyword	85	97.70
Use of truncation	47	54.02
Boolean operators	20	22.98
Phrase searching	19	21.83
Formulating search strategy	11	12.64
Any other	31	35.63

Table-7 depicts about search strategy used by the Faculty member. It shows that 97.70% of Faculty member use the keyword as the main search technique, followed by 54.02% use of truncation, 22.98% Boolean operator, 25.18% Phrase searching and 35.63% of Faculty member use another type of search technique in using search engine.

Regarding "satisfaction with search engine" a question was asked to the Faculty members of GGV, Bilaspur. The responses are tabulated in table-8.

Table 8: Satisfaction level of Search Engine

Name of Search Engine	No. of Respondents	%
Google.com	71	81.60
Yahoo.com	68	78.16
Rediff.com	51	58.62
MSN.com	46	52.87
Opera.com	23	26.43
Alta Vista.com	08	09.19
Excite.com	--	--
Hunsa.com	--	--
Kapook.com	--	--
Others	11	12.64

It is observed from Table-8 that, 81.60% of Faculty member completely satisfied with

google.com followed by 78.16% with yahoo.com, 58.62% with Rediffmail.com, 52.87% with MSN.com, 8.14% opera.com, 26.43% Opera.com and 12.64% of Faculty member are satisfied with other types of search engine.

Table 9: Speed Satisfaction of Search Engine

Name of Search Engine	No. of Respondents	%
Google.com	67	77.01
Yahoo.com	61	70.11
Rediff.com	53	60.91
MSN.com	44	50.57
Opera.com	--	--
Alta Vista.com	--	--
Excite.com	--	--
Hunsa.com	--	--
Kapook.com	--	--
Others	56	64.36

Table-9 depicts that 77.01% of Faculty member are mostly satisfied with the speed of Google's search engine, followed by 70.11% Yahoo's speed, 60.91% Rediff's speed, 50.57% with MSN's speed and 64.36% of respondents are satisfied with speed of other type of search engine.

A question was asked to respondents about which information is mostly unavailable in search engine. The analysis of data is summarized in table 10.

Table 10: Type of Information unavailable in search Engine

Type of Information	No. of Respondents	%
Synonymous information	61	70.11
Picture searching	49	56.32
Range searching	42	48.27
Birthdates of particular or famous person	39	44.82

From table-10, it is observed that, according to 70.11% of faculty member's view synonymous information is mostly unavailable in any type of search engine, followed by 56.32% unavailable picture searching, 48.27% unavailability of range searching, and 44.82% Birthdates of particular or famous person is unavailable at any search engine.

The respondents were asked about the problems during getting the information through search engine. There are various problems during needs information associated with the access of search engine by respondents. Realizing its value, the study attempted to collect data on this and data are tabulated in table11.

Table 11- Problems faced by Faculty members and Faculty member

Type of Information	No. of Respondents	%
Poor connectivity with Internet	81	93.10
Retrieval of irrelevant information	69	79.31
Limited access	58	66.66
Limited access computer terminals	43	49.42
Unawareness of information in their fields	33	37.93
Poor database searching skill	26	29.88

Table-11 revealed by the analysis of data is poor connectivity with internet i.e. 93.10%, followed by retrieval of irrelevant information 79.31, limited access 66.66%, limited access computer terminals 49.42%, unawareness of information in their fields 37.93% and 29.88% of Faculty member are facing the problem of poor database searching skill.

9. Findings of the study

The major findings of the study are:

- It is observed that maximum Faculty member i.e. 93% have good awareness and acquaintance with search engine.
- The study explores that 61% of respondents use search engine for the purpose for preparing class lecture.
- The study explores that 64% of Faculty member prefer to use the search engine in the department.
- The study represents that Google is the most popular search engine among 94% of Faculty member.
- 81% of respondents are fully satisfied with Google search engine.
- The study represents the majority of the Faculty member i.e. 93% face the problem of poor connectivity with internet.

10. Conclusion

The Guru Ghasidas University, Bilaspur, U.P. is the highly established institute which is well known for quality research and academic activities. The study sought to get the overview of information gathering of Faculty member on search engine by taking sample from various departments. The choice of collection should meet the need and requirements of the end user consequently, librarians must be aware of how the faculty seek information utilizing search engine. In their regards Satpathy and Rout (2010, pp16) observed that the role of libraries in the age of e-resources will increase tremendously, particularly in providing training and guidance to use authentic and relevant information. The libraries are and will develop necessary tools to provide such services to their users satisfactorily." Keeping pace with changing user demand for e-resources. The central library of G.G.V., Bilaspur should provide maximum number of computer terminals with good connectivity with internet and try to provide access facilities to reliable & authentic resources for faculty's satisfaction.

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Innovative Library Services in School of commerce and Management studies in Jain University: *A case study*

Meeramani N **Krishnamurthy, M**

Abstract:

A library is a collection of information, sources, resources, books, and services, and the structure in which it is housed, it is organized for use and maintained by a public body, an institution, or a private individual. In the more traditional sense, a library is a collection of books. With the collection of media other than books for storing information, many libraries are now also repositories and access points for maps, prints, or other documents and works of art on various storage media such as audio tapes, CDs, cassettes, videotapes, and DVDs. Purpose a library professionals today need to acquire knowledge and skills in information and communication technology as the services of more and more libraries are now centering on information technology (IT), especially in educational institutions. The primary focus is to research and document the integration of services based on the framework of academic libraries. An attempt to provide details service provided in the academic institute is presented here.

Keywords : Innovative service, Academic Libraries, Management Studies,

1. Introduction

Purpose a library professionals today need to acquire knowledge and skills in information and communication technology as the services of more and more libraries are now centering on information technology (IT), especially in educational institutions. Today there is no area, which has not been influenced by IT. IT mainly helps to provide timely information and facilitates real-time access to remote databases. The importance of information lies in its accessibility and utilization by users for productivity and decision making. Technology remains one of the primary drivers of change in the ways that people work, seek information, communicate, and entertain themselves. In an academic environment, no unit has been transformed by technology than the library. Practical implications in the libraries need to reorganize their physical space to make technology-enabled resources both more readily available and widely used. Library and information professionals should add new IT skills to their current capabilities in order to help users overcoming their anxieties about the new world of networked and digitized information, and assist them to navigate through it. In this regard college librarians have to be serious in developing their own proficiency and must find out how to develop their professional competency in general. Since the users are more prone to online and electronically delivered services, the growing role of the librarian in colleges would lie in information counseling, training, advising users on services and information products appropriate to their needs and how best to use them. This is a time that necessitates innovative ways of thinking about services, collections, information access, and also our roles as academic librarians.

2. Role of Libraries in Academic Environment

Libraries are in the midst of a technological revolution: from acquiring prints to providing electronic access and eventually moving towards the virtual (digital) library, they are operating a paradigm shift from availability of library materials (locally) to accessibility of information from remote places. This shift is bringing a complete metamorphosis of libraries, which are subject to an

ongoing change. One of the fundamental rules of business is to be led by demand of the market. Library services go beyond this demand-oriented provision of services and are eventually more user-centric than book-centric. More and more libraries in the developed countries are employing innovative methods to rethink and reshape services in order to remain relevant and keep close to their patrons. Feedback on all aspects of services, inputs and contributions from the customers are the major and useful elements that are considered for service innovations in libraries overseas. The mutual understanding of the customers' needs and wishes as well as the technological opportunities are highly valued and used for the service development which, consequently, brings a constant change in the role of customers in the innovation process.

3. Literature Review

Nesta and Mi (2011) are among the few who place the next generation library services in a historical perspective. They examined the websites of academic libraries in New Jersey and Hong-Kong to document the adoption of web services, and they concluded that libraries implement these services without evaluating their potential. Harinarayana and Raju (2010)) studied the library websites of the top 100 universities for the year 2007 according to the Times Higher Education university rankings, and they concluded that RSS and IM have the highest integration. Tripathi and Kumar (2010)) examined 277 randomly selected academic library web sites. The integration of the six web services that they studied ranged from 2.2% (Vodcast) to 43.7% (IM). Crawford is among the first to criticize the notion behind the 2.0 suffix in library services. First he deconstructed the ideas that are the foundation of these changes (2006)), and he returned to the questions later and added that not much had changed (2009)). He noted that there was a significant, but fallible, project movement and that we need to find a balance between new and old services.

Joint (2010)) writes that librarians are trying to make a technology that did not originate in the library world look as though it is a library technology. He also argues that the revolutionary nature of web services has not, at least until now, revolutionized the library services. Joint (2009) also provides an insight into library decisions at Strathclyde University to move away from the experimental usage of web services like Instant Messaging (IM) and Second Life. Breeding (2007)) highlights the risk of confining the use of the web within the library context, when specific tools are promoted. He argues that before libraries move to the next generation of services, many will have to catch up with the previous generation. There is the danger that we may already have gone beyond that point by labeling some new provision as "2.0 service", but at the same time we are branding some features as "web services" and "service strategies" even though they have been in libraries for decades in other forms, including instant messaging, user-centered services, the dissemination of information and libraries' (physical) social networks, to name but a few.

Brown-Sica and Beall (2008) address the problem of "hate speech" that arises with the inclusion of user-generated content in library information systems, while Wolf (2008) argues that the web has been a breeding ground for hate, especially through its mainstream services like YouTube, Facebook and MySpace. Davenport (2008) points out that another risk associated with web use, not only by librarians but in a general social context, is the lack of diversity and the risk of conformity.The Beluga Project investigated users' opinions of the next generation of library catalogues and found that users are unwilling to create content (tags, reviews, ratings) and share literature lists, that they disapprove of linking catalogues to Amazon metadata, and they complained about the over-simplicity of the catalogue interface. Kim (2010) reports that the users of an academic library find it hard to customize its web site while Merčun and Žumer (2008) recognize the impact that the web had on library catalogues but they also state that many of the ideas and concepts behind the next generation catalogue are older than the web itself.

Kim and Abbas (2010) conducted a research study that focused on US academic libraries and the use of several of the services that are also examined in this paper, and concluded that RSS and weblogs are the most widespread choices. They also found that the utilization of those services by library patrons is rather limited. Han and Liu's (2010) study in Chinese university libraries showed that the use of web applications is quite low. Dickson and Holley (2010) reviewed the literature on the use of social networking tools in American academic libraries from 2006 to 2009, acknowledging that their research was limited by the absence of statistical analysis of the effectiveness of social networking and a possible shift in the popularity of these services. They identified several well-founded concerns about the use of social networking sites by academic libraries: they are time-consuming, they are not heavily used, and users already have a negative view of them.

Desai (2003) provides a reflective analysis of this service. She writes that, "Instant messaging is above all a personalized service requiring time and typing. Therefore it is no faster than dealing with people face-to-face or on the phone" which implies that instant messaging is not that instant. Social networking sites have been at the forefront of discussion about the use of the web in libraries but there are several issues that might need to be considered (or reconsidered). Sekyere (2009) argues that students use Facebook to escape, even for a short period of time, from their academic responsibilities, which is the opposite of what led academic libraries to exploit Facebook in the first place. Smith and Caruso (2010) surveyed over 36,000 students and found that although more than 90% use social networking sites, only 30% of them use those sites for course-related purposes and 8% to communicate with course instructors. Fuchs (2009) reports that university students consider the provision of information and news to be a minor advantage of social networking sites, with eight other purposes being valued more highly.

4. Library Services

A **library** is a collection of information, sources, resources, books, and services, and the structure in which it is housed: it is organized for use and maintained by a public body, an institution, or a private individual. In the more traditional sense, a library is a collection of books. With the collection of media other than books for storing information, many libraries are now also repositories and access points for maps, prints, or other documents and works of art on various storage media such as microform (microfilm/microfiche), audio tapes, CDs, cassettes, videotapes, and DVDs. Libraries also provide public facilities to access CD-ROMs, subscription databases, and the Internet. Thus, modern libraries are increasingly being redefined as places to get unrestricted access to information in many formats and from many sources. **Library services** are means of sharing knowledge to wide spectrum of user community. Library even with a small collection can provide effective library *services*, provided it effectively uses the available information technology applications. Hence, numerous services are introduces to disseminate the information generated to the user community. Library services in general include reference, referral, Inter library loan, current awareness service, selective dissemination of information and supportive service. More recently, libraries are understood as extending beyond the physical walls of a building, by including material accessible by electronic means, and by providing the assistance of librarians in navigating and analyzing tremendous amount of knowledge with a variety of digital tools.

5. Jain University: An Overview

Jain University is promoted by the Jain University Trust. The Jain University Trust is managed by the JGI group. Headquartered at Bangalore, the JGI Group represents a cluster of 75 vibrant educational establishments. After 23 years, the Group is today home to over 35000 students

and 3200 staff members engaged at the P - 12, undergraduate & postgraduate levels across 53 campuses and centres of excellence.

The University currently offers over 60 innovative programmes at the Undergraduate, Postgraduate and Research levels. At **Jain University** undergraduate & postgraduate aspirants have an opportunity to fulfil education requirements, choose among a wide variety of elective courses and interdisciplinary certificate programmes and be a part of research activities undertaken by the university in diverse fields. The university offers degrees spanning Languages, Social Sciences & Humanities, Physical & Life Sciences, Engineering Science and Technology, Management and Commerce.

Academic library services have add value in their operation to enable their users to generate genuinely new ideas. This may do in a variety of ways, some of which are:

- Providing an information rich environment
- Including peripheral and speculative material in their information service
- Providing inter-disciplinary information
- Indicating gaps in the knowledge
- Providing Internet facilities in the service

6. Application of Innovative Services

Some of the significant **services** which have been evolved as a result of development in telecommunication are: electronic delivery of documents, online searching of databases, online ordering, electronic directory, teleconferencing, electronic mail, electronic messaging, community information (on TV), new/business information and recreational information. In India, more and library and information centers providing information services are likely to use the communication networks for providing information services. Such enhanced use of technologies allows the users more and more easy access to the communication services. The Jain University Library (JUB) in Bangalore, applies a systematic approach to involve customers in the service innovations. The management team is alert to the changes taking place and has defined major roles of the customer while involving their contributions in the innovation process.

6.1 Reference Service

6.1.1 Responding to the reference questions asked directly by the users

- Guiding the users to the required references.

6.1.2 Circulation Service

- Book issue
- Return
- Renewal
- Reservations

6.1.3 Current Awareness Service

- Current Addition of Book service (CABS)
- Content Page Service of Periodical (CPSP)

- Instruction in the use of library
- Assistance in the location of document

6.1.4 Newspaper Clipping Service – on various subjects like:

- Education and Career
- Commerce and Management
- English Literature
- Health and Medicine
- Kannada Literature
- Personality Development
- Science and Technology

6.1.5 Institutional Repositories (D Space)

- Question papers
- Content pages of periodicals
- Newspaper clippings
- Videos and photographs

6.1.6 Institutional Membership

- British Library
- IIMB, Bangalore

6.1.6 Notice Board Display

- Examination alerts
- Competitive examination- GRE, TOEFL, CAT, SAT, GMAT etc.
- Latest innovations in science and technology

6.1.7 Orientation Programme for Fresher- PPT presentation will be given in each classroom.

6.1.8 Annual Best User Award: **Criteria**

- Maintaining library discipline
- Maintaining Library rules and Regulations
- Reading and references
- Hours spending in library
- Maximum usage of library facilities

6.1.9 Conducting Book Exhibitions every year.

6.10 National Library Week celebration by conducting various Programmes like conducting in-house book exhibitions, releasing library Hand Book etc.

This study demonstrates that there are basically four dimensions to consider when aiming for that goal:

- Enhancing the services for which libraries have long been famous and valued, such as quality-controlled answers, provision of authoritative information, due diligence, and keeping clients current for the digital era (Innovations range from interacting with clients and delivering content and services to mobile devices to customizing alerts into on-point synthesized briefings.)
- Reconfiguring physical spaces previously used for collections into collaborative workspaces
- Leveraging professional expertise to promote client self-service through e-learning platforms or in-person training in the effective use of content tools, library services, or project-specific, high-end content applications
- Aligning information services with, and embedding content directly into, client workflows

7. Conclusion

This paper provides insights regarding not only the implementation of new services in academic libraries, but also records data about their acceptance by their users. This is only one step among many in our attempt to understand (and not determine) what the future of library services will be. This will be a future that will include both traditional and innovative methods for user-orientated services, physical and web tools, failures and successes. We are evolving, as we always have, but we are now moving at a faster pace since the environment is also moving faster. Our efficiency, however, is based not only on the timely integration of new tools, but mostly on our understanding and evaluation of their use.

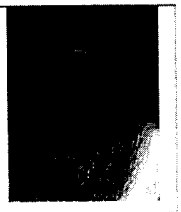
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Innovative Practices in Agricultural Information Systems and Services for Teaching and Research in Agriculture Sector

Papegowda, M. **Valmiki, R.H**

Abstract

Agriculture forms a major source of India's economic background and the Universities / Institutes related in research and development in this concern play a vital role. Several projects have been funded by the Central / State governments for inventing innovative ways for the growth and following best practices and services in this regard, as there is vast agriculture knowledge with the framers, researchers, faculties or individuals involved in this area there is a lack of information flow among these sectors and to channelize this information or knowledge there is a need for unified approach in sharing of knowledge. CeRA, e-Granth and Krishiprabha are some of the initiatives stated the ICAR to provide quality agricultural information to agricultural Libraries in India. A national consortium of agricultural libraries like CeRA and e-Granth are playing a vital role in providing research information to scientists, teachers, extension specialists and students located in all over India. All these activities will help increase the country's agricultural production and thereby achieve self-sufficiency in food.

Keywords: Innovative Practices; Agricultural Information Technology; Internet; Librarianship

1. Introduction

The mission of the libraries i.e. providing excellent information services to patrons has never changed. Libraries are now more known as information centers while adapting the changing technology. Technology has changed the way the librarians serve their users and it will continue in future also. While continuing to provide many traditional information services, librarians are developing new skills and taking on new roles that are necessary to support hybrid information services. The need to provide value-added library services in Agricultural Libraries is all the more necessary to help in academic, extension and research pursuits. The user expectations have increased with the proliferation of electronic sources. Libraries have to redesign their services on the context rather that form and delivered to the users. The information is available electronically trough networks and consortia 24 hours a day. In fact technological developments and the impact of Information Technology in agricultural libraries have led to the emergence of a new concept called're-engineering'. The future libraries are going to witness a tremendous growth in Virtual Libraries or libraries without walls or global Libraries.

2. Innovative Practices in Agricultural Information System in India

ICAR has the following innovative services providing under NAIP (National Agricultural Innovation Projects for sharing of Information among Agricultural Libraries in India

1. Consortium for e-Resources in Agriculture (GeRA)
2. Krishi Prabha : Indian Agricultural Doctoral Dissertations Repository
3. e-Granth: Strengthening of Digital Library and Information Management under NARS (National Agricultural Research system)
    a. AgriCat
    b. Krishi Kosh: An Institutional Repository under NARS

3. CeRA: An Overview

The ICAR being an apex organization at the national level for promoting science and technology programmes in the agricultural research and education, an attempt has been made to available the selected journals over the network of NARS institutions. The consortium has commenced its operations since July, 2008 through it's headquarter at India Agricultural Research Institute. New Delhi. The Consortium subscribes to full-text electronic journals for 126 leading NARS institutions in India including 4-Deemed Universities, 3-ICAR Head Quarters, 47-ICAR Institutes, 6-National Bureaus, 9-National Research Centers, 19-Project Directorates, and 41-State Agricultural Universities. The expenditure on electronic journals proposed for subscription under the consortium for these institutions are being met from the funds made available by the National Agricultural Innovation Projects (NAIP). Website; www.cera.jccc.in

3.1. Objectives of the CeRA

- To develop existing R & D information resource base of ICAR Institutions/ Universities, etc. comparable to world leading institutions / organizations.
- To subscribe e-journals and create e-access culture among scientist /teacher in ICAR Institutes / Agricultural Universities.
- To study the impact of CeRA on the level of research publications measured through SCI & NAAS ID.

4. Krishi Prabha: Indian Agricultural Doctoral Dissertations Repository

Krishi Prabha is a full text database of Indian Agricultural Doctoral Dissertations submitted by research scholars to the 45 State Agricultural Universities and Deemed Agricultural Universities from 01-01-2000 to 21-12-2006. This database, listing about 10,500 Dissertations, has been created by Nehru Library, Ch. Charan Singh Haryana Agricultural University, Hisar with financial support from Indian Council of Agricultural Research, New Delhi under its National Agricultural Innovation Project. There were 45 Ph.D. awarding Agricultural Universities/Deemed Agricultural Universities /ICAR Institutes in India, when the project received the nod of ICAR. The doctoral dissertations, submitted by the scholars for award of doctoral degrees, are on of the very important and valuable original sources of information. A copy each of these dissertations is placed in the libraries of the respective Universities/Institutes. These sources of information can be utilized to its full potential, if:

- Indian Agricultural Dissertations Repository (IADR) is set up for the preservation of information enshrined in these dissertations for the posterity and use by the current generation;
- The Repository so established, is used for evaluation of research findings, and the evaluation reports are used for further pursuit and generation of agricultural knowledge;
- The same Repository is utilized for the creation of electronic Database of Doctoral Dissertations;
- The Database, so created, is made accessible online to the national and international user over the Internet; and
- The same Database is further utilized for the publication of a journal reporting abstracts of the dissertations in order to disseminate information.

4.1 Objectives

The following objectives were set for the project:

- To develop, organize and sustain knowledge base of Indian Agricultural Doctoral Dissertations in digital form and make it accessible online.
- To develop a standard format for submission of e-theses by the State Agricultural Universities & /Deemed Agricultural Universities (Data Centres) to the Lead Centre.
- To upgrade skills of human resources of SAUs/ICAR Institutes.
- To publish a Journal in electronic form/Hard copy form the Database, later on dropped as the Database was to be updated on regular basis and data is available online world wide).

4.2 Major Achievements

- A database of metadata and abstracts of about 7525 with a full text of about 6000 dissertations covering the period 2000-2007 has been created. IP-based access is provided to all the Consortia Partners. University-wise distribution of dissertations uploaded in the Krishi Prabha Database is reflected in the tabular form below:
- Metadata abstracts and full text data is accessible to all the Consortia Partners through IP authentication. Downloading and printing of full text has been restricted to prevent plagiarism.
- A Standard Format for submission of softcopies of dissertations was prepared in consultation with the experts; and it was communicated to all the Data Centres to submit softcopies of theses as pr this format.
- The Lead Centre organized three workshop/trainings for up gradation of skills of the Librarians of SAUs/DAUs/ICAR Institutes. Over 75 Librarians participated in these workshop/training programmes.
- The database is drawing attention of the scholars and the scientists from agriculture and allied sciences. It is evident from the table given below that the interest in this Database is growing with every passing day.
- Google had proposed to index the contents of KrishiPrabha database in Google Scholar. The proposal is still under consideration with NAIP-ICAR.

The innovation saw its dawn in Oct. 2007 with the privileged support of NAIP-ICAR through its ICT initiatives. The establishment of this Online Repository has made the treasure of information in the field of agricultural and allied sciences available at the desk of the researchers.

5 Strengthening of digital library and Information Management under NARS (e-Granth)

In the present age of globalization, technology is changing at a very fast pace. Capacity building in ICAR Institutions and SAUs libraries is the need of the hour for sharing knowledge I cost effective manner. These libraries needs update infrastructure to face the technological challenges. There have about 123 libraries in ICAR Institutions and SAUs Some of these libraries are old; where as most of them are recently started building their collection and services. In the present capacity building proposal, the implementation of this project will again be carried out in consortium mode. Under this project central infrastructure for all the activities will be built/created at IARI Library New Delhi. In the first phase of capacity building, 12 libraries were selected. After reviewing the existing infrastructure and manpower of these libraries, the gap will be filled up in the proposed

plan, so that they can meet the information need of NARS. **Home Page of AgriCat @Granth (www.egranth.ac.in)**

5.1 Objectives of e-Granth

- To create Online Public Access Catalog (OPAC) under "Indian Agricultural Research Group Catalogue" of all 12 library resources with Online Computer Library Center (OCLC) partnership.
- To digitize important institutional repositories (limited to IARI, New Delhi; UAS, Bangalore, IVRI, Izatnagar, and ANGRAU, Hyderabad) including rare books and old journals and make them open access under NARS.
- To strengthen capacity building for library and information management system (open to all libraries of NARS).

Duplication of records creation can be avoided by pooling the efforts through common electronic protocols. Union catalogues are useful to librarians, as they assist in locating and requesting from other libraries through interlibrary loan service. Indian National Agricultural Research System (NARS) has very large collection of institutional repositories in agriculture and allied sciences, in different libraries of ICAR Institutes and State Agricultural Universities spread all over the county. Digitization of these valuable archives would allow online access to researchers, teachers and students to which they would not otherwise have access.

5.2 Partners of e-Granth Project

- Indian Agricultural Research Institute (IARI), New Delhi (Lead Center)
- University of Agricultural Sciences (UAS), Bangalore
- GB Pant University of Agriculture & Technology (GBPUAT), Uttarakhand
- Indian Veterinary Research Institute (IVRI), UP
- Mahatma Phule Krishi Vidyapeeth (MPKV), Maharashtra
- National Dairy Research Institute (NDRI), Karnal
- Tamilnadu Veterinary and Animal Sciences, University (TANUVAS), Tamilnadu
- Directorate of Knowledge Management in Agriculture (DKMA, earlier DIPA)
- Acharya NG Ranga Agricultural University (ANGRAU), Hyderabad
- Central Institute of Fisheries Education (CIFE), Mumbai
- Ch. Charan Singh Haryana Agriculture University, Hisar
- CSK Himachal Pradesh Krishi Vishwavidyalaya (CSKHPKV), HP

6 AgriCat

The project aims at complete conversion of library catalogues into MARC21 compliant union catalogues. Strategy followed to develop group catalog, named 'AgriCat', was to adopt the OCLC's Connexion software for online cataloging and direct uploading of records to AgriCat and WorldCat in MARC21. WorldCat is the largest Union Catalog in world held by OCLC. The existing catalog were batch uploaded which was processed by OCLC and added to AgriCat and WroldCat in batches.

AgriCat is a subset of WorldCat and has been developed as a group catalogue of 12 partner

libraries, intended to provide versatile search and retrieval facilities to share library resources can be accessed on 24x7 basis at http://www.egranth.ac.in/ or http://www.agricat.worldcat.org/.

Institute-wise Total Records in Agricat as on 30-09-2012

Sl. No.	Name of the University / Institute	No. of Records
1.	Indian Agricultural Research Institute (IARI), New Delhi	62,854
2.	Indian Veterinary Research Institute (IVRI), Izatnagar	24,092
3.	University of Agricultural Sciences (UAS), Bangalore	42,650
4.	National Dairy Research Institute (NDRI), Karnal	40,410
5.	Ch. Charan Singh Haryana Agriculture University (CCSHAU), Hisar	82,231
6.	GB Pant University of Agriculture & Technology (GBPUAT), Pantnagar	53,410
7.	Acharya NG Ranga Agricultural University (ANGRAU), Hyderabad	28,518
8.	Central Institute of Fisheries Education (CIFE), Mumbai	14,658
9.	CSK Himachal Pradesh Krishi Vishwavidyalaya (CSKHPKV) Palampur.	31,575
10.	Mahatma Phule Khishi Vidyapeeth (MPKV), Maharashtra	33,673
11.	Tamilnadu Veterinary and Animal sciences Universtiy (TNUVAS), Chennai.	36,009
12.	Directorate of Information & Publication of Agriculture (DIPA), ICAR, New Delhi.	8,364
	Total	4,58,444

Benefits for Users

- Users can search WorldCat for holdings at global level, AgirCat for holdings at group level and Local holdings at partner Library level.
- User can locate the material beyond own library and share through interlibrary loan, and article request.
- Users can search through physically fragile collection to which they would otherwise have access, such as rare books, old journals and manuscript collections.
- User can browse the contents of the documents (access full text), reviews, and can share their views.

6.1 Major Achievements

- Process for Online cataloguing using Connexion software complying to MARC 21 International Standards, established and implemented, first time in the country. Required capacity has been built in 12 partner libraries which can be replicated to other libraries of NARS.
- A software product, 'AgriCat' available at URL http://www.egranth.ac.in & http://www.agricat.worldcat.org has been created as subgroup of WorldCat to access combined holdings of 12 partner libraries. This serves as versatile virtual library interface.
- To strengthen the digital library initiatives, more advanced Library Management Software, Koha-an open source software has been identified for implementation by outsourcing for expert support, intensive training and in-house capacity building.

7 Krishi Kosh: An Institutional Repository under National Agricultural Research System (NARS)

ICAR Institutions and SAUs have many important documents like reports, thesis, research & popular articles, extension literature, multimedia etc. In the present digital environment

institutional repositories are becoming an indispensable component for information and sharing. Sharing of knowledge is very useful for research, development and extension in agricultural science. DSpace will be used for development of Institutional Repository for ICAR Institutions and SAUs Libraries. Initially the repository will be developed at following 4 libraries.

- Indian Agricultural Research Institute, New Delhi
- Indian Veterinary Research Institute, Izatnagar
- University of Agricultural Sciences, Bangalroe
- Acharya N G Ranga Agricultural University, Hyderabad

The repository of knowledge in agriculture and allied sciences, having collection of old and Valuable books, records and various documents spread all over the country in different libraries of Research Institution and State Agricultural Universities (SAUs).

7.1 Work Methodology for digitization of Records at NARS

- The Document Controller will receive Books from the officials of NARS. The no. of Books and pages received will be recorded in a Log register in mutually agreed format where information like no. of documents received, delivered by and received to will be mentioned.
- At document preparation stage Page cleaning of the Books will be done. Receiving books after document cleaning form library officials. Batch wise scanning of the Books will be made where based on the quality of the Books i.e. readability and visibility, Scanning of the Books will be done through the book scanner, so that the quality of physical Books should remain unaffected.
- Data Verification / Quality Control will be done after completion of Searchable PDF-A Book Creation and Metadata the batch will automatically will become available for final QC. At the Final QC Station random PDFs and their respective data entered will be displayed for verification to the QC Operators. After finale data verification accuracy level of 100% is assured.
- After creation of final data, backup of the data i.e. PDF-A file and concerned meta data will be taken on the DVDs which will be delivered to Department. Final data will be ported into the DSpace Digital Library Software.

Status of Digitization Work under e-Granth as on 30-10-2012

Sl. No.	University/Institute	No. of pages Digitized	No. of pages uploaded
1.	University Agricultural Sciences (UAS), Bangalore	21,78,652	5,64,167
2.	Indian Agricultural Research Institute (IARI, New Delhi)	26,94,998	17,92,620
3.	Indian Veterinary Research Institute (IVRI), Izatnagar	14,82,450	1,95,000
4.	Acharya N G Ranga Agricultural University (ANGRAU), Hyderabad	17,00,371	7,20,000
		80,56,471	32,71,787

e-Granth project has catalyzed the enthusiasm of NARS librarians as well as user community to strive for the best in this world and synergies the efforts of our scientific community tirelessly working for the benefit famers, food security, nutritional enhancement and better place to live.

7.2 Changing Needs of Library Users

Information seeking behavior of user during the 21st century has changed significantly. They want immediate access to information with preference to electronic resources. If information is not instantaneously and immediately available, The impact of communication technology is all pervasive including on information seeking behavior of users which has significantly changed in the present electronic environment. Changing users' expectations for information services have profound implications for the future librarians and the print library. The quality of traditional library services must be maintained while new digital library services have to be developed; since these innovations may both improve the services and reduce the costs of many routine operations.

8 Innovation Services Introduced by Agricultural Libraries

Over past few decades with the changes in library collections, services and demands of users and also with tremendous impact of ICT based technologies; many innovative services are being introduced by libraries to cope up with the changes. Some remarkably innovative library services introduced by agricultural libraries are as follows:

- Online Public Access Catalogue (OPAC) and Web OPAC.
- Automated issues and return of documents through software, RFID etc.
- Document Delivery services through e-mail etc.
- Online access facilities for electronic resources i.e. databases, books, journals etc. and online Inter library Loan facility by allowing external users.
- Digital Library Services.
- Video Library Services.
- Citation analysis through web of science.
- Web based CAS, Conference announcement, news paper clipping services.
- Agricultural Information Services through Mobile technology.

8.1 Need of Information Literacy in Agricultural Libraries:

The mission of a well established library is to inspire, educate, inform and entertain by providing quality library and information programs to support cultural research and educational needs as the users are well conversant with information sources and techniques of information.

The need of information literacy may be essential due to the following reasons:

- Rapid increase in the stream of information due to information revolution.
- Advent of information and communication technologies.
- Vast variety of information sources and Wide dispersal of information.
- Changing shape of library and Rise in number of users.

8.1.1 Methods Used for Advancement of Information Literacy in Agricultural Libraries

- Lectures, Seminars and demonstrations
- Printed guides books, newsletters, promotional leaflets describing systems and databases, database user manual, thesauri, text books.

- Audio visual material like video tapes films and audio cassettes.
- Individual instructions, and Online course/tutorials.

8.1.2 Capacity Building of Agricultural Library & Information Professionals

Capacity Building means updating, strengthening and sharpening of the professional competencies and development of understanding and anxieties in the different professional duties. It is necessary for the library professionals to acquire a set of knowledge, skills, values and behavior for performing their duties. Library profession requires mastery over a body of knowledge about what type of resources they are having and what information sources have to be acquired and in what way effective services can be provided. The following are some of the important capacity building measures:

- Orientation Programmes and Creation of Staff Manual
- Periodic Staff meetings, Feedback/Suggestion System
- In-Service Training, attending Professional Conferences and Staff Promotion
- Performance Appraisal, Self Appraisal of Staff and Improving Working Conditions

8.1.3 The Skills Required for Future Agricultural Information Professionals

The following are the essential skills required for the future agricultural library and information professionals:

- High level information handling skills and High level management and leadership skills
- Transferable skills and Good communication skills
- To be flexible and adaptable
- To be innovative and imaginative
- The ability to be proactive

9 Challenges for Agricultural Librarians

The present day environment leads to sophisticated and challenging tasks to Agricultural Libraries. The following challenges are facing by the agricultural librarians in future.

- Changing formats environment of information material and Technological Challenges
- Challenges in collection of Virtual Information and Accessing Virtual Information
- Archiving or preserving the Virtual Information
- Changing Role of Librarians & Special skills needed for Librarians to face the challenges in building a virtual library.

The Agricultural Librarian should anticipate and integrate new technologies to redesign access and delivery mechanisms to maximize utilization of information and to minimize the costs of supporting such services. They should improve their skills in the use of Information Technology to overcome above challenges to provide efficient and effective information service to the agricultural scientist.

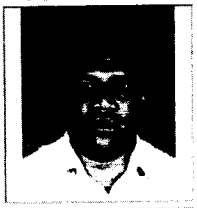
10 Conclusion

Application of ICT have made a great impact on agricultural libraries and information centre's, and the computers and associated facilities have come to be recognized as indispensable tools for accurate storage, processing, retrieval and dissemination of information. All agricultural librarians should be familiar with the benefits of modern technology and perform efficiently. The challenges are to design library services and to manage operations exploiting the advantages offered by ICT. To that end it is pertinent to understand the process of technology development and technology diffusion in general and ICT in particular. CeRA, e-Granth and Krishiprabha are some of the initiatives stated the ICAR to provide quality agricultural information to agricultural Libraries in India. Technology and it is in a major transition period, a transition from an exclusively print environment to a print and digital environment. Library now days with the application of technology, is enhancing delivery of its services to the desktop users. The CeRA and e-Granth are playing a vital role in providing research information to scientists, teachers, extension specialists and students located in all over India. All these activities will help increase the country's agricultural production and thereby achieve self-sufficiency in food.

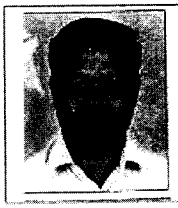
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Knowledge Society: Present and Future

Kishore Kumar, M.

Abstract

The Knowledge Society is the new context of our living and working. Knowledge society is judged by the way the country effectively deals with knowledge creation and knowledge deployment in all sectors. The emergence of the knowledge society, building on the pervasive influence of modern information and communication technologies, is bringing about a fundamental reshaping of the global economy. Its significance goes well beyond the hyping of the Internet. In this paper the author describe the concept, meaning, and nature, characteristics of present and future of Knowledge Society.

Keywords: Knowledge society, Globalization, ICT

1. Introduction

During the last century the world has undergone a change from agriculture society, where manual labor was the critical factor, to industrial society where the management of technology, capital and labor provided the competitive advantage. Then the information era was born, last decade, where connectivity and software products are driving the economy of a few nations. In the 21st century, a new society is emerging where knowledge is the primary production resource instead of capital and labor. Efficient utilization of this existing knowledge can create comprehensive wealth of nations and also improve the quality of life – in the form of better health, education, infrastructure and other social indicators. Ability to create and maintain the knowledge infrastructure, develop knowledge workers and enhance their productivity through creation, growth and exploitation of new knowledge will be the key factors in deciding the prosperity of this Knowledge Society.

2. The Knowledge Society: Concept and Meaning

Broadly speaking, the term Knowledge Society refers to any society where knowledge is the primary production resource instead of capital and labor. It may also refer to the use a certain society gives to information. A Knowledge society "creates shares and uses knowledge for the prosperity and well-being of its people". it is a society where the economic, socio-cultural, political and intellectual processes are guided and driven by applications of knowledge and not by the brute force of the power of money or muscle, not even in the name of religion, tradition or hierarchy.

Knowledge Society, has a wider meaning in itself, it "is an advanced and modern era that demands for higher Standard of Living, better Infrastructural facilities, better Health facilities, better Educational facilities, etc. As from the past where the human resources and capital resources were the super powers of the world has now lapsed and replaced by power of artistic skills & knowledge. The World A Global Village' seeks for those who are Knowledgeable, as we see every sector welcomes the person with multi skills, multi-task handlers with better knowledge.

3. Infrastructure

The Free software movement is a success story of knowledge society. A knowledge society needs infrastructure like Physical: meeting places, notice boards Technological: local language content sharing, mailing lists, web portals, wikis, chat rooms, video conferencing, virtual meetings, collaborative development environments, distance education.

4. Characteristics

Knowledge forms a major component of any human activity. Economic, social, cultural, and all other human activities become dependent on a huge volume of knowledge and information. A knowledge society is one in which knowledge becomes a major creative force. Knowledge societies are not a new occurrence.

5. Knowledge as Key Resource

Knowledge has become the key resource. Knowledge has value, Creating value is about creating new knowledge and capturing its value. The most important property is now intellectual property, not physical property. And it is the hearts and minds of people, rather than traditional labour, that are essential to growth and prosperity. Workers at all levels in the 21st century knowledge society will need to be lifelong learners, adapting continuously to changed opportunities, work practices, business models and forms of economic and social organisation.

6. Future Challenges for the Knowledge Society

Information revolution and the new society - It might appear that everything has already been said about this topic. Knowledge society, however, is only about to emerge. The question is about transformation where social, economic and technical systems become simultaneously reorganized. It will lead to new models of politics and community. At the same time it will change self-perceptions of individuals and their relationships with other humans, cultures, and value systems.

Knowledge society connects us across national borders and it will rearrange time and space. It will make the world a world of meaning creation, where communication has a central role. In the core of knowledge society is its system of learning. When the processes of knowledge production and appropriation change, also the system of learning changes.

Education is rapidly becoming international and intertwined into individual life careers. The historical role of universities as institutions of knowledge production is about to change. It should not be impossible to think that in the next decade the system of education should look quite different than it is today. A new system of learning is about to emerge, and it depends on us what it will do and how it will look like.

Knowledge society is internationally networked. A strategy for globalization is therefore an integral part of the knowledge society. Global networking is becoming increasingly easy. Strategic investments are needed to grasp this opportunity. Local regional development is the reverse side of internationalization. The world is becoming a world of parallel systems of meaning. Life opportunities increasingly depend on individual skills in communication and conceptualization. The importance of software technologies is increasing. Software has a special role because it is the technology that is used to implement the new forms of social and societal practice. A profound understanding of software technologies is a critical success factor of the knowledge society. New distributed software models will spread with convergent broadband networks and reorganize industries, work practices, and the everyday life at home. New challenges also mean risks. Therefore it is important that the society reduces risks. Knowledge society needs risk transfers instead of income transfers. The demographic shift also means that the economic logic of innovation is changing.

In the knowledge society, ethical principles, however, need to be understood more broadly. Knowledge society has to be built on an ethical foundation which can be globally accepted

7. Conclusion

Knowledge is not a quality of the world, but a quality of observing the world. Knowledge isn't something that we find "out there", but something that is created by observing the world and by comparing world observations over time and among different observers, bearing in mind, of course, that the observer is part of the observed world Knowledge societies rest on a foundation of educational and research excellence. The Internet, advances in communications technology, and the rapidly expanding global fiber optic network are necessary, but not sufficient. It takes people to train, to educate, to collaborate, and to innovate.

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Managing Knowledge and Knowledge Society

Anuradha Sinha

1. Introduction

Knowledge has been a subject of interest and enquiry for thousands of years, since at least the time of the ancient Greeks, and no doubt even before that. "What is knowledge" continues to be an important topic of discussion in philosophy. More recently, interest in managing knowledge has grown in step with the perception that increasingly we live in a knowledge-based society.

Davenport and Prusak (1998) view knowledge as an evolving mix of trained experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. They found that in organisations, knowledge often becomes embedded in artifacts such as documents, video, audio or repositories and in organisational routines, processes, practices, and norms. They also say that for knowledge to have value it must include the human additions of context, culture, experience, and interpretation. Nonaka (1991) expands this view by stating that knowledge is about meaning in the sense that it is context-specific. This implies that users of knowledge must understand and have experience with the context, or surrounding conditions and influences, in which the knowledge is generated and used for it to have meaning to them. This also implies that for a knowledge repository to be useful it must also store the context in which the knowledge was generated. That knowledge is context-specific argues against the idea that knowledge can be applied universally, however it does not argue against the concept of organizational knowledge. Organisational knowledge is considered to be an integral component of what organisational members remember and use meaning that knowledge is actionable.

2. Intellectuals and Knowledge

One component of the anthropology of knowledge is the role of intellectuals in society and the social production of knowledge. Until recent decades, anthropologists were primarily concerned with those bodies of cultural knowledge shared by all members of a society. Anthropologists such as Radin (1957) in American anthropology and Griaule (1965) in the French tradition portrayed intellectuals as possessing an especially intense awareness of the sacred center of their society and an ability to reflect and explain its categories of knowledge. A classic essay by Victor Turner (1967) on the knowledge and character of one of his principal informants on Ndembu symbolism, comparing him to an 'Oxford don' also broke from an earlier tradition in which individual producers of knowledge were subsumed in larger collectivities. An influential approach to defining intellectuals in relation to theories of modernisation and modernity was initiated by Edward Shils (1972). For him, intellectuals were those imputed with an 'innate need' to understand and articulate ideas and concepts that are more general and profound than those faced in practical, everyday concerns. For Shils, all intellectual work originally arose from religious occupations, but religious orientations in modern times have attracted a diminishing share of the creative capacities of an elite oriented toward more 'modern' concerns. Shils's approach assumed that not all knowledge was equally shared, and it also encouraged anthropologists and other scholars to think of varied types of intellectuals and their relation to the different political and social contexts in which knowledge is produced and valued. Whether they were called intellectuals or entrepreneurs, anthropologists shifted their focus away from discerning classificatory categories and cosmologies and toward the economic and political contexts in which knowledge is produced and shaped.

In this shift to understanding knowledge and its social distribution as process and as historically rooted, the strategies used for comprehending 'elementary' societies—to invoke Emile Durkheim's term—were adapted to depict ideas of knowledge in advanced, 'complex' ones. Thus Pierre Bourdieu compared the cognitive style implicitly learned at the Sorbonne to that transmitted by Bororo elders in the Brazilian Amazon. For Bourdieu, the verbal maneuvers learned by students preparing for the *lecon* at the Sorbonne furnished a model for the 'righf mode of intellectual activity in the French context as much as the dualistic spatial layout of Bororo villages embodied Bororo cosmology as interpreted by dominant elders. The dualistic method of the *lecon,* which establishes a traditional 'two views' on any subject is subsequently applied to discussion of a wide range of intellectual problems, to the exclusion of alternative, less culturally valued approaches.

3. Diffusion of Knowledge and Information

New knowledge (whether in the form of technologies or social values) is created in particular places and contexts and through interaction within space. The speed at which new knowledge and information diffuses over space depends on the type of knowledge; the institution within which the new knowledge is produced, the interest of the producer (inventor) to share his or her knowledge, the previous knowledge necessary to understand the contents of new information, the availability of technology necessary for the production and application of knowledge, and the inclination to accept the knowledge.

The first type of knowledge and information which is most quickly distributed in space is the kind of 'public news' which is easily understood by almost everyone, which does not require previous knowledge or expensive technology, and whose free distribution is in the provider's best interests. This type of information and knowledge is highly mobile, can be spread around the globe in seconds and is easily available by telecommunication.

The second type of knowledge and information is more complex and cannot readily be used even by those who have access to it if these constituencies lack the previous knowledge, experience or training, necessary to recognise, understand and evaluate the contents of, the information. This type of knowledge can only be transferred from one person to another if the receiver's training, skills or capability are broadly equivalent to that of the sender. Previous knowledge necessary to understand an information may consist of knowledge of a foreign language or of a specialised scientific discipline. The third type of knowledge and information is kept secret by its producer in order to gain an economic, political, scientific or military advantage.

These three forms of knowledge and information vary in the degree of their spatial concentration and in the speed of their diffusion. Only the first type of information, which is the least important for economic competitiveness and innovation, is (theoretically) ubiquitously available, assuming all places have the technical equipment and all people an equivalent inclination to receive the message. The second type displays a much higher spatial concentration in a few centres or areas, and often circulates only between the upper levels of the urban hierarchy (Hagerstrand 1966). The third type has the highest degree of spatial concentration. The term 'spatial concentration' does not imply a tight, everlasting linkage to a certain place but rather **a** conglomeration of functions that may change its location over time.

4. Types of Knowledge

Polanyi (1967) and Nonaka and Takeuchi (1995) describe two types of knowledge, tacit and explicit. Tacit knowledge is that which is understood within a knower's mind and which cannot be directly expressed by data or knowledge representations and is commonly understood as

unstructured knowledge.' Explicit knowledge on the other hand is that knowledge which can be directly expressed by knowledge representations and is commonly known as structured knowledge. Current thought has knowledge-existing as neither purely tacit nor purely explicit. Rather, knowledge is a mix of tacit and explicit with the amount of explicitness (only one dimension needs to be measured) varying with each user. This is the knowledge continuum where purely tacit and purely explicit form the end points with knowledge existing somewhere on the continuum between the two end points. Some authors have an individual position knowledge on the continuum through context explication where context explication reflects the experience and background of the individual. Others expand knowledge into a multidimensional view by adding the dimensions of reach (social aggregation), life cycle (stage of the knowledge life cycle), and flow time (timeliness) to explicitness. Research is continuing to refine the concept of knowledge and its dimensions.

Knowledge transfer in an organisation occurs when, members of an organisation pass tacit and explicit knowledge to each other. Nonaka and Takeuchi (1995) propose four modes of knowledge creation and transfer.

- Socialisation is the process of sharing experiences and thereby creating tacit knowledge such as mental models and technical skills. Tacit knowledge can be obtained without rising language through observation, imitation, and practice.
- Externalisation is the process of articulating tacit knowledge in the form of explicit concepts, taking the shapes of metaphors, analogies, concepts, hypotheses, or models.
- Combination is the process of systemising concepts into a knowledge system by combining different bodies. Explicit knowledge is transferred through media such as documents, meetings, email, and/or phone conversations. Categorisation of this knowledge can lead to the generation of new knowledge.
- Internalisation is the process of converting explicit knowledge to tacit knowledge and is closely related to learning by doing.

These four modes or processes show that the transfer of knowledge is dependent upon the transfer of a common understanding from the knower to the user of the knowledge. Common understanding consists of the context (the story behind the knowledge, the conditions and situations which make the knowledge understandable) and the experience (those activities which produce mental models of how the knowledge should be used) expressed in a^ culturally understood framework.

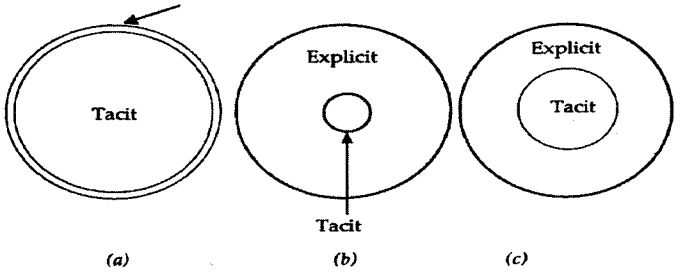


Figure 1: Relationship between Tacit and Explicit Knowledge

It is, however, most important to realise that tacit and explicit knowledge are not mutually exclusive concepts. Rather, any piece of knowledge has both tacit and explicit elements, as shown in

Figure 1. The size of the inner circle represents the proportion of tacit knowledge: the "tacit core" at the heart of the knowledge that we "cannot tell". Figure 1 (a) shows a case where the knowledge is almost entirely tacit, as in riding a bicycle. Figure 1 (b) shows mainly explicit knowledge, where the tacit core is very small, for example, how to process a claim for travel expenses in an organisation. Figure 1 (c) shows an intermediate case, such as making a piece of furniture, where substantial amounts of both **tacit and** explicit knowledge are involved.

4.1. Explicit and Implicit Knowledge

Explicit knowledge is knowledge that the knower can make explicit by means of a verbal statement: 'Someone has explicit knowledge of something if a statement of it can be elicited from him by suitable enquiry or prompting (Dummett 1991). Implicit knowledge can then be defined simply as knowledge that is not explicit. On this construal, implicit knowledge corresponds roughly to what Polanyi calls 'tacit knowing: "we can know more than we can tell' (1967).

The distinction between explicit and implicit knowledge might seem to be connected closely to the familiar distinction (Ryle 1949) between knowledge of a proposition ('knowing that/) and possession of a skill ('knowing how). In everyday cases of 'knowing that the knower can say what it is that they know. In contrast, it is manifestly possible to have a skill (such as the ability to tie one's shoelaces) while being quite unable to give any verbal account of how the performance is achieved. So 'knowing how may provide examples of Polanyis 'tacit knowing.'

But implicit knowledge, as it is considered here, is closer to 'knowing that' than to "knowing how. In cases of implicit knowledge, a proposition or rule is known, but this is not available to the knower for verbal report. In the absence of verbal report, an attribution of implicit knowledge must be supported by other kinds of empirical evidence. But more fundamentally, we need some account of what it is for a subject to possess knowledge but to be quite unable to make it explicit (cf. Dines and Perrier 1999).

5. Routinisation and Management of Knowledge Work

Knowledge work will always include certain features of individual creativity and imagination. But its integration into the institutional framework of society presupposes its transformation from craftsmanship to industry. Though the term 'industrialisation of knowledge' may sound anachronistic—at least insofar as knowledge society is conceived to be postindustrial (Bell 1973)—some characteristic changes of knowledge work are similar to the transition from craftsmanship to industrial production. One of the essential nineteenth century breakthroughs of the industrial revolution was the development of a branch specialised in producing machine tools (Rosenberg 1972). The general tendency was to disintegrate the manufacturing of all parts of a product and to specialise in the production of standardised parts of multiple use and high precision. Similarly, the industrialisation of knowledge work proceeds by disintegrating the craftsman style of manufacturing knowledge—a style that is best represented in the tradition, of scientific research groups which start by collecting data from events, arranging them in information packages, and providing interpretation by theoretical models. Contemporary knowledge work transgresses the limits of this tradition. This does not imply a fundamental difference between science and knowledge work but assumes science and its institutions to become part of a new production and distribution system of knowledge. The most important step to be taken in this respect is to understand knowledge as something that can be designed, assembled, shaped, combined, controlled, and adjusted by means of knowledge instruments and that can be certified, licensed, and sold (Fuller 1992). The paradigm of such kinds of knowledge is the algorithm, the software core of all intelligent products and procedures. Algorithms are objectified know-how structures that

instruct men, machines, and themselves what to do under certain conditions. In this sense, the history of computer and software industry resembles many traits of the machine tool and other hardware industries. Several authors have rightly stressed the differences between "Fordist mass production and 'post-Fordism,' but they overlook the structural similarity and material continuity between industrial and knowledge economies.

6. Knowledge and Science

It is important to relate the characteristics of knowledge society to those of science in society. While on the one hand large-scale expertise can be interpreted as spreading the methodical and theoretical potential of science to highly specialised problems and as a consequence of a job-seeking academically trained labour force (Stehr 1992), the differences between expertise and research are obvious. Research is performed in an institutipnally (laboratories) and cognitively (theories) separated world, in which failures and errors are highly welcome. Everything can hypothetically and experimentally be pushed to the extreme and 'only in a few cases are legal and social norms violated. Society is only affected indirectly by research, namely by transforming research results into technologies or ideologies. Even if this view meets a convenient self-description of the scientific community rather than historical facts, expertise could rarely be sold as a piece of hypothetical reasoning to which those who apply it provide the testing field. Still it is instructive to underpin the intersections of expertise and research.

While many branches of science tend to derive expert knowledge directly by extrapolating from isolated theoretical worlds to the real world (of health, education, international affairs, social structure, development, etc.) experience tends to not only apply certified knowledge but to do research. Consequently knowledge society can be interpreted as being exposed to hypothetical assumptions and experiments designed by experts and analysts. While expertise effectively reduces the complexity of the real world for an observer, it inevitably contributes to increase the risks of those who decide to rely on it.

7. Knowledge Society

The analysis of contemporary societal change toward information society or knowledge society can emphasize two different sets of variables: technological innovation and institutional transformation. If it is theoretically controversial as to how both sets may be casually interrelated—ranging from technological determinism to the social shaping of science and technology— empirical observations certainly benefits from focusing on both: the impact of technological change on the organisational and cultural institutions of society as well as on the enormous monetary and cultural investments of corporate and individual agencies in developing and using new knowledge. The terms 'information society' and 'knowledge society,' though overlapping in many respects, may help to distinguish these perspectives. The first relates to the pervasive influence of computer-based networks and thereby the globalisation of information, communication, and control technologies. It assumes that collecting, copying, storing, -transmitting, incorporating, manipulating, simulating, and managing information about every aspect of collective and individual life penetrate and shape all these aspects.

The concept of knowledge society emphasizes in a complementary way the problems and strategies of making sense of information. The knowledge work of researchers, experts, analysts, and users depends much on and contributes to information—but what makes this work important is its use of theories, models, scenarios, evaluation criteria, decision strategies, experimental designs, and implicit experience in order to establish fits and pieces of orientation and certainty. Orientation and certainty are needed by individual and corporate actors who face the risks of

decision-making in an environment that has become complex, opaque, and rapidly changing precisely because of the infinite amount of information it contains. The instantaneous availability of ever increasing resources of information and information about information vastly increases the need to know something about its value and relevance (Earl 1996).

When the term knowledge society was coined the path of societal development was conceived much more clearly. Fritz Machlup was the first to estimate the contribution of knowledge work to the economy; Peter Drucker (1969) developed guidelines for mastering the discontinuity brought about by information technology and knowledge work; Daniel Bell (1971, 1973) predicted the stage of postindustrial society, in which theoretical knowledge would be the new 'axial principle' of society and strategic resource of progress.

Scholarly and public attention became steadily intensified and extended the general themes of the societal centrality of knowledge to a broad variety of fields of investigation: the reconstruction of class structure in knowledge society its relation to postmodernism globalisation.

The term knowledge society refers to a society in which the creation, dissemination, and utilisation of information and knowledge has become the most important factor of production. In such a society, knowledge assets (also called intellectual capital) are the most powerful producer of wealth, sidelining the importance of land, the volume of labour, and physical or financial capital.

The term knowledge society has several meanings. First, it is used by social scientists to describe and analyse the transformation toward so -called postindustrial society. Second, it is used to refer to a normative vision that nations or companies should aspire to fulfil. Third, it is used as a metaphor, rather than a clear-cut concept, under which various topics are examined. In many cases, the distinction among these three usages is blurred, and it is not clear whether the author using the term is putting forward an analysis of current trends, is forecasting changes, or is proposing a strategy that should be followed.

Although the term is frequently evoked, it is rarely defined and explored in a systematic way. However, the key characteristics of a knowledge society can be outlined as follows:

- the mass and polycentric production, transmission, and application of knowledge is dominant;
- the price of most commodities is determined by the knowledge needed for their development and sale rather than by the raw material and physical labour that is needed to produce them;
- a large portion of the population attains higher education;
- a vast majority of the population have access to information and communication technologies and to the Internet;
- a large portion of the Labour force are knowledge workers who need a high degree of education and experience to perform their job well;
- both individuals and the state invest heavily in education and research and development; and
- organisations are forced to innovate continually.

7.1. Consequences of Knowledge Society

Empirical data reveals that some countries (especially Scandinavian and western European countries, as well as Japan, the United States, Canada, and Australia) have moved toward becoming

truly knowledge-driven societies (World Bank 1998; United Nations 2005). Many other countries remain in an industrial age, while others are still essentially agrarian. Why is this so? If knowledge is considered the most productive factor, why are not all societies knowledge-based or at least heading in that direction? And how can industrial and agrarian societies become knowledge societies?

In principle, knowledge is a nonrival and nonexcludable public good: one person's use of a particular piece of knowledge does not preclude the use of that same knowledge by others, and when a piece of knowledge is already in the public domain, it is difficult for the knowledge creator to prevent others from using it. In reality, knowledge, in contrast to information, cannot be easily acquired and applied. First, only so-called explicit knowledge can be easily transferred across time and space. Large portions of knowledge—tacit knowledge—reside in people's minds can be accessed on a first-person basis only, and take time to develop. Second, the effective creation and application of knowledge depends upon the broader context— culture, institutions, and governance. Knowledge must be integrated into an effective system of research institutional innovation-driven enterprises, universities, and other establishments. Third, because knowledge is considered the key factor of production and is expensive to create rich countries have broadened the protection of intellectual property rights (especially patents), and thus have increased the amount of knowledge that is secured and monopolised.

These factors contribute to do unequal distribution of knowledge across and within countries, a situation known as the knowledge gap. Indicators used to evaluate the development of knowledge society (such as educational attainment, investment in research and development, and Internet access) seem to show that the knowledge gap has been widening, because knowledge produces further knowledge in an ever-increasing rate, and this in turn increases productivity. It is risky for a country or company to rely largely on unskilled labour and natural resource-based goods. Countries, companies, and people who do not invest sufficiently in education and new technologies for acquiring and disseminating knowledge will find it increasingly difficult to catch up to those who did invest. Yet, investment in education and new technologies is not enough; it is also necessary to create appropriate conditions to foster innovation, creativity and cooperation. Otherwise, negative consequences, such as brain drain (the emigration of one country's highly educated people to other countries offering better economic'and social opportunity), can be expected.

7.2. Social Stratification in Knowledge Society

What will be the class structure of knowledge society? Who will become richer and who poorer? According to Robert Reich (1991)," there is a three-tiered workforce in the most advanced economies. At the bottom are workers who offer personal services: in the middle are production workers in factories or offices performing simple, repetitive tasks; and at the top are symbolic analysts who solves, identify, and broker problems by manipulating symbols.

Symbolic analysts include research scientists, engineers, lawyers, and consultants of various types, but also publishers writers, editors, journalists, or musicians. Reich predicted that advances in technology and globalisation would widen the gaps in income and opportunity between these tiers.

While symbolic analysts are globally in great demand and their income is thus steadily increasing, production workers in advanced economies could be easily replaced by routine producers in other nations, which results in the disappearance of available routine jobs. Similarly, Peter Drucker (1994) and others $peak of knowledge workers, that is, a newly emerging dominant

group being employer in professions that require formal education and theoretical knowledge, as well as a different approach to work—qualifications that the industrial worker does not possess and is poorly equipped to acquire. Drucker also warned, though without details, against a potential new class conflict between the highly productive minority of knowledge workers and the majority of people who make their living traditionally. Though the future of knowledge and nonknowledge workers remains to be seen, even now there is empirical evidence that in advanced economies the number of jobs that demand only low cognitive skills is declining and that high-level skills and knowledge are substantial determinants of earnings (OECD 2000).

If knowledge workers are the leading social class economically, do they also dominate in a political and cultural goose? Who possesses control and power in a knowledge society? Can a 'knowledge society devolve into an Orwellian totalitarian society, where one social group is able to dominate other groups through its possession of knowledge and information? Authors disagree on this. According to Zbigniew Brzezinski (1970), we are entering into a "technetronic society," where scientific and technical elites will seize control of the essential flow of information; their claim to political power would rest on allegedly superior scientific know-how. Similarly, Alvin Gouldner (1989) forecasts the rise of a so-called "new class"—as opposed to the "old moneyed class"—that is composed of intellectuals and technical intelligentsia. This; class will be bonded by similar education, culture, and language codes that facilitate solidarity between class members and enable collective political action. This "culture of critical discourse," as Gouldner terms the essential unifying attribute of this new class, functions as more than the group's common ideology; it is its instrument of domination and control and the source of ire growing power.

In contrast, Nico Stehr (2002) argues that knowledge-based occupations do not and cannot form a social class because they are found in, all sectors, of the economy and their job description and interests are very diverse.

Moreover, in decentralised and pluralistic democracies like the United States, all policymaking actors try to legitimise their claims using knowledge and information, and for this reason they employ various experts and consultants. In turn, it is difficult to enforce any claim solely on the basis of knowledge. Although those with scientific knowledge have a high social standing, they are often questioned. The consequence is a fragile society where controlling, planning, and predicting social conditions becomes more and more difficult and where the power of formerly monolithic institutions, such as the state, the church, and the military, declines.

The basic difference between Gouldner and Stehr is an assumption of knowledge distribution and its attributes. While Gouldner believes that knowledge can be concentrated in relatively few hands, Stehr assumes that knowledge, is widely dispersed, that there are various types of knowledge and they are rapidly changing. Empirical studies seem to support Stern's view.

If knowledge society is to be a useful term, it must be taken critically and further elaborated. There are several problems with its usage. First, it does not (and cannot) capture all aspects of modern postindustrial societies. It simply states that knowledge is the most important productive factor. Yet, any type of economic determinism should be avoided. There can be different types of knowledge societies, with different value structures, life styles, and even political systems. Similarly, modern societies can be given many other labels, such as risk society, consumption society, and so on. Second, knowledge is too broad a term and should be carefully decomposed and defined in any analysis or strategy. Third, attaining a knowledge society is not ensured but must be actively supported. Fourth, there is no clear-cut threshold from which societies become knowledge societies. It is more about processes (knowledge production, learning, innovation, and creativity) than about fulfilling static objectives.

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Paradigm Shift in Library Services and Activities: *Change Agents Thereof*

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Abstract

Library and Information Science (LIS) profession had always been at cross roads with constant and continuous demands from cliental base to which these professionals had been serving since time immemorial. Technological advancement in the form of internet and WWW has posed a great challenge to LIS professionals. As has increased the production of information so has its consumption. Day in and day out seekers of information is growing conscious of authenticity and reliability of information for which they rely heavily on LIS professionals. The exponential growth of information in all the formats be it conventional in the form of print or contemporary in the form of electronic/digital in both closed and open access format or the growing trend towards author self posting. In this paper attempt has been made to highlight some of the aspect of LIS profession where it has changed continuously, technological advancement as a challenge and need thereof to cope with it. The present study is aimed to discuss about the various change agents in LIS, even at larger level library itself is being seen as an agent of change in society at large.

Keywords : Librarianship, Paradigm Shift, Change Agent, Skill Development, IT, Human Resource, Professionalism, Competence, Internet, Communication Skills

1. Introduction

Though change is the law of nature and we do should change ourselves as per the demands of profession and society at large to which we are aimed to serve, but at the same time it is equally important that every change is not always a welcome change, need is to embrace to those changes which are welcome and inevitable. If we try to look at the library system from conventional to contemporary point of view, we can see that library system in general has changed altogether. When we talk about a change, it simply means replacement of one form of thinking by another form or one form of practices by another form and these changes do not take place arbitrarily but are governed by a sequence of events or a series of changes, what we also call as agents of change or change agents.

In the field of library science a good example one can site is about the course of Library and Information Science and its development so far. These houses of wisdom which earlier used to act more as custodies and librarian as its custodian have altogether got transformed into institutions of knowledge sharing and houses to lend information to public. Even the course of recording knowledge got transformed from time to time. Earlier civilizations used to record knowledge on parchments sheets or papyrus and gradually the time moved towards paper, microforms like microfilms, microfiche etc. and towards the end of the 20th century world got digital. Metamorphous of change i.e., recording of human knowledge and experience from palm leaf to palm top. In any modern day library most of the documents procured are in digital form what we also call as electronic documents. Even most of the activities and services these days are handled with the help of electronic gadgets.

When we talk about agents of change this means we are talking about those events which are somewhat bound to happen or results due to the activities already undertaken for a different purpose and which ultimately results or lands us in to a situation which governs a change. We can see how different scientific theories changed from time to time. At one point of time people used to

believe that earth is the centre of the earth but with the passage of time this notion got transformed into a new one whereby people accepted that it is not the earth but the sun which is stationary and all other planets move around it. Similarly in the field of recording knowledge it was printing press which at one stage of evolution revolutionized the sphere of reading and writing. Gutenberg in 1440 [1] invented an agent of change and this agent took the whole world into its savvy. Invention of printing press was such a wonderful agent of change that people started falling in love with reading and writing, more and more books began to be produced, knowledge could be stored and organized in a definite way and so started manuscripts reaching to their desired end.

2. Review of Related Literature

As said above change is the law of nature, because change helps in the sustenance and survival of the object and subject. Change is what is always correlated with life and continuity, while stagnation as a sign of decline and ultimately death. Nothing in this ever and fast changing world can afford to remain still and so holds true about Libraries and librarianship, constant and continuous change is simply an act of guarantee that we exist and believe in survival by adapting to all possible means of change. Thomas Kuhn, (1962), the man responsible for popularizing the term 'paradigm shift' believed that advancements in science are not evolutionary but a "series of peaceful interludes punctuated by intellectually violent revolutions"[2].

Libraries itself are being seen as agents of change not only to the institution they serve but also to the society at large. Basfsky (1999) is of the view that libraries must transform itself into an agent of change as perhaps the time has come when library should be going to its patrons rather waiting for them [3]. Basfsky further believes that time has come when libraries should look beyond mere collecting, organizing and assisting and should widen its horizon to informing, discussing, soliciting, targeting, teaming, stretching and all this imbibes the services which society is already availing at different hands in the form of facilitator, consultant, trainer, Journalist/reporter. Library itself as an agent of change in society confronts with smaller subsystems or subunits of change which in fact are important for the survival and sustenance of library as larger agent of change. Role of technology as an agent of change is supreme, followed by human resource, internet, effective communication, competence, skill development and many more are there. One cannot undermine the coming into being of printing press [4] as one of the earliest forms of agents of change. Society at large has already undergone through unaccountable number of changes at all levels be it cultural change, economical change, political change etc all these changes are in fact brought by agents of change which in social context can be seen in the form of agents like globalization, industrialization, modernization, social and civil movements etc. similarly computers and internet as an agents of change have revolutionized the modern day human ways and methods of dwelling.

Human resource always acts a good change agent maintains Beckhard [5], who reported several such cases where human resources trained for organizational development on their return to their respective organizations turned out to be successful change agents. Here it is equally understandable that human resource as change agents can either be internal or even external. Dave Ulrich (1997) [6] believes that a renewable organization is the deliverable expected from the change agent role in human resource. Virginia Murray is of the view that human resource as a change agent is more like looking for change in leadership. Human resource as an agent of change is seen with one who is aimed to take new initiatives to help organization to improve performance and to influence and monitor moral and climate. Work of Mary Alice Baish (2006), [7] 'Librarians as change agents; how you can help influence public policy speaks volumes about the librarians as change agents.

A paradigm shift is more about revolution whereby one cannot reject the new accepted fact mostly tested and verified on scientific grounds and which as a result becomes the order of the day, Thomas Kuhn (1962) [8] in his book 'the structure of scientific revolutions', maintains that a paradigm shift is a change in the basic assumption. The term paradigm shift received greater acceptance post 1990 mostly due to economical boom all across the globe and became almost buzz word [9], however the interesting part is, the Larry Trask in his work 'Mind the Gaffe' advised the people to refrain from using the phrase for being either abused and overused to the point of becoming meaningless[10]. Even the term paradigm shift is being used for representing the major changes, where a radical change takes place, with the result one thought process is completely replaced by the newer one. Keeping in view above facts and the radical changes which have taken place over the period of time in the field of library science be it in theoretical or applied aspect, a paradigm shift has been experienced, where old thought process has been almost completely replaced by the newer one and that too with greater degree of acceptance.

The essence of sustenance and survival can be seen in the change agents, Peter Hernon and Charles McClure [11] in their book entitled 'Evaluation and Library Decision Making' maintain that careful planning is the prerequisite for affecting the change in library be it about resources, or human resource and affecting the change outside the organization requires even far greater skill on the part of change agents.

3. Agents of Change

Transition or shift in activities or services rendered by any organization or institution is governed by some external forces what we call as agents of change or change agents. Change is an inevitable event, in our day to day activities we experience many a type of changes, these can be social, cultural, organizational, familial, eventual or any other type, all these type of changes are actually warranted by some external forces what we call as agents of change or change agents. A change agent can be an event, any material thing, an organization, or even a person which normally is responsible for all sorts of change, all such different kind of forces act as catalysts of change. Humans are the first and foremost change agents, most of the business houses look for such men who will act as catalyst rather reformist in their organization to led them new business heights and organizational face-lifting.

3.1. Information Communication Technology (ICT)

Information and Communication Technology has been truly instrumental in bringing change not only in the field of LIS and the activities and services thereof related with it but in overall human dwelling and outlook. ICT as an agent of change has become almost a universal phenomenon and is being seen as first and foremost change agent in every other science. Technological offerings in giving a new lease of life to services and activities in the field of LIS is where we owe technology as an agent of change, which has played a major role towards the end of 20th century in putting library services to a newer form. A modern day library can be easily seen fully laced with technology playing its parts in the activities and services like, acquisitioning, accessioning, classification, cataloguing or even circulation of documents, which otherwise prior to induction of technology in library services used to be handled manually. Introduction of services like OPAC and web OPAC supplemented with RFID applications has literally put the whole collection of any largest size library on the finger tips of the seeker of information. Needless to talk about electronic and digital libraries these are already in place and seekers of information have got immensely benefitted by this technological feet. There is no end to technological advancement, these advancements are so fast and up-to-date that, even by the time people think of having some

additional technological service, such services are either already in place or even may have become obsolete. To predict about technological distinction is only in having faith in it as it can push beyond the limits of human visualization.

3.1.1. Information and Communication Technology Involves

- Using optimum quality data communication technology with ability to deliver and handle multimedia information
- Entering into MOU's with organizations whereby maximum relevant information can be retrieved and technology should not be employed for name sake only as is the case with most of the academic institutions
- Latest equipment, best technology, upgraded application software's, anti hacking protection in the form of firewalls, ant viruses etc., should be employed.
- Technically sound and highly skilled technological people should be preferably employed to handle information technology network with constant and continuous up-gradation avenues.

3.2. Human Resource

There cannot be anything as greater and as impactful a change agent as human resource. Human resource of any organization is said to its backbone and if the backbone of any organizations is not erect and firm it cannot stand and the same needs to be adaptive to suit the requirements of an institution. Most of the organizations are always on constant look for the trained, efficient and skillful manpower as it always proves as an asset for an organization. In the lure to outclass or outnumber competitors' organizations always work for constant and continuous up gradation of knowledge and skill of its human resource by making them undergo developmental programmers like workshops, seminars, lectures about the latest developments in the sphere of their activity. Trained and skillful Human Resource can always act as an agent of change, like most of the professional fields LIS people do strive for constant up gradation of professional manpower. Even at teaching level students of LIS are exposed to latest syllabi along with technological knowhow and other developments so as to suit the requirement of market. Once the trained human resource enters into an organization it starts acting as a change agent. Expertise obtained in one set of organization is always used in other set and system of organizational functioning and people who move or get swapped in-between from one setup to another do get equally benefitted with higher wage offers. Human resource helps an organization to exploit its potential to its optimum.

3.2.1. Human Resource involves

- Engagement of trained and learned professionals should always be priority
- Organizing orientation courses for HR development on regular basis
- Organizing workshops, seminars, conferences, and other professional development programmes at regular intervals of time.
- Acknowledging and recognizing good work of professionals who perform exceptionally well as token of encouragement. Promotions and monetary benefits acts as great motivator so should never be compromised at the cost of better services

- Human resource should never feel alienated form system and should be always encouraged for its importance in organization.

3.3. The Internet

Though internet constitutes part of first change agent viz. information technology but keeping in view the independent and prominent role which internet plays individually cannot be undermined, as such becomes imperative to discuss it independently to that of technology. Internet is proving one of the greatest disposal and delivery systems in any activity and from the information seeking and delivery point of view which otherwise used to be in the realm of libraries has altogether taken over by internet. Concept of e-documents (e-books and e-journals) would have never attained so large and greater acceptance had there not been a third agent, a change agent for accepting the responsibility of quick delivery. Wider and broader use of technology laced with internet for archiving of information in digital form in fact compelled library professionals to change their service delivery techniques from manual to fully automated. Internet has itself proved a great library, where not only rivers of information and knowledge flow but also the ocean of wisdom rests. Fast and timely retrieval of information from various databanks spread all across the globe at the single click of mouse is something what mankind would have not imagined couple of decades back.

3.3.1. Internet involves

- Library without internet facility or internet lab can no more be deemed as a modern library,
- For handling huge chunk of data available in various databases and banks all across the globe internet connectivity is inevitable.
- For access of online documents like e-books, e-journals, subscribed, unsubscribed, open access documents etc. and many more additions services like online banking, ticketing, booking, billing, mailing, ordering, etc.
- For resource sharing among libraries in network environment with advantages of overcoming the space and time constraint

3.4. Effective Communication

Communication through oral and written means is an age old practice and will continue to dominate as a most preferred means of communication all along humanity in every era. Effective communication plays a very vital role in transpiring most valid and authentic information form source to its seeker. If we introspect past practices of information professionals, one can see that not much attention used to be paid on effective communication, though at formal level or written level by means of preparing catalogues and arranging them in most easy and scientific manner much care used to be taken at this front which by and large remained missing in oral communication. Effective communication especially in developing and under-developing world remained missing all though the course of library history, but present society is in great demand of it and effective communication skill has itself established as a change agent. Effective Communication helps to develop better understanding of concept between the seeker and the provider of information. Role of a library professional is more of an intermediary which more or less relates to that of a translator and a successful translator is one who has command over both the languages and in our case it is about developing command over demand and it delivery.

3.4.1. Effective communication involves

- Proficiency in reading and writing formal communication
- Effective command over language to understand half spoken of information seeker with minimal wastage of time
- Ability to convince others with quality and other handy resource available with them so as to make them feel of him being part of his/her research activity
- Ability to guide and refer person to the most desired information.

3.5. Professionalism

Creeping demands for effective information delivery system always questions the professionalism of any sort. Information professionals are always under constant pressure and strain to fulfill information requirements of a heterogeneous group. Though information professionals and information seekers are homogeneous as they are part of same group but when it comes to information requirements they vary considerably from person to person and to be a master of whole varied lot of information, is not possible for information professional. Also one can see during the past two decades societies at large all across the globe have shown a great deal of drift in their dwelling methods where services sector has put itself at top with committed professionalism. People are ready to spend any amount of money for better service and under the prevailing conditions library professionals are bound to change themselves as per the requirements of society at large. Computers enabled with internet applications and facility has already intruded in the information profession and people do prefer it over professionals for better services. Professionalism as an agent of change can be seen from the point that subject experts with professional degrees can help rejuvenate information profession and can extend a new lease of life to information professionals. Need is to develop and restore faith among the information seeking community about the information profession and professionalism, which is aimed to exploit information to its optimum.

3.5.1. Professionalism involves

- Identifying and collecting relevant knowledge resources (books, journals, online, offline resources and services)
- Keeping vigil over teleological developments and embracing them in library operations so as to facilitate library clientele (computer, e-resources, databases and databanks, websites, networking, resource sharing etc.)
- Improving financial health of library (Budget)
- Employing trained and skilled human resources (competent)

3.6. Competence

Technology enable society is always looking for best delivery system, common man who is immensely empowered with technology, information, education, entertainment and what not always eyes on newer and better services. It is high time for information professionals to always make it sure that their clientele whom they either serve or are going to serve is better informed and well learned, so the information professional is required to raise the bar as of being competent enough to do justice by delivering information beyond the expectations of his/her clientele.

Competence is something which mostly gets enhanced with ones zeal and exuberance for being committed towards ones profession. Competence is not supposed to be developed in one or two areas but in a range of areas and for that matter one has to begin from conventional methods and techniques and carrying them to the contemporary level. Library clientele should never feel that he/she has come across a tumbling block while communicating about his/her information requirements with library professional. Competence in any profession can be developed by constant and continuous introspection, which should always be supplement with latest developments in profession embedded with personal expertise. A good information professional is one he who uses his own power of judgment in delivering services to the satisfaction of his/her clientele rather relying on rule of thumb. All the agents of change discussed above and below one way or the other way are also the agents responsible to develop professional competence.

3.6.1. Competence involves

- Being responsive to change, accepting challenges, having adaptability with adoptive nature.
- Being self motivated, exploiting knowledge to its optimum with resources in hand.
- Believing in providing updated, timely and qualitative services to clientele.
- Being tolerant and flexible so as to suit different requirements of varied library clientele.
- Be knowledgeable and learned with effective and convincing communication with zeal to update self with latest developments in different fields.
- Should act himself as an agent of change rather relying on other agents of changes if time demands and conditions warrant so?
- Be a manager of par excellence with all managerial and strategic abilities.

3.7. Skill Development

Competence and skill development may apparently seem two synonyms terms as such people may also get the feel that competence and skill development are one and same thing. Skill development can be said as a part of competence. When we talk about skill development it means we are putting focus on all small and little areas in peace meals. To horn ones skill means putting more attention towards a particular activity and in information science this skill development can be confined to any particular or specific activity. Skill development is also a gradual process which is normally learnt over the period of time. Skill development is generally categories in to two groups, one is skill obtained by transference and another is skill developed by personal experience. in library and information science skill development can be encouraged in developing efficiency in all little and small areas, be it newspapers service, reference service, circulation, online search, creating databanks, databases etc. managing online data, information or the technological knowhow usually employed in handling day-to-day library activities and services.

Skill development involves

- Having knowledge of various operating systems - Windows, LINUX, Ubantu etc.
- Having complete computer proficiency, especially those required in professional areas.
- Networking and system administration skills, including web designing etc.

- Managerial skills for content Management, information management, knowledge management etc. Knowledge of open source software's and other application tools required for handling digital content.
- Knowledge of conventional library tools, their handling and management in consonance with contemporary library culture etc.

Other agents which governed the change in library profession and practices

- Microforms (Microfilms and Microfiche)
- Automated Libraries (OPAC, RFID applications etc.)
- Electronic Libraries (Digital and Virtual Libraries)
- Online Sources (E-books, E-journals, Databases, Databanks, Archives etc)
- Changing Role (Librarian, Network Manger, Information Scientist, Knowledge Manager, System Administrator,
- Changing Life style
- Unprecedented growth and development at global level
- Globalization, Industrialization, Urbanization, Modernization and post Modernization

4. Conclusion

In the concluding remarks we can say change is the law of nature and these changes do not take place overnight or all of a sudden, there is always a course through which every minute change undergoes and becomes responsible for a major change. All these changes take place in and around us governed by mankind itself and still human being do not notice these governed changes which even at some point of time complain about. Human mind has always been very inquisitive, whatever we perceive, we actually unintentionally being to work on it and the moment we observe such a perceived change we grow conscious of it and tend to convent that perception into reality.

There is no end to changes which humans may see over the period of time and these changes are not confined to one or two spheres of human activity but in every sphere and library being one of them. Libraries and library professionals are bound to undergo such a sea change, which time and our clientele will demand from us and if we fail to respond to those changes we are bound to cease. Of the late we can see cloud computing has become the buzz word these days there is hardly any professional activity where prospects of cloud computing are not being percepted and this has already shown and thrown open new vistas for library profession in the coming days. We library professionals cannot afford to remain elusive of it; we are bound to embrace these technological feet in our profession even if we try to be resistive to it.

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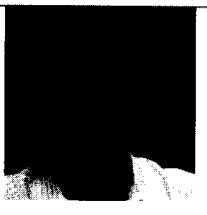
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Problems of Collection Development among the Degree College Libraries of Dharwad District

Mrutyunjaya Kotur **Krishnamurthy, C** **Ramesh Kuri**

Abstract

This paper highlights the problems of collection development among the degree college libraries, in the present era of information explosion. The data collected from the survey of degree colleges in Dharwad District, reveals that most of the libraries suffer from inadequate and unbalanced collection of resources. The study also reveals absence of collection development policy among majority of the libraries. It is also observed from the study that many degree college libraries lack appropriate IT infrastructure to develop sound collection of digital resources. The authors attempt to suggest some measures to improve the status of the degree college libraries through the application of modern IT and develop a comprehensive collection of digital resources. In order to provide effective services to the users based on their needs and requirements.

Keywords : Collection Development and Policy, College Libraries, Book Selection Policy

1. Introduction

Collection development includes everything that goes into acquiring materials, including selection, ordering, and payment. It is a chain of events that includes planning, administration, and control. Collection development serves as a foundation upon which other library services are built. The critical importance of collection development may be demonstrated in several ways. The "Best" selection may bring the largest number of useful items to the users of the library. A good representative collection of reading materials is the very foundation for educational activities of a college. Its scope and verity should reflect at the activities of a college that includes Teaching at under graduate and Post graduate levels, Research in different disciplines, Extension programs and General and recreational reading interest of the academic community.

In the present context it is very difficult to select the reading materials useful to the library users particularly to the students and also to the teachers due the explosion of print and electronic media and there are many hurdles created by information technology and its implications. The emergence of inter-disciplinary subjects and demands of information, availability of similar information in different formats, changes in curriculum and research activity, expansion of higher education, space and man power problem, escalation of the prices of the reading materials, declining budget etc are some of the major problems encountered by library professionals. Therefore there is an immediate need for the college libraries to adopt a Collection development policy keeping in mind that changing environment of e-publication and increasing information needs of the user community.

2. Objectives of the Study

- To identify the level of courses and subjects offered in different disciplines by Degree colleges in Dharwad District;
- To know the strength of students and faculty in Degree colleges;
- To ascertain the criteria followed in the Degree college libraries with regard to collection development;

- To understand the problems of collection development of the Degree college libraries.
- To identify the level of awareness and use of internet among the users of degree college libraries;
- To know the reasons for non-use of electronic information resources;

3. Methodology

The present study is conducted through a questionnaire method. Suitable questionnaire was designed and the copies were distributed among the degree college librarians. A total of 80 questionnaires were distributed out of which 60 duly filled questionnaires were received. Therefore the response rate is 75%.

4. Data Analysis and Interpretation

The data collected is interpreted, analyzed and presented below.

Table-1: Level of courses offered

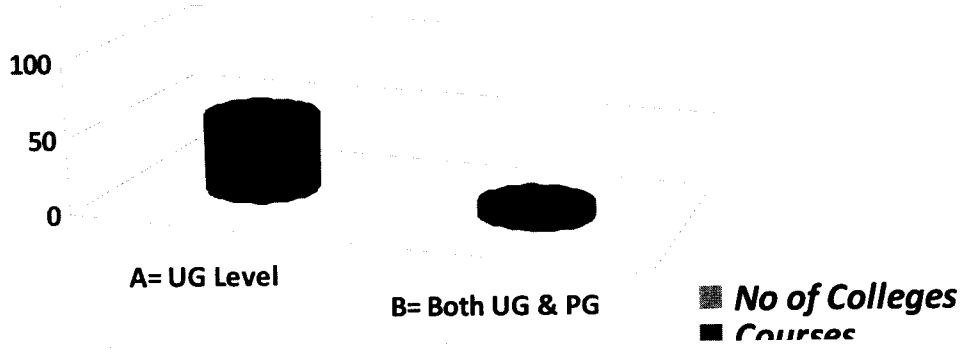


Table-1 indicates that 52 (86.66%)) colleges offer only UG courses whereas 08 (13.94%) colleges offer both UG & PG courses.

Table-2: Courses offered in different disciplines by the colleges

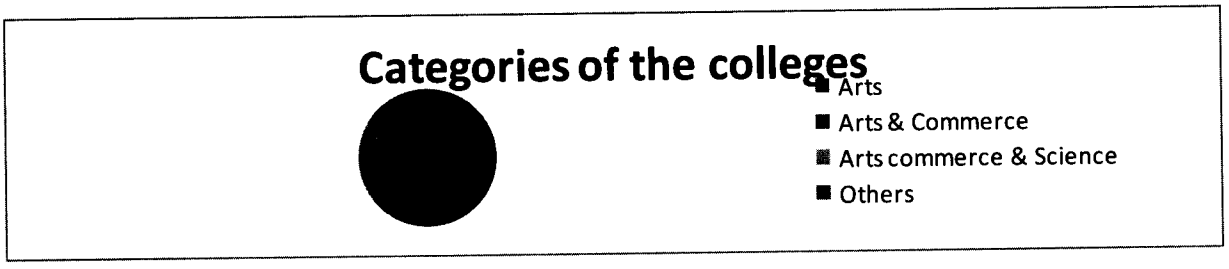


Table-2 reveals that 23 (38.33%) colleges offer Arts, 15 (25.00%) colleges offer Arts, Commerce & Science, 12 (20.00%) colleges offer only Arts and the remaining 10 (16.64%) colleges offer courses in other disciplines.

Table-3: Strength of students and faculty

Students	No of Colleges	Percentage	Staff	No of Colleges	Percentage
100-1000	15	25.00	Less than 50	31	51.66
1001-2000	27	45.00	50-100	24	40.00
2001-above	18	30.00	100-above	5	8.34
Total	**60**	**100.00**	**Total**	**60**	**100.00**

It is observed from the table-3 that 27 (45.00%) colleges have the student strength between 1001-2000, 18(30.00%) colleges have the strength of students in between 2001 and above. Only 15 (25.00%) colleges have the student strength in between 100-1000. The table also reveals that the strength of the staff in 31 (51.66%) is less than 50, 24 (40.00%) colleges have the staff in between 50-100 and only 05 (8.34%) colleges have the staff strength 100 and above.

Table-4: Independent Library Building

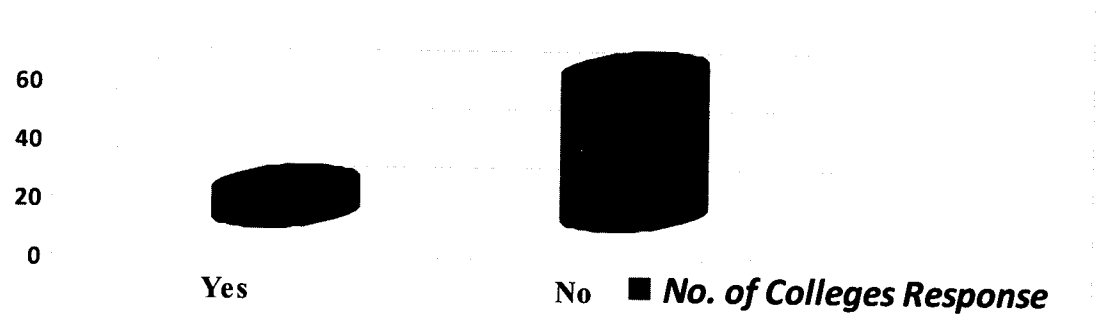
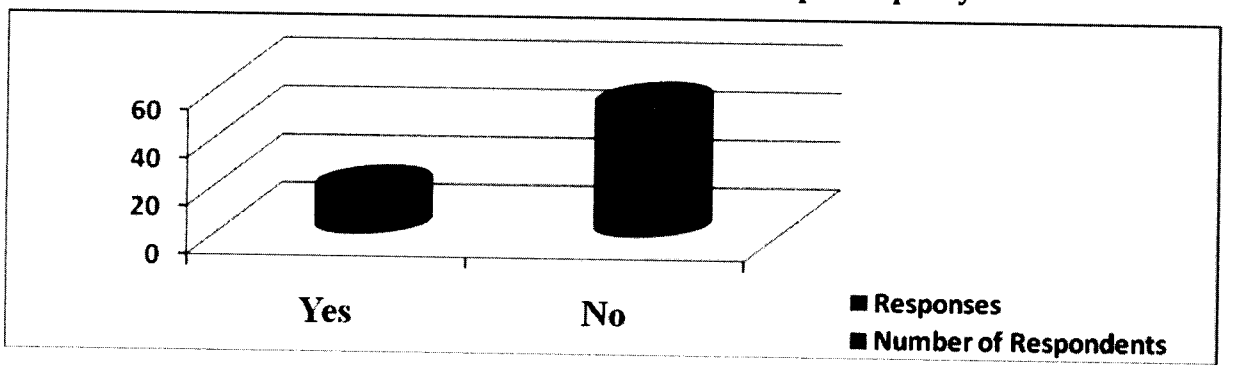


Table-4 indicates that 50 (83.34%) colleges do not have independent library building, whereas only 10 (16.66%) colleges have libraries with independent building.

Table-5: Adoption of collection development policy



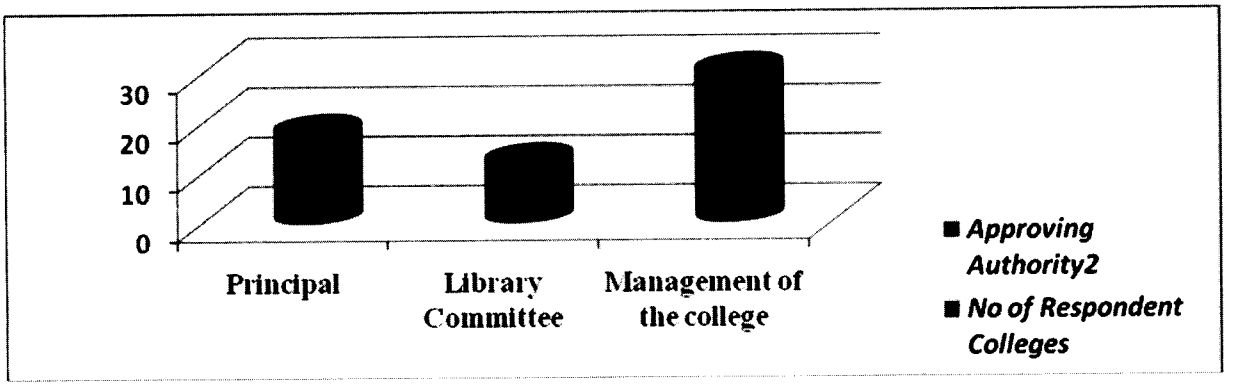
A question was asked to know about adoption of collection development policy in the college libraries. Tatble-5 reveals that 53 (88.34%) colleges don't have any collection development policy. Only 07 (11.66%) colleges follow collection development policy for collection building.

Table-6: Tools for selecting the reading material

Sl. No	Tools	No of Respondents	Percentage
1	Vendor's list	54	90.00
2	Publishers Catalog	50	83.33
3	Suggestions From lecturers	53	88.33
4	Online search	10	16.66
5	Other mode of agency	3	5.00

Table-6 indicates that majority of the college libraries i.e. 54 (90.00%) use, vendors list for selecting the reading materials. Whereas 53 (88.33%) college libraries obtain suggestions from the lecturers for selecting the reading materials and 50 (83.33%) college libraries make use of publisher's catalogue. Only 10 (16.66%) college libraries make online search for the selection of reading materials.

Table-7: Approval for the selection of documents



It is observed from the table-7 that 30 (50%) college libraries get the approval from the management authorities to procure the reading materials. 20 (33.33%) college libraries take the approval from the Principal and only 10 (16.67%) college libraries obtain the final approval from the library committee in the selection of reading materials.

Table-8: Problems of book selection

Sl. No	Problems	No of respondent colleges	Percentage
1	Non availability of selection tools	38	63.33
2	Incomplete bibliographical details	12	20.00
3	Lack of adequate funds	30	50.00
4	Frequent changes in curriculum	33	55.00
5	Lack of co-ordination among the teaching and library staff	56	93.33
6	Non-availability of documents in regional languages	40	66.66
7	Lack of collection development policy	58	96.66

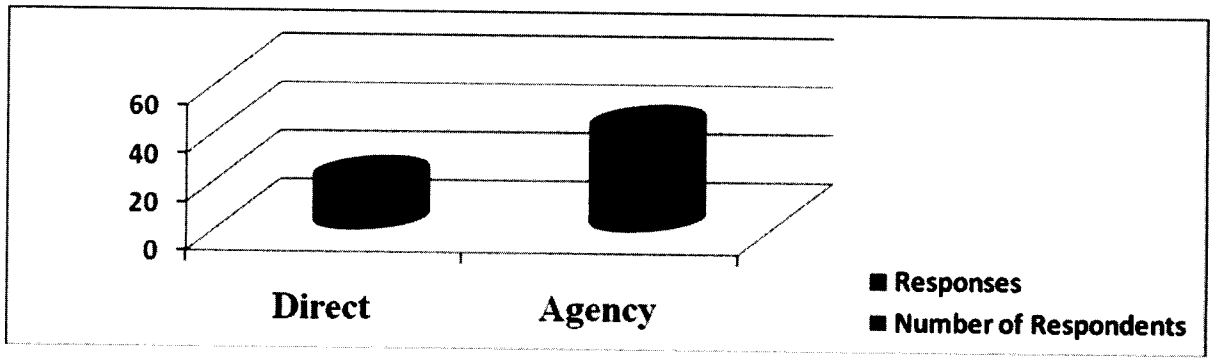
There are various problems in the selection of reading materials encountered by the college libraries table-8 lists out some of the major problems. It is observed that 58 (96.66%) college libraries lack collection development policies, 56 (93.33%) college libraries face lack of coordination among the teaching and library staff. 40 (66.66%) college libraries encounter the non availability of documents in the regional languages. 38 (63.33%) college libraries state that non availability of selection tools as the major problem in book selection. 33 (55.00%) college libraries consider frequent changes in the curriculum as the problem in book selection. 30 (50..00%) college libraries face in adequacy of funds. Whereas among 12 (20.00%) college libraries, incomplete bibliographical details is considered to be major problem in selection of reading materials.

Table-9: Mode of acquirement of documents for the library

Sl. No	Modes	No of respondent colleges	Percentage
1	Gift/Endowments/Donation	40	66.66
2	Exchange	3	5.00
3	Purchase	48	80.00
4	Any other	3	5.00

Table-9 indicates that purchase of reading materials constitutes 48 (80.00%) one of the major mode of acquiring the documents among the college libraries, followed by 40 (66.66%) which includes acquirements of documents through gifts/endowments/donation and only 3 (5.00%) of the documents are procured to the college libraries to exchange mode.

Table-10: Placing the order for the document supply



It is observed from the table-10 that maximum i.e. sixty percent of the college libraries place the order through agency and 19 (31.66%) of the college libraries place the order directly from the publishers.

Table-11: Availability of Automation software in handling collection development

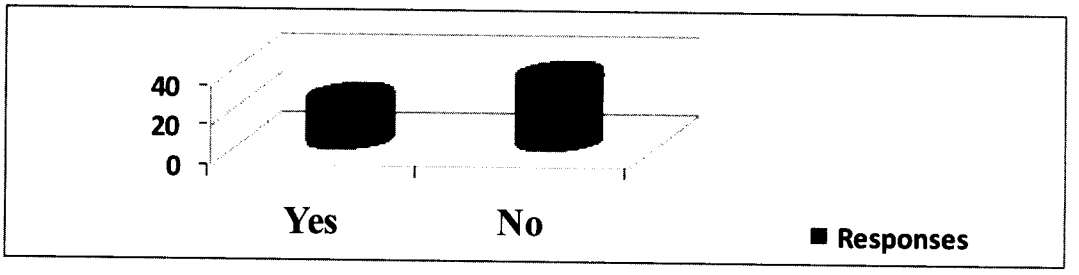
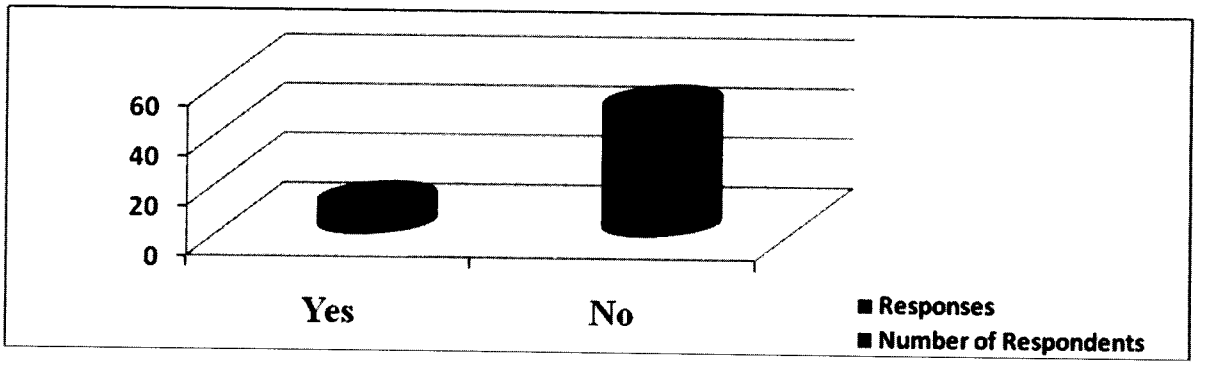


Table-11 indicates that 24 (40.00%) of the college libraries have adopted automation software whereas 36 (60.00%) college libraries have not adopted automation in their libraries. It is surprising to know that many libraries have not automated their library activities. This reveals a very unpleasing situation in the IT dominated environment.

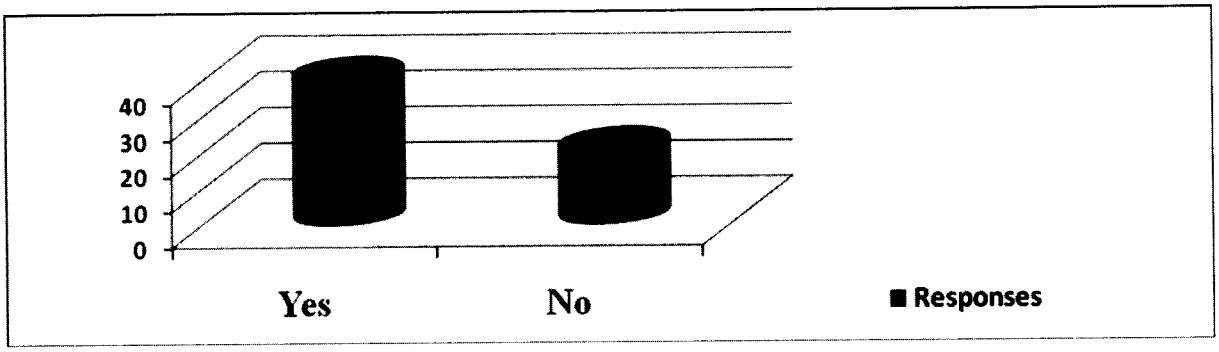
Table-12: Participation in resource sharing



Library co-operation is essential in this era of information explosion where no single library is able to satisfy the information needs of its clientele. Therefore a question was asked to the respondents

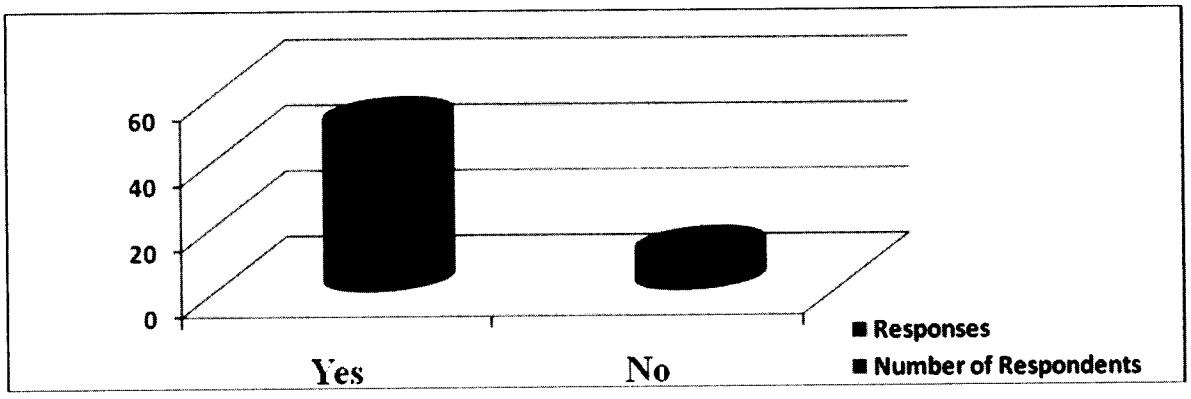
regarding the resource sharing among the college libraries. Table-12 indicates that only 10 (16.66%) of the college libraries participate in resource sharing activities, whereas majority of the college libraries i.e. 50 (83.34%) do not participate.

Table-13: Internet connectivity



Internet is one of the essential tools of information retrieval in the ICT dominated society. The above table-13 clearly indicates that majority 40 (66.66%) of college libraries have internet connectivity and 20 (33.00%) of college libraries do not have internet connectivity.

Table-14: Internet awareness



It is observed from the table-14 among 50 (83.33%) of college library users including staff and students are aware of the use of internet and among 10 (16.67%) college libraries the users are not aware of the use of internet.

Table-15: Awareness of e-journals consortium

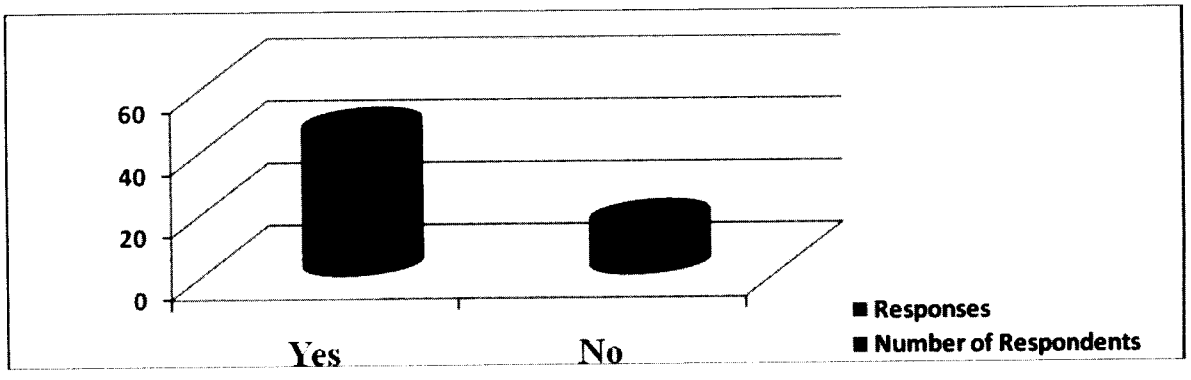
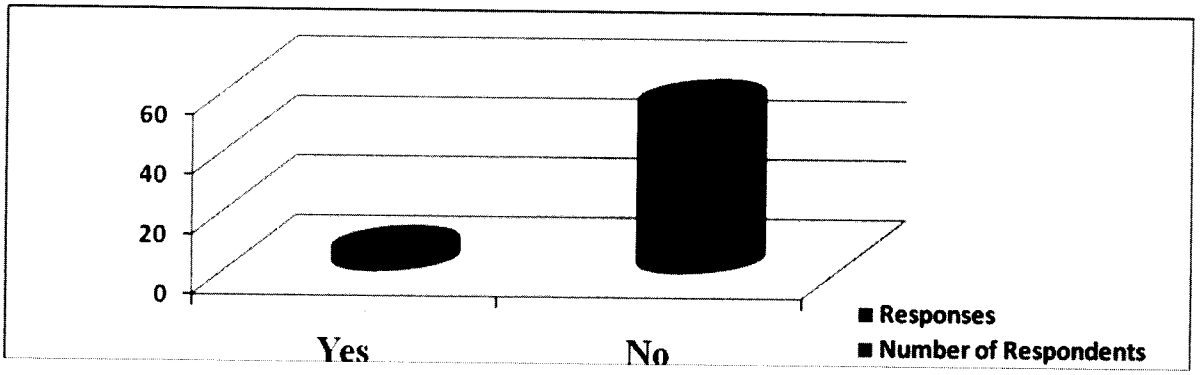


Table-15 clearly indicates that majority 45 (73.34%) college librarians are aware of e-journals consortium. whereas 15 (25%) of the respondents are not aware of any ejouranls consortium.

Table-16: Membership & use of E-journals consortium.



Decreasing financial resources, information explosion and format war libraries are unable to procure what their readers require. To overcome these problems college libraries should subscribe to consortium. From Table 16 it is found that more than 90 percent of the college libraries are not a member to any consortium.

Table-17: Reasons for non-use of electronic information resources

SL. No	Responses	No. of Respondents	Percentage
1	Unfamiliarity with computerized searching	40	66.66
2	Satisfaction with print source only	50	83.33
3	Inadequate information	11	18.33
4	Inadequate database	3	5.00

Table-17 reveals that 50 (83.33) college libraries are not using e-resources due to the fact that the users are satisfied with the print source only. 40 (66.66%) of the college libraries are not making use of EIR, because they are unfamiliar with the skill of computerized searching, 11 (18.33%) college libraries state that inadequate information is the reason for the non use of EIR.

5. Major Findings of the Study

- Most of the colleges i.e. 52 (86.66%) offer only UG (Under Graduate) courses.
- 27 (45.00%) colleges have the student strength in between 1001-2000 and the strength of staff among 31 (51.66%) colleges is less than 30.
- 83.34% of the college libraries do not have independent library building.
- 88.33% of college libraries don't have any collection development policy.
- 53 (88.33%) use, vendors list for selecting the reading materials, whereas 83.33% college libraries make use of publishers catalogue in the selection of documents.
- 50% of the college libraries get the approval from the management authorities while procuring reading materials.
- 83.33% college libraries indicate that lack of co-ordination among the teaching and library staff is the major problem in selection of documents.
- 96.66% college libraries are of the view that lack of collection development policy is the major problem in CD.

- Among 80% of the college libraries purchase of reading material is the major mode of book procurement.
- 60% of the college libraries have not automated their libraries.
- More than 80% of the collection developments are not involved in any form of resource sharing.
- 66% of the college libraries have internet connectivity.
- Among 83.33% of the college users are aware of the user of internet.
- 73.34% of the college libraries are aware of e-journals consortium and 91.64% of the college libraries are not members to any consortium and are not using it.
- 83.33% of the college libraries are not using EIR'S as the users are satisfied with print sources only and unfamiliarity with computerized searching is the reason among 66.66% libraries for the non-use of EIR,s

6. Suggestions

Based on the findings, the following suggestions are made. If these suggestions are implemented, a library can perform its functions effectively in changing IT environment.

- Libraries need to shift from the concept of owning resources to sharing resources to satisfy the user needs.
- Libraries have always relied on cooperation and partnerships to accomplish goals. Co-operation among the staff members should be developed strongly.
- Library users are becoming computer literates and will become more aware of what is available via the internet. Libraries must meet the increased needs and awareness of more computer knowledge users while continuing to provide services to those who are not.

7. Conclusion

Collection Development in libraries is an important activity, and selection policies and practices and policies play fundamental role in developing a strong collection so as to provide effective services to the clientele based on their and requirements. However the study reveals that majority of the libraries do not have sound collection development policy and the management authorities play a dominant role in procuring the resources rather than librarians. However, it is very essential that the librarians and the teaching faculty must play a prominent role in the collection development of the libraries through active involvement in the selection process. Our environment is fast changing, driven by rapid developments in Information Technology, but most of the degree college libraries have no automation, some of the libraries are not even connected with internet, only few libraries involve in resource sharing activities, and majority of the libraries are not members to any consortium. Considering all these facts it becomes inevitable for the degree college librarians to revamp their collection development activities based on the needs and requirements of the users.

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Repositioning the Future Libraries and Librarianship through Innovation: *Observation and Suggestions*

Rishi Tiwari **Singh, D V** **Shokeen, Ashu**

Abstract

The higher education system of the future will undergo a transition from a heavy emphasis on teaching to a heavy emphasis on learning. Experts will create the courseware and the students will learn anytime or anywhere at a pace that is comfortable for them, learning about topics that they are interested in. In the future, teachers will transition from topic experts to a role in which they act more as guides and coaches. The Mission of Librarians is to improve society through facilitating knowledge creation in their communities. In this paper the authors identified and presented the trends that are affecting the development of future generation library. The concept, points and reasons raised in this paper are not the only trends, but ones that have been selected to give clear insight into the rapidly changing technologies and equally fast changing mindset of library patrons.

Keywords : Repositioning libraries, Librarianship, Future libraries, ICT.

1. Introduction

The library was the center of information revered by most because each contained the foundational building blocks of information for all humanity. The future of libraries is being shaped today by emerging technology that is transforming the way information is created and disseminated. One indicator of the future of libraries is the push to provide increasing amounts of information in electronic and digital format. Traditional libraries are being converted into new flavors of 'electronic' or "digital" or "virtual" libraries. One measure of that pace is the extent to which content buying centers are spending on print vs. electronic content products. We have transitioned from a time where information was scarce and precious today where information is vast and readily available, and in many cases, free. People who in the past visited libraries to find specific pieces of information, now they are able to find information through online. The vast majority of people with specific information need no longer visit libraries. However, others who visit for pleasure as example, still regularly patronize their local library.

2. Transition of Libraries and Librarianship through the years

Ever since the peoples of ancient began storing and classifying their knowledge, experiences and information produced by the different scholars are recorded in the form of palm leaf, parchment, papyrus, clay tablets, stone inscription etc., and same housed in temples, churches, mosques or of these documents may be with individual kings, priests, scribers etc. But, after the invention of paper and printing technology are revolutionized the entire world and these technology cause for establishment of libraries, educational, scientific and cultural institutions around the world. Each and every institutions and society given prime importance to establishment of libraries for the overall development of the mankind and the same time libraries are started spreading the knowledge and information without any discrimination by adopting library management tools and techniques. Up to 19th century libraries have been hallowed and largely unchanging bastions of learning. But in the information age, libraries have been caste with a new identity, and the future is evolving into a very different place. In the 21st century, as the Internet

began to take off, many in the tech elite were predicting the death of the libraries and librarians. What the critics failed to predict, however, was libraries' stirring ability to reinvent them. Such is their resurgence that today; libraries are going through an age of rebirth by inventing new innovations. David Lankes from School of Information Studies, Syracuse University rightly pointed out that "the best way to predict the future is to invent it".

3. People's Participation in Modern Information & Knowledge Centers

In the future people are no longer satisfied with information flowing one way. They want to participate in it, add their own contributions, and take ownership of it. Traditional lending of documents has been replaced with downloadable books, which are never out of stock, formatted for electronic gadgets and readers. Where once a reader would passively read and, hopefully, absorb a book, every volume now is more akin to an online forum, with authors, experts and other readers available to discuss and answer questions on almost every important book ever written.

The future of the information center and knowledge resources center will not only serve as an information resource, but much more, with the exact mission and goals evolving and changing over time. A modern library is one that taps into the spirit of the community, assessing priorities and providing resources to support the things deemed most important. Modern day library and information centers include museums, theaters, parks, and educational institutions. The library of the future could include all of these for attracting and retaining different categories of user community.

4. Repositioning Library and Information Centers

Traditional library environment require the bulk of library staff and their time, with sorting and organizing often coupled with repairs and replacement. As we move to an era of inexpensive networked environment with improved user interfaces, libraries are moving from physical place to virtual space. In this environment the following Zonal Centres suggested in physical, digital and virtual space environment.

4.1. Information Search Zone

Search technology is destined to become the heart and soul of future libraries. As the format and structure of information evolves, librarians will need to position themselves as cutting edge information finders, and the Search Command Center is one tool for transitioning to the next level. Users who come to libraries are searching for information. Sometimes it's an exploratory mission with only vague notions about what they are looking for, at other times patrons have a laser-like precision in their search for specific data points. But invariable they will need help in search tools, techniques, strategies and the Search Information Center is intended to be a central feature for a visitor's first-contact. Further it is necessary to develop online search tips and modules for users of online and web resources. The information search zone will serve three critical functions:

- Draw attention to databases, specialized search engines and other available resources
- Provide expert, hands-on assistance in finding and using the databases, electronic and digital resources and services
- Teach patrons how to access this information remotely
- To reach to the unreached through information literacy programme.

4.2. Serials/e-Zine Zone

Magazines, newspapers and scholarly serials communication continue to be the spontaneous information sources for students, researchers and faculty members and many library visitors. Comfortable overstuffed chairs and a fireplace or two will make this a very attractive place to kick back and recharge their intellectual batteries. Those how want to access through web this zone have to have develop separate portal to access e-journals.

4.3. Book Download Zone

In the near future e-books pre-dominate the book industry due to its versatility and advantages over printed books. Therefore libraries have to make provision of download zone for download and use of all types of e-books through appropriate suitable e-book readers. The downloading of books onto a book reader can happen either remotely or at the library itself. The purpose of a Book Download Zone is to draw attention to this offering with some people needing help to do their first download and others asking for recommendations on book readers. Over the years, the price of book readers will plummet and libraries are made provision of downloadable version of the books. Future book readers will come in both audio and visual formats, and will actually be easier to read than traditional books.

4.4. Cyber Café Zone

Since many of the visitors will be largely focused on finding an open terminal and getting onto the Internet, it may make sense to design the Electronic Outpost around the look and feel of a casual, yet artsy, cyber-café. With this design, people will be looking for the perfect balance between privacy and inclusion, efficiency and randomness, and purpose and spontaneity. Coffee kiosks and food services, either operating as in-house library services or as adjacent businesses annexed to the library, can serve to complement the casual atmosphere.

4.5. Gamer Zone

With games quickly becoming the cultural norm, standard issue in most households, gamer zone can be arranged for individual and group competitions as well as a variety of non-competitive activities.

4.6. Daycare Facilities

Libraries tend to have a unique symbiotic relationship with daycare centers. Because of the strict rules governing daycare operations, pay-for-service daycare is best housed in adjoining facilities with separate staff and management. However, by leveraging library resources and aligning them with the needs of the community, a daycare facility can provide a win-win service to fit the needs of many library users.

As above list not limit we can extend like Mini Theater, video and audio section zone with mini sopping zone etc., as we listed here are some are mandatory some are options, many will be seen a bit radical or simply inappropriate for the community that you live in, and that's okay. The intent here was to stretch your thinking about everything possible in an Electronic Outpost. Libraries are going through a transition period, and the shape and form of libraries 20 years from now will look radically different than what we see today.

5. Suggestions for Future Libraries and Librarianship

Libraries are in a unique position. Since most people have fond memories of their times growing up in libraries, and there are no real "library hater" organizations, most libraries have the luxury of time to reinvent themselves. The role of a library within a community is changing. The way users interact with the library and the services it offers is also changing. For this reason libraries and librarians have to change their mind set and develop the products and services which are suitable for the changing needs of the users wherever they are either off campus or on campus. The following recommendations are presented for the discussion during the conference, which will allow libraries and LIS professionals to arrive at their own best solutions.

- **Measure and Evaluate the Library Experiences:** Begin the process of testing patron's opinions, ideas, thoughts, and figure out how to get at the heart of the things that matter most in your user and non-user community. Survey both the community at large and the people who walk through the library doors and access the library remotely. This evaluation helps to identify the SWOT and PEST of the library and information centres and also facilitate to prepare future plan with executable actions.
- **Embrace New ICTs:** New technology products are being introduced on a daily basis and the vast majority of people are totally lost when it comes to deciding on what to use and what to stay away from. Since no organization has stepped up to take the lead in helping the users understand the new technology, it becomes a perfect opportunity for libraries and librarians. LIS professionals need to become a resource for as well as the experts in each of the new technologies.
    - Create a technology advisory board and stay in close communication with them.
    - Recruit tech savvy members of the community to hold monthly discussion panels where the community at large is invited to join in the discussions.
    - Develop a guest lecture series on the new technologies.
- **Preserve the Memories of Communities of the Organization:** While most libraries have become the document archive of their community through developing Institutional Repositories/digital repositories for scholarly communication, history, heritage and cultural maturity of each community of the organization.
    - Libraries are changing and dynamic places and librarians are the **ultimate search engine**, helping people of all ages find the information they need in print and on-line.
    - Experiment with creative spaces so the future role of the library can define itself. Since the role of the library 20 years from now is still a mystery, we recommend that libraries put together creative spaces so staff members, library users, and the community at large can experiment and determine what ideas are drawing attention and getting traction. Some possible uses for these creative spaces include:
        - Podcasting stations
        - Blogger stations
        - Art studios
        - Recording studios
        - Video studios
        - Imagination rooms
        - Theater-drama practice rooms etc.,

6. Role of the LIS Professionals in the Changing Environment

Emergence of Information and Communication Technologies (ICT) offers lot of opportunities to redefine how information and associated instructions are communicated to users wherever they are. As information systems increase in complexity and new resources like digital resources or electronic resources continue to spring up, librarians are becoming indispensable counselors in the electronic environment. They are called upon to assist users in identifying, evaluating sources, and to serve as true advisors and teachers rather than as custodians of collections.

Librarians with a strong technological background will be essential in creating 21st-century library collections and services. It is clear that full-text article databases, electronic books, chat-based interactive technologies, videoconferencing, voice-over-IP applications, and streaming media have already impacted the services and roles of reference librarians. Understanding these varied technologies, including imaging technologies, Web markup languages, metadata, user interface design, Internet searching, and multimedia will be essential. As this paradigm shift occurs the librarians will be involved—developing seamless interfaces, help systems, delivering information to a variety of computing platforms, and coordinating this activity with computing and other personnel outside the library.

Librarians must understand the importance of a library's greatest commodity: information. While librarians have traditionally held a prominent place in the informational food chain, the explosion of information in recent years has made the efforts to harness it an insurmountable task. Still noted for their organization and access to information, librarians face an increase in interest and competition from the business sector. Many librarians debate the relative worth of a bookstore, a search engine, or an online business compared to a librarian's expertise, but the reality is that these competitors are indeed drawing patrons from the library and serving some of their needs.

Paradigm shift from Teacher centred to learner centred educational milieu enables the librarians and the users to work together, wherever each may be located; physical proximity is no long essential. It is equally unnecessary for the librarian to reside only in the library building; he or she can become as "distributed" as modern electronic information and work with faculty and students in their own spaces. Changing technologies and formats are also recasting the roles of librarians who collect, organize, and conserve information resources. Electronic collections will require new procedures for selecting and cataloguing, and librarians will confront critical new preservation and archiving challenges. Some tasks associated with print publications will disappear, allowing more time to be redirected to the instructional aspects of the librarian's changing role.

Librarians need to see themselves and their libraries as providing bridges to the past and gateways to the future. They need to establish partnerships, coalitions, and connections - technological, personal and organizational to ensure a central role in the twenty first century (Creth, 1996). They should aim to attain the following mission of ICT based libraries i.e.

- *Develop knowledge resources focused on patron's needs;*
- *Organize information resources in print and non-print considering the changing needs;*
- *Provide Human and technologically moderate access to information;*
- Design and develop innovative library services;
- *Build strong Network for effective dissemination of information;*
- *Provide continuing education and training; and*

- Evaluate at regular intervals about their collections and services with respect to the user needs.

7. Conclusion

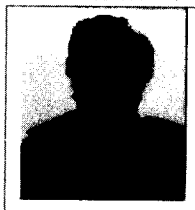
We have come a long ways from the time of da Vinci and the time when books were chained to lecterns. But we've only scratched the surface of many more changes to come. Writing the definitive history of modern libraries is a work in progress. Our best advice is to enjoy the journey and relish in the wonderment of what tomorrow may bring. In our fast-changing world, progress is too often seen as a zero-sum game, where innovation inevitably comes at the expense of the old. Yet libraries are showing that innovation always brings opportunity, too. While retaining its traditional functions, the library of the future will be home to myriad informational experiences, where great ideas happen, and people have the tools and facilities to act on them. In the future, Libraries will reinvent themselves by perfecting the path that they have now begun. They will become more of a fusion of physical and virtual realms.

To sum up a large number of people may never even see foot in a library, but at the same time they will consume many of the resources and services made accessible to them in Cyberspace.

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Status of Library Services and Facilities in Education College Libraries affiliated to Bangalore University: *A Study*

Jayarama Naik, K.G **Veerabasavaiah, M**

Abstract

The present study was conducted to know the availability of various information sources, services and other facilities available in Education College libraries affiliated to Bangalore University. The study followed the survey method using questionnaire as a tool for primary data collection from Education College libraries scattered in four districts such as Bangalore city, Bangalore Urban, Ramanagara, Chikkaballapura and Kolar. After the data collection same as entered into the M.S. excel sheet and transferred to SPSS package for inferential statistics and same presented in form of table and analyzed accordingly.

Keywords: Information resources & services, education college libraries, library stock variation and library automation

1. Introduction

Education is the life long process. It is the basic need to achieve knowledge of every individual. Its main aim is to national progress in any country in terms of social and economic development. It is directed to the strengthening of respect for human rights and fundamental freedom. India has been an independent nation for more than 65 years. The higher education programme receives a program for achieving the goal of the government 'Education for all'. The higher education provides potential in the most desirable form to young people in order to take up positions in the real life. It is not mere extension of school-teaching, it is supposed to be platform to develop oneself for a respectable position in society "through rational powers, rational decisions, imaginative process of oneself and for self expression, moral ethic, new ideas, innovations, experiments and research and self confidence".

According to Education Commission report the objectives of Higher Education are:

- To seek and cultivate new knowledge, to engage vigorously and fearlessly in the pursuit of truth, and to interpret old knowledge and beliefs in the light of new needs and discoveries.
- To provide the right kind of leadership in all walks of life.
- To provide society with competent men and women trained in all educational level.
- To strive to promote equality and social justice.
- To foster in the teachers and students and through them in society in general the attitudes and values needed for developing the good life in individuals and society.

There are excellent Education Colleges are to prepare teachers with good knowledge and skills. Teachers, laboratories and libraries are important equipments in providing effective Teacher Education. The libraries are the mirror for promotion and advancement of Education in all the institutions. The main purpose of the Education College libraries is to support teacher education, teaching and research. The objectives of a education college libraries is to assist educational, professionals in enhancing and updating their knowledge and skills, and to provide them information regularly new innovations, views, theories, and latest technologies adopted for better serving the library users. The primary goal of education college libraries is to collect, organize and dissemination of essential information for its users.

There are about 91 education colleges are functioning under affiliated from Bangalore University, Bangalore. A survey has been conducted to examine the present situation of its libraries i.e. to assess the extent of meeting the information requirements for users and to identify the drawback in the provision of services, so that the suggestions can be made to improve these libraries.

2. Review of related Literature

Review of related literature is an early step for conducting research. It enables to avoid the duplication of research work and broadens the understanding of the research problem. There are several research studies are done related to the present research study both at national and international levels. The study relate to the different aspects of libraries particularly use of libraries by students and teachers, their information seeking behavior, use pattern and user's satisfaction with the resources and services of libraries and physical facilities library administration, finance, document collection, library services and staff etc. In this context, reviews of related literature are selective and useful studies related to the present research topic have been attempted here.

Sohali et al., (2012) they attempted on "study on information seeking behavior of the students by University of Kalyani". They found in their study that the majority of respondents expressed their opinion about lack of library collections and guidance of searching documents. Singh (2008) attempted in his research article on 'user awareness towards using Internet in Jiwaji Univeristy: An analytical study - This paper says that 100% of respondents are expressed the use internet for e-mail purpose and more than 55.63% respondents use Google search engine. Choudhury and Sethi (2007) made a study on "use of text books by P.G. students in Sambalpur Universities". In this study they find that the user opinion regarding collections of text books are not satisfaction. Further they suggested that the computerization to render, quick and advanced services to the end users. Dhanavandan and Esmail (2007) they studied on "the use of information by computer science engineers in engineering colleges in Tamilnadu". They found in their study that the faculty members are visit to the library for the purposes of preparing journals articles, where as the students visit the library to borrow books. Majority of users expressed about collection is not sufficient. Chowukhande and Kumar (2004) they made a study on "An analytical study of information needs and use pattern of faculty members and research scholars of Amravati University". In this study they found that the majority of the users face the difficulty in accessing e-resources. They need guidance for the use of library resources. Mallaiah and Badami (1993) studied on the use of services and facilities of Mangalore University library. It covers 60 scholars. The majority of research scholars visited the library for consulting periodicals, barrow books some users are complained about the non availability of current issues of journals. Kumbar (1986) studied on "College Libraries under Gulbarga University Area: A Survey." He assessed the existing situation and statuses of 54 college's libraries were studied. He found that, there are only 12 libraries have their own library buildings; they spend more funds for books than periodicals and many of the users are not satisfactory about library services. Raina (1980) took up a study on "Degree College Libraries in Kashmir: A Survey." Analysis of the responses received from 10 libraries revealed that the text books collections were outdated. Majority of libraries follow close access system and funds are inadequate. Mukherjee (1965) made a study on "Library facilities in teachers training colleges of India". There are about 50 college libraries are surveyed. The study reveals that the majority did not have sufficient space for proper functioning. Some of the teachers say that they do not have their own libraries, Staff and students depended on university libraries. All most all the libraries are lack of indexing, abstracting services and inter library loan services.

Adebayo (2007) conducted a study on "library service standards implementation colleges of

education in Nigeria". The study reveals that the majority of users not satisfaction about indexing and abstracting services. Maughan (1999) made attempt on "users of University of California libraries, Berkley". The study reveals that 99% faculty were using library for research work. About 59% students are says their opinion on satisfied with circulation service. Awolola (1998) under took a studies on "College of education libraries in Kwara state (Nigeria)". He discussed the various problems of libraries related to finance, space, staff, collection and services etc. The study reveals that libraries facing lack of funds.

4. Objectives of the study

The study was designed and carried out to achieve the following objectives:

- To know the availability of various information sources and services in education college libraries under the study.
- To understand the status of the library automation in the libraries
- To know the internet facilities provided by the libraries.
- To study the period of library stock verification of documents in the library.
- To understand the librarian's role in the position of library committee.
- To know the financial resources of the college libraries.
- To know the separate library building for the library.

5. Methodology

- **Need and Purpose of the Study**

The libraries are the backbone for overall progress of the education system. At the same time its play is an important in providing quality of service to the users for their study and research, course assignment, teaching, extension and extra-curricular activities etc.

Due to the information explosion and the impact of information and communication technologies (ICT) many education college libraries providing better services both in print/ electronic service to user's community. In this context the present study is to understand the availability various information resources, service and other facilities in Education College libraries. This study will be help to suggest further improvement of education college library facilities.

- **Methods of Data Collection**

The present study has been adopted survey method using questionnaire as a tool for data collection. A well structured questionnaire has been designed and same distributed to education college libraries affiliated to Bangalore University. The questionnaire consists of questions like opening hours of library, library collection and services, physical facilities, library staff, acquisition, technical processing, circulation, stock verification and library automation etc.

- **Population and Sample**

There are 91 Education Colleges and libraries are chosen for the present study. Out of which there are 90 colleges are run by the private management and only one college under government control. The researcher selected all the 62 college libraries based on well functioning in terms students admission and continuation of affiliation are taken into considered for selection of sample study and same as distributed the questionnaire. Out of which 51 college libraries are responded positively.

6. Analysis and Interpretation of Data

The collected data have been analyzed according to the objectives of the study. Descriptive and Inferential statistics were used in the table and analysis is presented in the following tables.

6.1. Distribution of Respondents by Number of Education Colleges

There are about 91 Education College libraries offering B.Ed. courses. Majority (81) of education colleges are un-aided, followed by aided Colleges (11) and only one government Education College is affiliated to Bangalore University. Finally the researcher identified selected well functioning colleges in terms students admission and continuation of affiliation are taken into considered for selection of sample study. In total 62 colleges are identified and distributed the questionnaires to librarians. Out of which 51 colleges are responded positively and the rate of response is 82.25%.

Table 1: Number of Education Colleges

Sl. No.	Type of Colleges	Number of Colleges	Percentage
1	Un-aided Colleges	81	89.01
2	Aided Colleges	9	09.89
3	Govt. Colleges	1	01.10
	Total	91	100.00

6.2. Year of Establishment of Education College Libraries

It is observed from Table 2 that, the year of establishment of education colleges grouped under three categories. Majority 37 (70.56%) of the education colleges are established after new millennium and 8 colleges are established before 1980. Only 7 (13.75%) colleges are established during 1981-2000. It can be infer that the number of education colleges is established after 2001 to compensate with growing demand of the course along with increasing the population according to 2001 census.

Table 2: Year of Establishment

Sl. No.	Year of Establishment	Number of Colleges	Percentage
1	Before the year 1980	8	15.69
2	Between 1981-2000	7	13.75
3	After 2001	37	70.56
	Total	51	100.00

6.3. Gender-wise Distribution of Respondents

Out of 51 education colleges 36 (70.58%) libraries are headed by male librarians and remaining 15(29.43%) librarians are belongs to Female category. Male respondents are higher than the Female.

Table 3: Sex

Sl. No.	Description	Number of Respondents	Percentage
1	Male	36	70.58
2	Female	15	29.43
	Total	**51**	**100**

6.4. Distribution of Respondents by age

Majority of the librarians 36(70.59%) are in the age group below 30 year and maximum 40 years, followed by12(23.52%) are in the group of between 41 and 50 years and only 5.89% are in the group of Above 51 years. It was observed that the age group of education college libraries under the study well compensated in terms year of establishment of education college libraries.

Table 4: Age

Sl. No.	Description	Number of Respondents	Percentage
1	Below 30 years	17	33.33
2	Between 31 and 40 years	19	37.26
3	Between 41 and 50 years	12	23.52
4	Above 51 years	3	5.89
Total		**51**	**100**

6.5. Distribution of Respondents by number of years of experience

More than half (54.9%) of the respondents are having less than 5 years of experience, followed by 27.5% are in between 6 and 10 years, 11.8% between 11 and 20 years and only 5.9% are having above 21 years of experience.

Table 5: Number of years of experience

Sl. No.	Description	Number of Respondents	Percentage
1	Less than 5 years	28	54.9
2	Between 6 and 10 years	14	27.5
3	Between 11 and 20 years	6	11.8
4	Above 21 years	3	5.9
Total		**51**	**100.0**

6.6. Library and Information Services offered by the Education College Libraries

Library and information services offered by the education college libraries are presented in table 6. The majority of the libraries 42(82.4%) offers circulation service, Followed by the reference service 39 (76.5%), News paper clipping service 30 (58.8%), Reprography service 23 (45.1%). The online searching and e-mail services are 19 (37.3%). Inter Library Loan service only 3 (5.9%), SDI 7(13.7%), indexing and abstracting services 9 (17.6%) respectively. Further e-journals 6 (11.8%), and CD-ROMs database service 8 (15.7%) respectively.

Table 6: Types of information services provided by the libraries

N=51

Sl. No.	Types of Information Services	Number of respondents	Percentage
1	Circulation service	42	82.4
2	Reference service	39	76.5
3	Inter Library Loan service	3	5.9
4	Current Awareness service	23	45.1
5	SDI Service	7	13.7
6	Indexing and abstracting service	9	17.6
7	Reprography service	23	45.1
8	Bibliography service	17	33.3
9	Newspaper clipping service	30	58.8
10	E journals service	6	11.8
11	Online Searching service	19	37.3
12	CD ROM Databases service	8	15.7
13	e-mail service	19	37.3
14	intranet - LAN service	9	17.6

6.7. Sources of Library Budget

Table 7 indicates about the different sources finance to library to purchase library books, subscription to library journals, news papers and magazines and development other infrastructure facilities. There are 44 (86.3%) management institutions are providing finance to the libraries. Followed by the collecting library fees 20 (39.2%), overdue charges 13(25.5%). There are 6 (11.6%) libraries are getting financial support from State Government and only 5 (9.8%) of each colleges received the grants through UGC and donation from donors.

Table 7: Source of Library Budget

Sl. No.	Funding agencies	Number of respondents	Percentage
1	UGC	5	9.8
2	State Government	6	11.8
3	Managements	44	86.3
4	Donations	5	9.8
5	Library fees	20	39.2
6	Overdue charges	13	25.5

6.8. Position of the Librarians in Library Advisory Committee

The status of librarians in library advisory committee is presented in table 8. Out of these are 51 libraries majority 28 (54.9%) of the libraries were expressed that, they were not member of library advisory committee and only 23 (45.1%) of librarians were expressed about library committee member.

Table 8: Position of the Librarians in Library Advisory Committee

Sl. No.	Answer	Number of respondents	Percentage
1	Yes	23	45.1
2	No	28	54.9
Total		**51**	**100.0**

6.9. Library Stock Verification

The above table 9 indicates about the period of stock verification of documents. Majority of 35 (68.6%) libraries are followed stock verification every year and followed by 10 (19.6%) libraries are conduct twice in a year. Only 6 (11.8%) libraries are conduct once in three months.

Table 9: Periodicity of Stock verification

Sl.No.	Period	Number of respondents	Percentage
1	Every year	35	68.6
2	Twice a year	10	19.6
3	Once in three months	6	11.8
Total		**51**	**100.0**

6.10. Status of Library Automation

Follow from the above table 10 it is noticed that, the majority 30 (58.8%) of the libraries are not follow library automation. The remaining 21 (41.2%) libraries are followed library automation by using various related software.

Table 10: Status Library Automation

Sl. No.	Answer	Number of Respondents	Percentage
1	Yes	21	41.2
2	No	30	58.8
Total		**51**	**100.0**

6.11. Internet Access facilities offered by the education college libraries

Table 11 indicates opinion about the internet service in education college libraries under the study. The majority 40 (78.43%) of libraries are not provide internet services and only 11 (21.57%) libraries are providing internet facility for users.

Table 11: Opinion about the internet service

Sl. No.	Answer	Number of respondents	Percentage
1	Yes	11	21.57
2	No	40	78.43
Total		**51**	**100**

6.12. Availability of separate library building

Table 12 relates to opinion about the separate library building. There are 49 (96.1%) college libraries not having separate library building. Only 2 (3.9%) libraries are having separate library building.

Table 12: Opinion about Separate Library Building

Sl. No.	Answer	Number of Respondents	Percentage
1	Yes	2	3.9
2	No	49	96.1
Total		**51**	**100.0**

7. Major Findings of the Study

- The growth and development of education college libraries has shown a spectacular development, the year during 2001 to 2005 has shown the seed for the establishment large number of 31 education colleges under the study region.
- Out of 51 education colleges 36 (70.58%) libraries are headed by male librarians and remaining 15(29.43%) librarians are belongs to Female. Male respondents are higher than the Female.
- Majority of the librarians 36(70.59%) are in the age group below 30 year and maximum 40 years, followed by12(23.52%) are in the group of between 41 and 50 years and only 5.89% are in the group of Above 51 years.
- More than half (54.9%) of the respondents are having less than 5 years of experience, followed by 27.5% are in between 6 and 10 years, 11.8% between 11 and 20 years and only 5.9% are having above 21 years of experience.
- It is observed from the analysis the opening and closing hours of the library is very from library to library. But most of the libraries 21.57% are opening during 10.00am to 5.00pm following that 17.65% opening 9.00am to 5.00 pm.
- From the study it reveals that most of the 44 (86.3%) education college libraries are received the financial assistance from the parent institutions, followed by library few i.e., 39.2% libraries and remaining libraries are compensating the library budget through collecting overdue charges (25.5%) and only few libraries (9.8%) are received grants from UGC.
- The study depicts that majority 49 (96.1%) of the education college libraries are not having independent library building for smooth and better functioning of library services and activities only 2 colleges are having separate independent building for library.
- Out of 51 education college libraries 35(68.6%) are conducting annual stock for its resource verification and rectification and remaining libraries are conducting stock verification twice a year (19.6%) and once in six months (11.8%). On the other hand more than half of the libraries (53%) are conducting stock verification using a separate sheet containing accession numbers verifying method; followed by accession register (23.5%) and only a few libraries (15.7%) are adopted separate register with accession number.
- It was known fact observed from the study is majority of the education college libraries (82.4%) are provided circulation services, followed by reference services (76.5%),

newspaper clipping services (58.8%) and only few libraries are providing 5.9% Inter Library Loan Services.

- It was strongly observed from the study more of the half of the education college libraries 30 (58.8%) were not automated and remaining 21(41.2%) were automated their libraries.

7. Conclusion

The education college libraries are providing various kinds of information service. There are more number of management colleges are established. They must spend more funds on purchase of information sources and service. Some of the colleges are lack of library building and internet services. Therefore the libraries are needed to further improvement their collections, services, and raising funds. The libraries need to introduce promotional activities that it helps to increase awareness and usage of information. The main objectives of the library are to obtained self sufficiency in their resources and provide an optimum level of services to reach more potential users and encourage the effective use of library resources and services.

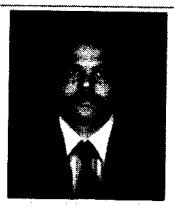
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Status of Selected College of Education Libraries in Wardha District of Maharashtra: *A Survey*

Ghangare, Milind B. **U. P Nalhe**

Abstract

A questionnaire based survey on the status of selected seven colleges of Education in Wardha district of Maharashtra. Study reveals that the staff strength in the libraries was insufficient and that only two libraries had computers. The article concludes that the college of Education studies needs to strengthen their libraries so as to achieve the objectives and goals of the colleges.

Keywords: Status, Libraries, standards, Education College

1. Introduction

In Independent India, government has played a significant role in teacher education. The National council for Teacher Education (NCTE) was established in 1973, first as an advisory body to advise central and education. But it had no regulatory powers to check falling standards of teacher education. Finally NCTE was given statutory status by an Act of parliament in 1995 for the purpose "to achieve planned and coordinated development of the teacher education system throughout the country." Education has the most significant role in the lives of all human beings one may grave for or against a particular system of education but the vital role of education in one's life is not debatable. This unanimity soon withers away when one delves with the details of imparting education to a defined group.

The District of Wardha has at present a network of 11 colleges offering B.Ed. course; 04 of these also offer M.Ed. degree course also. Some of these colleges have a long history and some of these have been newly opened. During the present decade there has been tremendous growth in the teacher education institutions particularly in the self financed sector.

2. College of Education Libraries

The college of education library like any other library affiliated educational institution primarily contributes to the teaching learning process by providing various information and learning resources for successful completion of the course programs offered by the institution.

The regulatory body for teacher education in India, NCTE, has framed elaborate norms for libraries of colleges offering different teacher education courses. For a college offering B.Ed. course (with an intake of 100) the position of librarian is placed under technical support staff. It is prescribed that one full time librarian should be there whose qualifications should be as prescribed by state Government. The librarian appointment like other employees should be made on the basis of recommendations of the selection committee constituted as per the policy of the UGC / Affiliating University.

Regarding library infrastructure NCTE has prescribed that in each college there shall be a library-cum-reading room with seating capacity for at least 25% students equipped with minimum 1000 titles and 3000 books including text and reference books relevant to the course of study, educational encyclopedias, yearbooks electronic publications (CD-ROMs) and minimum five Journals of teacher education and subscription to five others in related disciplines. The library holdings shall be augmented with additional 200 titles annually. The library shall have photocopying facility and computer with internet facility for the use of faculty and student teachers.

In the service areas like reading room or Internet facility "space shall not be less than 10 sq. ft. per student."

For the colleges offering M.Ed. course, the number of technical staff shall be as per the norms prescribed by the university / state Government. Regarding infrastructure it states that there shall be a library-cum-reading room facility for at least 10 students and equipped with minimum 2000 titles including text and reference books related to all courses of study. Educational encyclopedias, electronics publications (CD-ROMs) and minimum five professional research journals and Internet connectivity. At least 100 quality books will be added in the library every year.

3. Objective of the study

1. To find out about the availability of physical infrastructure like space, furniture items. IT infrastructure, etc.
2. To know about the status of IT applications in library systems and services, and
3. To understand collection strength, user services, staff status, etc.

4. Methodology

Most of the colleges of education in Wardha district have come into existence only in the last five to six years. Some of them one still engaged in building basic infrastructure. The study was intended to know the current status of college of education libraries in the Wardha district all their colleges of education affiliated to RTM Nagpur University, Nagpur. At the time of conducting this study in June/July 2012, there were 11 colleges of education in these districts.

A questionnaire was prepared and personally administered to the 7 libraries and responses of 7 libraries were received which were subjected to analysis.

5. Analysis and Interpretation of Data

6. Respondents Profile

The response of 07 libraries has been analyzed in the following sections. Analysis has been limited to frequency.

Table - 1 Respondents Profile

Sl. No.	Characteristic		Frequency	Percentage
1.	Location Rules	Rural	03	43%
		Urban	04	57%
2.	Library Building	Yes	04	57%
		No	03	43%
3.	Courses offered	B.Ed.	05	71%
		M.Ed.	02	29%
4.	Period of existence	< 10 Yrs.	05	71%
		10-20	01	14.5%
		> 20 Yrs.	01	14.5%
5.	Membership	< 100	02	29%
		100-150	04	57%
		> 150	01	14%

Table 1 seen that seven colleges from Wardha district responded to the study. About 57%

colleges are located in urban area and 43% are rural area. About 57% institutions had a separate library building some time spread over more the 1000 sq. mtr. Area, otherwise, most of most of the libraries were functioning in an area ranging between 200-500 sq. meters. 71% college offered only B.Ed. Course and remaining 29% were offering M.Ed. course also and about 29% libraries had less than 100 members and 57% had between 100-150 members while 01 library had more than 150 members.

7. Library staff

Table 2 gives the staff situation in the responding libraries all the libraries have the librarians position filled. In addition, one college had assistant librarian. Two had library assistants and 07 college libraries had other support staff also. As for as staff strength is concerned, majority of the libraries (43%) had only one person, two libraries had three persons. When the librarians were asked whether the present staff strength was sufficient, 70% responded negatively. In the present survey 05 responding librarians were post graduate in library and information science.

Table – 2 Library staff

Sl. No.	Characteristic	Frequency	Percentage
1	**Staff status**		
	Librarian	07	100%
	Asstt. Librarian	01	14.5%
	Lib. Asstt.	02	29%
	Support staff	05	71%
2	**Staff strength**		
	One person	03	43%
	Two person	02	29%
	Three person	02	29%
	Four person	--	--
	More than four	--	--
3	**Qualification of the librarian**		
	Ph.D.	01	14.5%
	P.G. (Master in Lib. Sci.)	05	71%
	Graduate (Lib. Sci.)	01	14.5%

8. Library collection Development

Library collection is not acquired in a haphazard way. It needs to have a well thought out policy and procedures.

Table – 3 Collection Developments

Sl. No.	Characteristic	Options	Frequency	Percentage
1	Book selection Policy	Yes	2	28.57%
		No	5	71.32%
2	Book selection committee	Yes	4	57%
		No	3	43%
3	Book ordering frequency	Monthly	1	14.5%
		Six monthly	2	29%
		Yearly	4	57%
4	Book acquisition procedure	Director order	3	43%
		Vendor	2	29%
		Quotation	2	29%
5	Periodicals acquisition procedure	Direct order	2	71%
		Vendor	2	29%

Table - 3 shows the collection development policies and procedure followed in the responding libraries. 72% libraries had a book selection policy while 57% libraries had book selection committee. The committee member included librarian, faculty of the concerned subject and the director / principal of the Institution. Book ordering took place several times a year in some libraries. However, in one library the frequency was almost.

9. Status of Library Collection

Table - 4 presents the status of library resources at the time the study was conducted. 57% libraries had a collection up to 5000. All these libraries were part of colleges established during last five years. The older institutions had relatively large collection. 14.5% only one library had more than 20000 documents in their collection. The same trend is visible in subject periodicals and magazines seventy one percent libraries were subscribing up to 10 periodicals while one library are subscribing more than 20 periodicals. Similarly, 85.5% libraries were receiving up to 10 magazines. 14.5% libraries between 11 to 20 85.5% libraries were getting 3-5 newspapers while remaining 14.5% library receiving between 6-8 newspapers daily. All the seven libraries had audio-visual documents in its collection.

Table - 4 Library Collections

Sr. No.	Characteristic	Options	Frequency	Percentage
1	All types of books	Up to 5000	04	57%
		5001-15000	02	29%
		15001-20000		
		More than 20	01	14.5%
2	Current subject periodicals	Up to 10	05	71%
		11-20	01	14.5%
		More than 20	01	14.5%
3	Magazines	Up to 10	06	85.5%
		11-20	01	14.5%
4	Newspapers	3-5	06	85.5%
		6-8	01	14.5%
5	Audio - visual Material	Yes	07	100%
		No	--	--

10. Library Services

Library services help in using the collection, in the best possible way. The modern library services have broken the traditional boundaries of place and started delivering from outside the confines of four walls.

Table - 5 Library Services

Sl. No.	Characteristic	Options	Frequency	Percentage
1	Access system	Open	05	71%
		Closed	02	29%
2	Library orientation	Yes	07	100%
		No	--	--
3	Reference services	Yes	07	100%
		No	--	--
4	Photocopy service	Yes	02	29%
		No	05	71%
5	Reservation of books	Yes	03	43%
		No	04	57%

Table – 5 show the library services being provided in different colleges of education. Majority of the libraries (71%) had open access system. All the 7 libraries had some sort of library orientation programme all the libraries were providing reference service to their users. 29% libraries had photocopy facility for their users. 43% of the libraries also had reservation facility for books on loan.

11. Information Technology infrastructure and its application

Availability and use of IT is no longer new to libraries. However there are wide variations among different libraries. Many libraries have made substantial advances in this direction, while some others are planning in early stage of implementation.

Table – 7 IT Infrastructure

Sr. No.	Characteristic	Options	Frequency	Percentage
1	Computer system	One	03	43%
		Two	01	14%
		More than two	--	--
		No system	03	43%
2	Printer	Yes	04	57%
		No	03	43%
3	Scanner	Yes	02	29%
		No	05	71%
4	Library software	Yes	02	29%
		No	05	71%
5	Internet	Yes	03	43%
		No	04	57%

Table – 8 presents IT infrastructure available in the responding college libraries. Only four libraries had computer system. Three libraries (43%) had one system and one library had two computers of these four all had printer while two libraries had a scanner. Two libraries which were having readymade library software. Three of the responding libraries had Internet facility, and they were offering e-mail and web-surfing services to their users.

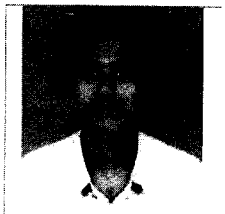
12. Conclusion

The findings of the present study and personal observation of functioning of the college of Education libraries reveal that staff strength in the libraries is a major cause of concern. There is an urgent need to fill in the existing vacancies in these libraries and raise the staff strength to an optimum level so that these libraries can achieve their objectives successfully and also improved include library collections and IT application in the libraries college of education libraries in Wardha district, it is expected that the situation may improve as these institutions grow.

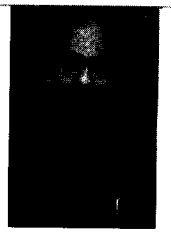
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Authors Profile



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User's Information library through online & offline Resources in Nutan Maratha College Jalgoan

Shamkant Deshmukk **More Balaji Kondiba**

Abstract

The Soul objective of any library makes possible efforts to achieve the goals and objectives of the parent organization by catering need of the users. A Periodical review and evaluation of collection and services of the library is highly essential to provide effective and efficient library services. It is crucial to design and develop library services which will assure maximum users satisfaction. The aim of this paper is study the information literary application in the library as a tool to provide efficient services to the user's of Nutan Maratha college Jalgoan, Maharashtra (India). For collection of data a questionnaire based survey method will be adopted. It can be conclude that applying information literary the library staff will come to know its lacking areas and will be helpful for Improvement in better services.

Keywords : Information, literacy, , Visual literacy, Media literacy, computer literacy, digital literacy, Network literacy, library literacy

1. Introduction

Information literacy the 21th century had after been considered as the age of information and technology. Societies are restructuring them salve in way that react to technology social and economic change. Recognize when information is need and have the ability to locate. Evaluate and use effectively the need information "in 1974 PaulMurkowski, president of information industry association, introduces the concept of it" in a proposal submitted to the national commission on libraries and information science (NCLIS).

IL is and ability to find use and communicate information it is the key stone of lifelong learning. The ability to read and write only defines literacy but dues not defend information literacy in today. Environment nowadays the concept of information literacy includes both computer literacy and it information literacy people are effective consumer of information. They are critical thinkers and self-directed learners they use and communication information effectively and repose sibyl every member of the society should be equipped with information literacy skills so as to be able to succeed in school college, university, profession and in his or her daily life in order to gain IL.

2. Definitions of the term

Information: information can be defined as "the meaning that a human assigns to data by means of conventions used in their presentation."In order words, information is data that has given shape. It may be considered as processed data. Thus, information is data plus the meaning, which has to be a result of human action.

Literacy: The term literacy is derived form Latin word literates meaning ability to read, write and understand native language and expressing a simple thought in writing. In other words literacy can be defined as riding, writing and calculating ability and making use of that ability for his/her and community's development.

Information literacy: The term "information literacy" was first introduced in 1974 by Murkowski. To be information literate requires a new set of skills theseincluded how to locate and use information needed for problem solving and decision making efficiently and effectively. "Information literacy is a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information".

3. Definition of Information literacy:

- **Paul Murkowski:** first definition of information literacy in 1970 as "people trained in the application of information resources to their work can be called information literates they have land techniques and skills far using the wide range of formation tool as wellsprimary sources in molding information solution to their problems."
- **(ALA)** American library association's presidential committee on information literacy in its final report states that, "To be information literacy a person must be able to recognize when information is need and have the ability to locate, evaluate and use effectively the needed information."

4. College Profile:

The Nutan Maratha College Jalgoan, Maharashtra (India) was established by J.D.M.V.P. Co-op. Samaj in 1972.

Courses offered and annual intake of student

Sr. No.	Particulars	Courses	Intake
1	Undergraduates	1st to XI & VII	9500/-
2	Degree courses	B.A. B.com, B.Sc.	4000/-
3	Post graduate courses	Pol. Science, Sociology, History, Geography.	1500/-
4		Total	15000/-

5. Library

A college having well equipped library, our goal throughout has been to strive for excellence and each day we take a step forward in time and near to our goal that is to provide reading material to our faculty and student, ultimately resulting to fulfill our institute goal.

6. Data collection

All data collected from college library in year 2011-12 online offline resources and services by sharing views with library staff.

Offline resources in library year 2011-12

Sr. No.	Particulars	Total
1	Books	85000
2	Journals	150
3	Newspaper	018
4	Bound volumes	1200
5	Thesis, Dissertation, Project, Report	350
6	Audio-Visual Material	500

Online resources in library year 2011-12

Sr. No.	Facility	Online
1	Internet	P
2	Book	P
3	Wifi	P
4	e-book	P
5	e-Joumal	P
6	N-list http://nlist.inflibnetac.m	-
7	Book volumes	P
8	Online public access cataloger	-

7. Objectives

- To know the information literacy rate of college.
- To find out user's awareness about information literacy.
- To know which library information literacy services provide to student or users.
- To find out user's satisfaction for library services.
- To recognized an information gap.

8. Methodology

For collecting necessary data a questionnaire based surrey method was adopted. Keeping in view the objectives in mind a questionnaire is prepared with multiple choice to collect data from higher secmdary, degree, post graduate student in college. 300 questionnaires have been distributed to the users and 250 questionnaires were retimed by the respondents with response being 83.33%.

9. Scope of information literacy

Broadly information may be presented in a number of formats; the term "information" applies to more than just the printed worked. Other literacy's such as:

- **Visual literacy:** When we look at visual information such as photographs, illustrations, orcoputer graphics, we rely on our previous perceptions of the world to make sense of the visual images. Visual literacy is defined as the ability "to understand and use images, including the ability to think, learn and express oneself in terms of images, including the ability to think, learn, and express oneself in terms of images."

- **Visual learning:** Visual learning refers to the acquisition and construction of knowledge as a result of interaction with visual phenomena.

- **Visual thinking:** Visual thinking involves the ability to organize mental images around shapes, lines, colors, textures and compositions.

- **Visual communication:** Visual communication uses visual symbols to express ideas and convey meaning. Visual communication may be accomplished by using a camera or computer graphics programmers

- **Media Literacy:** Media literacy refers to critical thinking in assessing information made available through television, radio, newspapers, magazines and increasingly the internet. In turn, quoting the second Cox report states that: "Media education seek to increase children's critical understanding of the media... How they work, how they produce meaning, how they are organized and how audiences make sense of them."

- **Computer literacy:** Computer literacy is usually associated with technological know-how to manipulate computer hardware and software. Computer literacy is familiarity with personal computers and ability to create and manipulate documents and data via word processing, spread sheets, databases and other software tools. Often these skills are taught out of context in special computer classes.

- **Digital literacy:** Digital literacy considers broad range of resources that are accessible online and underscores the importance of looking at each of the resources with a critical eye. Emphasis is placed on the format of the information presented and the special considerations that each type of resource presents.

- **Network literacy:** Closely related to computer literacy is "network literacy," a term that is still evolving. To locate, access, and use information in networked in a networked environment such as www users need to be bet work literate.

- **Library literacy:** Library literacy refers to competencies in the use of libraries (collections and services), the ability to follow a systematic search strategy to locate and evaluate the most relevant information on a given topic.

10. Information literacy In college

Information Literacy services graph-1

Discussion:

Observation of data available showed online and offline facilities provided by library.

Table-1 Indicate total user's of college.

Table-2 Offline resources in library

Table-3 Online resources in library

Graph-1 Indicate different tupelo of information literacy in college.

Conclusion:

From the study conclusions can be drawn that.

- Out of 250 user's 225 users visual literate. Visual literacy in college is highest then other i.e. 90%.
- Out of 250 user's only 75 user's are network literate. Networking literacy is very low i.e. 30%.
- Percentage of media and computer literacy is medium i.e. 60%.
- There is need of more digital and Networking literacy to user's.
- Overall at jalgoan district place information literacy in nutan Maratha college jalgoan is good.

Acknowledgement

Authors are grateful to Dr. Deshmukh L.R. Principal of the college Nutan Maratha College Jalgoan.

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Bodily/Kinesthetic Intelligence among Master's students in Library and Information Science Schools in South India: *A Survey*

Baskaran, S

Abstract

This paper identified the Bodily/Kinesthetic intelligences among the MLIS students studying in South Indian Library schools. The examination of the possession of Bodily/Kinesthetic intelligences as propounded by Howard Gardner in his Theory of Multiple Intelligences has been examined among students of Library and Information Science in South India.

Keywords : Kinesthetic Intelligence, LIS schools, Multiple Intelligence

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Challenges of Human Resource Management in Academic Libraries

Lalitha, R

Abstract

The implementation of an information commons in an academic library has a significant impact on human resource concerns in the organization. The success of the project relies on the application of change management strategies. The information profession is a service industry, and it cannot function without staff to manage information and serve the consumers of that information. Therefore, a successful information commons is dependent on the staff that implements and carries out the service. This paper focuses on human resource management, the decreasing supply of qualified professionals, identified several causes and shows ways towards the further development of libraries.

Keywords : Information commons, academic libraries, HRM, change management

1. Introduction

Libraries in varying academic environments have undergone tremendous change during the last two decades of the 20th century as they have sought redefinition as learning organizations. As organizations they have experienced significant changes in the role and definition of professionalism, along with challenges from such shifting workplace demographics as age and ethnicity and technological issues, which have also had direct impact on the recruitment and retention of staff. Much of the attention of human resources administrators in academic libraries has focused on an array of issues that mirrors concerns across campuses: affirmative action and diversity. Take an in-depth look at the changing human resources needs of libraries, which plan to be active participants in creating information based society. In Human Resources Management in Libraries, educators, library administrators, and human resources managers will find helpful insights into the vital role they can play in attracting pro-active people to the profession, changing current library structures and staffing patterns to meet emerging information needs, and developing existing staff to cope with conflicting demands. Librarianship is experiencing a labor gap between increasing demand for library and information science professionals and a declining supply of qualified individuals – resulting in an increasing number of unsuccessful recruitment efforts.

2. Human Resource Management (HRM): A Concept

Human resource management is the management of an organization's workforce or human resources. It is responsible for the attraction, selection, training, assessment, and rewarding of employees, while also overseeing organizational leadership and culture, and ensuring compliance with employment and labor laws. In circumstances where employees desire and are legally authorized to hold a collective bargaining agreement.

3. Factors affecting recruitment

- The aging of the general labor supply and of the library profession leading to an increasing number of retirements;
- One of the lowest unemployment rates;
- The flat or declining number of Masters of Library and Information Science (MLIS) graduates;

- Increased competition from other career sectors (e.g., private sector, corporate libraries, technology and dot.com companies);
- Less than competitive salaries; and
- A lingering negative image of the profession.

4. Strategies for the recruitment and retention of library professionals

- Human resources officers and academic librarians to give seminars to library science students. Academic institutions and libraries have numerous opportunities for enhancing the effectiveness of recruitment efforts through more effective marketing of the benefits of the academic environment and a streamlining of the search process. Institutions are encouraged to consider geographic factors and promote the benefits of their surrounding community.
- Revamping placement services and employment websites, developing new recruitment and advertising models to take advantage of new electronic media, and establishing fee-based recruitment services. Library and information science programs are encouraged to poll LIS students about their interests in academic libraries, develop and offer internships and apprenticeships, and invite Human Resources Issues in Academic Libraries
- Understanding the needs of employees at the various stages of their careers, as well as the reasons for staying with a job or seeking a new one, is one key to developing retention strategies. Professional associations and MLIS programs can assist in this respect by conducting regular periodic job satisfaction surveys that would help shed light on how and why MLIS graduates make the job and career choices they do.
- Academic libraries are encouraged to examine individual employee needs and consider such retention factors as: salary & benefits, position responsibilities, opportunities for growth and development, opportunities for advancement and promotion, quality of work-life, and relationships with supervisor and colleagues.
- In order to more effectively restructure library education, library educators need to have more interaction with library employers about needs. Library schools are encouraged to survey library employers on a regular basis and to work with professional organizations to establish formal continuing education systems and credentialing. Placement officers are encouraged to work more closely with human resources officers in academic libraries to facilitate placement.
- The restructuring of the library workforce that has begun and will undoubtedly continue requires rethinking jobs and job qualifications. Professional associations should consider developing meaningful salary and position analysis surveys that incorporate updated models reflecting job content, qualifications, type of environment, etc.
- Academic libraries must recognize the need to employ more types of professionals other than MLIS librarians, consider continuing education and career development for existing staff (e.g. "grow your own" strategies), establish core competencies for all levels of staff, and focus recruitment on those competencies and skills needed for the position.

Conclusion

To summarize, the creation of an information commons involves a variety of human resources issues. The abilities and roles of staff members must be managed to fit them into the

integrated service model. The values of cooperation and adaptability must be fostered amongst staff members. The causes of resistance to change must be carefully considered and alleviated through communication and training. All of these changes are intertwined with the culture of the organization itself). Even after staff have adapted to the immediate superficial changes presented by the information commons, they will need to internalize any new policies, values, and interpersonal relationships that will have a long-term presence in the organization. The fact that attitudes, more than skill sets, allow library staffs to adapt to new service models. Information commons are designed to foster learning. It is apropos that the library itself should have the culture of a learning organization, which above all is designed to allow change to take place The effective implementation of an information commons requires an alignment between the learning ethic of the organizations culture and the management actions that take place in the realm of human resources.

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Effective Librarianship through Leadership

Pravin Kumar Choudhary **Shokeen, N.S.**

Abstract

This article deals with the necessity for consolidation of Library professional and its leadership. The authors also illustrate different ways through which image building for LIS professional can be made. It also advocates effective leadership and commitment on the part of professional bodies for overall growth of profession and prosperity of library professionals.

Keywords : Library Leadership, Library Professional, Team management

1. Introduction

Library, Librarian and information science professionals (LIS) today stand at a crossroads. We found Library & LIS professionals are struggling for survival, maintaining competitiveness and breaking away. As Gartner, Inc (2004) suggests that solution for improvement in the situation lies in three folds strategies for these organisations and professionals. The organisation who are fighting for survival need to place most emphasis on building new IS organization, organisation that is maintaining competitiveness needs to focus on IT governance and breaking away organisation need to start with developing a compelling vision. It is evident from the fact that the role of each LIS professional is changing and changing mainly because of two perspectives- *Information Technology and decreasing reading habits of Library and information centre users.* It is agreed fact that irrespective of whatever critical views we opined, the technology is playing a foundational, if not a central role in virtually every products and services we offer.

2. Question is how to Start

There are many ways in which we can start with. The basic two steps from which we can start include:

- we must lead, not just manage
- Second we must know our system/enterprise inside and out as thoroughly as, if not better than our executive colleagues do.

3. Leader's seven new priorities

Let us discuss in detail seven new priorities of leader of today, particularly in context of libraries

3.1. Lead, don't just manage

- **Status:** Most of us will agree that LIS professionals at the helm of administration are mostly engaged themselves in managing the routine works. We have also observed that service to the users has been given least importance in most of our library and information centres. Competency development for service providers (LIS professionals interacting with information users) is ignored to some great extent.
- **Solution:** We need to find out the solution 'how to lead the team and come out from the shell of managing the systems'. We have found simple solutions for this issue. As

a leader we need to develop Communication Skills (both oral and written), which majority of us need, either you accept openly or give a sincere thought to it. Please remember proper communication is key to become a successful leader. It will also help you in managing your system and services smoothly and you will get sufficient time to lead the team form the front.

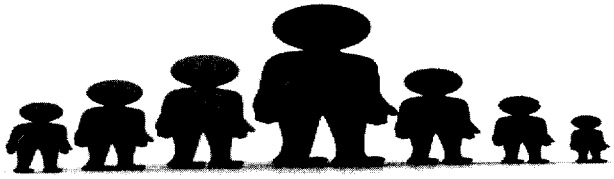


Fig.1 Showing Visible Team Leader

As we mentioned Competency development for LIS professionals at front is ignored to some great extent. We have found that in majority of cases Library and information centre management in the name of professional development recommends the name of professionals for attending seminar, conference and workshops once or twice a year. We professionals after attending such events hardly find space to even apply one percent, what we learn from the participation. We propose that true competency development can be achieved only when training and development is designed and customized as per the system requirement. Developing communication skills for front end LIS professionals is equally important to start with for competency development. We should also encourage for attending national and international conference for furthering the improvement, new implementation and development in Library and information systems and services. This will help in improving library services and also proactive library services to the information user groups.

We would also like to emphasize here that as a leader we somehow have lost our creditability. We need to regain it, which we can do by existing resources the information services and also organising through resource sharing, reference and referral services.

Following sketch is eye opener for us and is guiding how to regain creditability as a leader of our own domain.

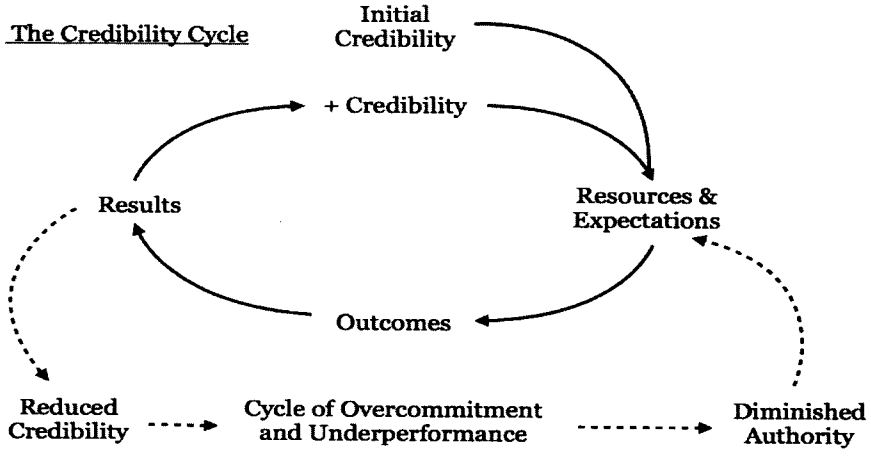


Figure 2 : Credibility Cycle (source CIO Leader, Gartner Inc. 2010)

3.2. Understand the fundamentals of environment

Status: We LIS professionals are working in different internal and external environmental conditions. Our LIS teachers, who groomed us don't want to be named as belonging, to be from the same Library profession. We need to fight form within also, as we need to fight with external factors.

We as a profession are continuously losing ground. The organization in most of the cases perceived library as a liability. We as a Library custodian, are not in most of the cases show our important pivotal role and visible identity to our administrative functionalities at different levels.

- **Solution 1**

In these critical conditions we need to start a fresh, irrespective of where we stand. Two front strategies are required to be taken i.e. information services at the core of strategy and resource building at the other. By information services, we mean services to the user to the extent possible augmenting resources from within and resource sharing and facilitate through personal and institutional networking at the other end. With this initiative more and more user will start using the library services, there will be greater demand from library, and a reading culture will culminate within our organization. The result will then reflect in performance of system say better academic performance, research output and better decision making with the input of timely, accurately and recent information. This will be the start of feel good factor for the organization.

We strongly feel with this start the environment will be become conducive for library where resources will be made available with any prejudice. Then come SWOT analysis and we will suggest we should start here from THREAT analysis and last to STRENGTH. This will be help in regaining credibility, which we mentioned in ours.

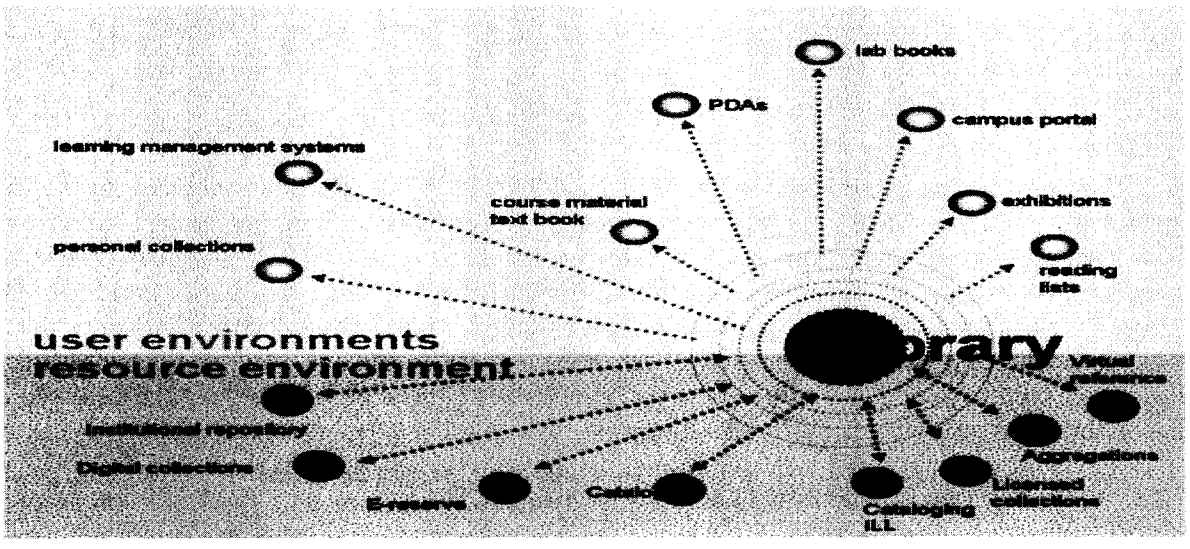


Figure:3 Showing Library environmental components

Some more *tips* for understanding the environment:

- Know your organization and competitive environment
- Know your operational fundamentals of your organization
- *Understand* the strategic intent of your enterprise that may be for operational

excellence, customer (information user) intimacy, product/ service leadership and innovation

- Understand the organization's basic business outlook that may fighting for survival, maintaining competitiveness, breaking away to move ahead of competitors.
- Engage key decision makers and stakeholders

Situation 2

Second strategy to get back identity for library professionals. Why we are saying this ? I have strong evidence to mention that most of us feel shy to be named ourselves as Librarian or library professionals. I found at many a forum very senior professionals and teachers of library schools, say that librarian as a professional is dead and being buried in due course of time. They are treating the situation cancerous, which cannot be cured. My question to them is that they had have tried ever to find the solution, taken steps to improve the situation or feel defeated without fighting to cure the ailments which has engulfed the profession.

We are of the view that, we need to understand the problems properly and motivation from within. We invite all library professionals to understand that problem in our profession is NOT UNDERSTANDING THE PROBLEM. We say our job will be taken over by technocrats in due course of time. If that will be case, professions like medicine, engineering which use many equipments and software will be taken over by the professional, who are developing those equipments. The content of library courses at different levels is not being upgraded as per the changing market demand. The authority at the helm of course revision are reluctant and against to the major shift in course content. They are fearing loss of superiority and vulnerability of their position, because most of Library school teachers are not keen to upgrade themselves. There is superiority complex among teachers of library schools. Common understanding among professionals and professional bodies are missing. There is mushrooming of library associations in the name of regions, subjects and individual aspirations etc.

Solution 3

We need to consolidate professionals. Personal aspiration need to be sidelined for the cause of profession. Course content need to be revised as frequently as demand comes. Hand on IT enabled training need to be imparted at different professional levels. Courses on motivation, professional relations and communication need to be imparted. A separate finance head should be generated for library services. The National Library body the ILA, need to come forward to take up the cause of library profession and will require to create consensus among various library associations, so that divide and rule strategy of government and other authorities are defeated and cause of library as a single voice is loudly heard.

3.3. Create a vision for how IT will build your LIC's

Once we have built a foundation based on enterprise knowledge & understanding and have relationship with key stakeholders, we should take the next step toward becoming information leader by developing vision of how technology can improve and even revolutionize the organization. To carry on this activity we need to

- Take knowledge we have acquired,
- Begin envisioning what organisation could be like if it were using technology in best possible way,

- What new growth opportunities would exist?
- What relationship would be strengthened?
- Whose productivity could be doubled, or even quintupled?
- What costs could be cut?

We must take systematic approach to create our vision, keeping in mind we are working in network era and real time enterprise. There is technology hype surrounds us, which we need to avoid.

- We need to develop our vision, keeping in mind how increase the number of information seekers, our revenue or both
- Create new information services and products.
- Retain and regain pricing power
- Reduce information service cycle time and costs
- Establish our credibility and brand for our information products and services
- Reduce overhead-administrative costs and so on.

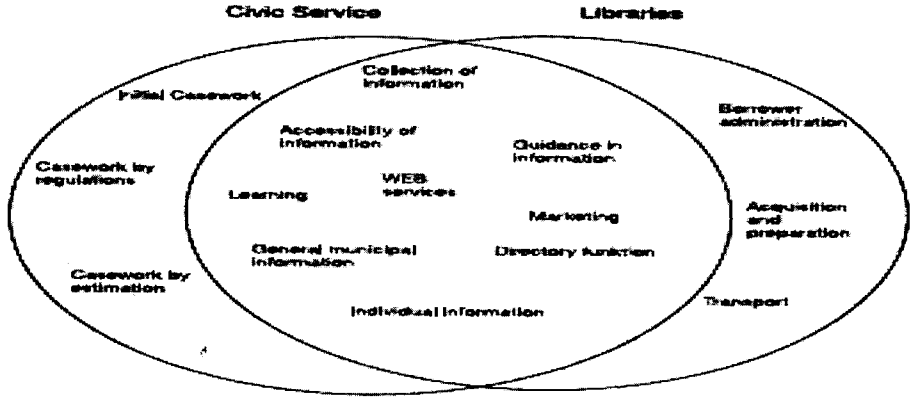


Fig. 4 : Showing vision for how IT will build your LIC's for Civic services as well

3.4. Shape and inform expectations for an IT-enabled Library System & Services

We have unique role to play in bridging the gap between technology enabled information services and smart as well as novice information seekers. To do so we must have credibility with our executive colleagues, we must be able to lead through influence and must have deep understanding of our organization where we are serving. These are needed to build our vision. The IT-enabled Library System and services need to consider include following consideration while planning IT enabled library services:

- Cost Focus: where we need to draw on the value discipline of operational excellence. It says we must offer price product and services at lowest cost and drive economies of scale through shared best practices
- Value differentiation as perceived by the customers (information seekers). This we can get by meeting client expectation of quality at reasonable cost, facilitate product selection as easy as possible and provide all information needed by information seekers from distant.

- Flexibility and agility: this can be achieved through developing new products & services and ensure the service to the user is provided at best possible way.
- Growth: we need to project the growth and related benefit
- Human Resources: we need to create an environment that maximizes intellectual productivity, maintain a high level of professional and technical expertise and identify and facilitate the movement of talented people.
- Management orientation: We need to create a management culture of information sharing and make decision close to the organization line.

All stakeholders must be informed correctly and periodically, so that focus is no deviated.

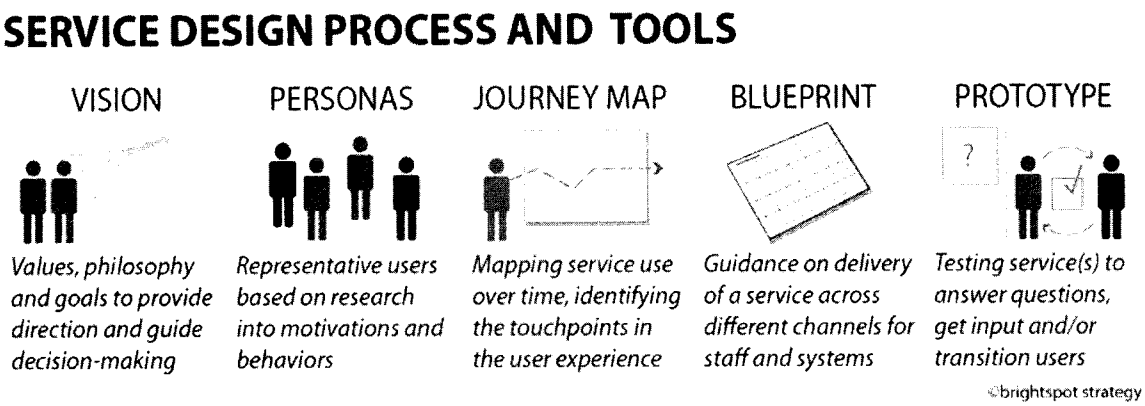


Figure 5: Showing service design tools and processes

3.5 Create clear and appropriate IT governance

We need clear, strong and appropriate IT governance to build trust, better delivery of services, synchronizes IT strategy with business strategy, encourages desirable behaviors in the use of IT.

We must remember six makers of effective IT governance:

- Clearly differentiated strategies
- Clear objective of IT investments
- High level executive participation in IT governance
- Stable IT governance with few changes from year to year
- Well-functioning, formal exception processes
- Formal methods of communication

3.6 Build and nurture a high-performance team

It is rightly said that no matter how well we organize your staff, if we don't have the right skills in place, we will not succeed. In the changed IT-enable environment, the skills LIS professionals require are different. In fact the new skills are similar to the skills we need to the role of business side. The skills requires by Library leaders in present environment in order to build and nurture include:

- Emotional intelligence: this is the capacity to deal with own feelings, as well as the feelings of the others.

- Meeting the needs of those we lead. The need included task needs, group needs, individual needs.
- We also need to understand our staff's personality types.
- We also require building our and our team's-human leadership skills.
- We also need to change ourselves, which if requires for the growth of the team we lead.
- We will also require to develop critical competencies requires by team. The competencies included technical, business and behavioral, which is matching the role (individual and team) & performance levels. We also need to develop strategies to close the competency gaps with training and recruiting
- We will also like to develop new information service competencies needed for fighting for survival

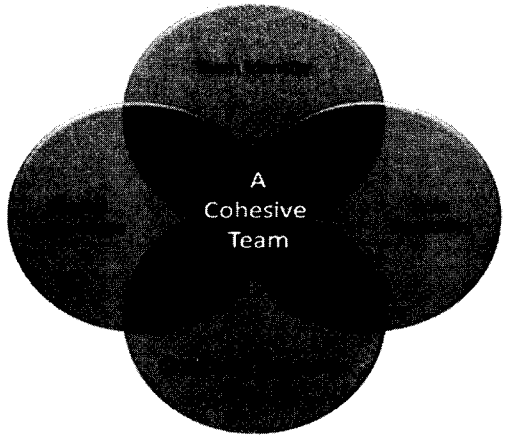


Fig. 6 Important components of a high-performance team

3.7. Communicate performance in business-relevant language:

We are working in global market place, where our performance is measured in term of profit growth i.e. business relevant language. Following is the four-step process which is the best possible way to communicate performance in business-relevant language:

- Start with some measure of business value at as high as a level in the organization as possible.
- Look for strategic initiatives in place to improve that value
- Identify how Information services support and add value to those initiatives and programs
- Attach metrics to the specific LIS investment and LIS imitative contributing to the organizational business value

4. Conclusion

Leadership Advice for Librarian

We are finding Library leadership in India, increasingly tough, due to many reasons namely mushrooming of library associations at different levels, category and at factional group and interests. Here we are listing some of the relevant points which will help our Library leaders to excel in its professional commitments:

- Hire the best possible to work for you, even if they fought you for your job.
- Surround yourself with a team of people, who can challenge your thinking and whose strengths make up for your deficits.
- Share credit with your closest colleagues, so that they are fully committed to your mission.
- Be sure to communicate, often and authentically with your large public.
- Create space for relaxation and thought
- It is good to engage with the resisters, learn from them and if they suggest smart adjustments to your initiatives open to that as well.
- Your biggest critics can turn into your best advocates, if you have the courage to listen carefully.

I appeal all LIS professionals at all levels, pl. compete for professional up-liftment which will embolden professional image and social recognition, that will ultimately lead to our financial and social improvement and security. It is in fact upside down status of ***Need Hierarchy propounded by Maslow.***

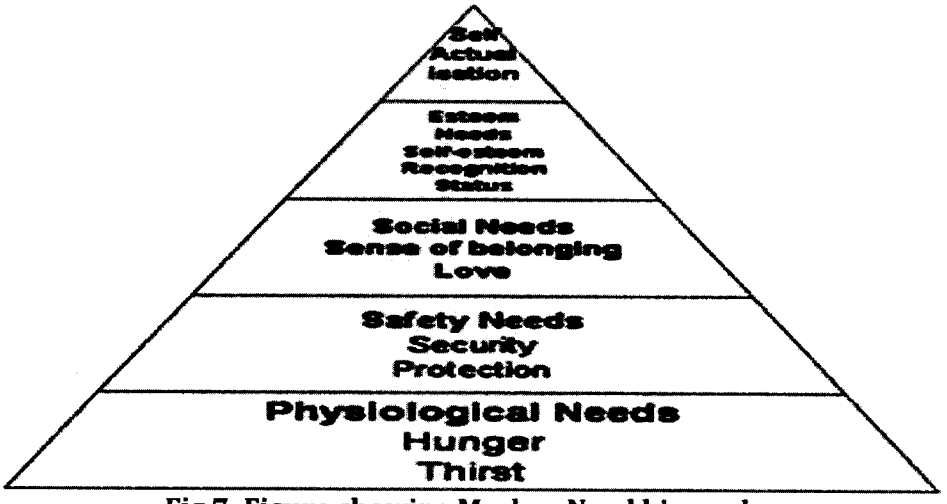


Fig 7: Figure showing Maslow Need hierarchy

Standing still in this situation is not an option, every LIS professional need to understand that their role is to act in two distinct ways, i.e.

- Take responsibility as a leader and show leadership for the sake of maximizing the reading culture among all levels of library users
- Built an effective service culture among professionals, so that revenue is generated amongst to source some activities to some extent and building a positive visible, effective professional and respected personality, which is downgraded and tarnished because of both internal and external factors

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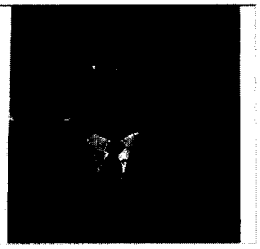
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Authors Profile



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E-Marketing of Library Products and Services

Praful Namdeorao Kadu

Abstract

The marketing of library products & services is a new concept of comparative recent origin, it has now emerged as an important area of libraries and information center. The importance and vital role of library in higher education have been will recognized by our educationists, librarians, committees, education commissions, planners and by all other concerned with the growth and development of higher education in country. The U.G.C. and the national knowledge commission have realized the value of library and its role in higher education. So U.G.C. accepted most of the recommendations of committees and commission while the national knowledge commission has also given a very strategic role to libraries information institutions to provide all the information and knowledge support to the process of economic development and growth in 21st century. Library is repository of resources that create a fundamental change in education. Education depends on information resources and all information resources are the driving forces for marketing an education society. The education society can exit only when information is stored, shared and utilized properly.

Keywords : Marketing, E-marketing, Library products, Information services.

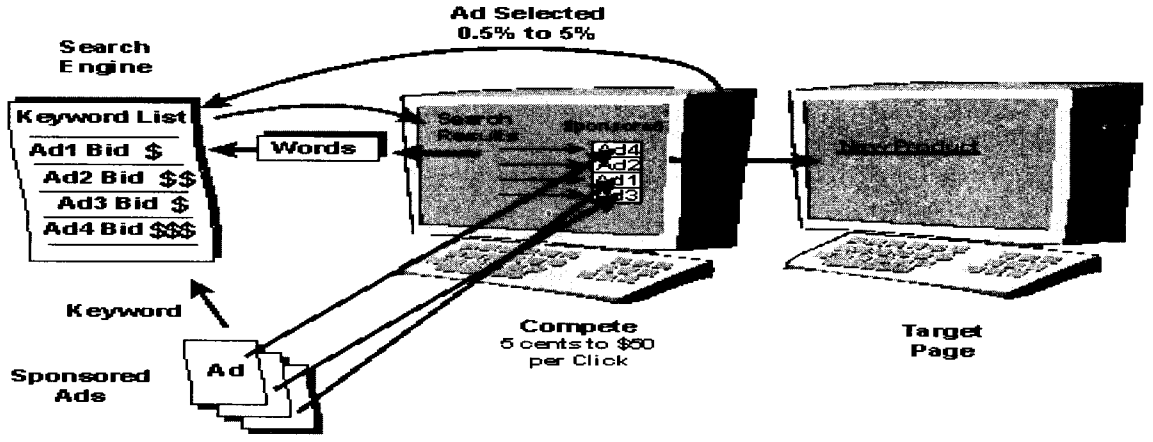
1. Introduction

In the world Globalization, marketing of information has been a resent topic in the library profession in recent year. Libraries and information centers of all types and sizes are faced with the need to market. Librarians and information professionals must learn to effectively market and advertise their services. Adopting marketing principles and techniques in libraries and information centers today, during a time of great change in the library field, the new technologies and ideas offer the opportunity for all types of libraries to show their sophisticated marketing campaigns and programs. A managerial tool that will help meet these challenges is marketing, which has been used very effectively in the profit sector. Libraries have confused marketing with publicity and promotion. However, promotion and publicity are only components of marketing. Libraries and information centers have begun to realize that marketing of information products and service is an integral part of administration, especially as means for improving user satisfaction and promoting the use of services by current and potential users. Three main factors, namely the information explosion, the technology revolution and escalating library costs are responsible for encouraging the library profession to develop a marketing approach in its operation and services. In large libraries, librarian often specialize in a single area, such as acquisition, cataloguing, bibliography, reference, special collections therefore good teamwork is important. Librarian also recommend materials. They collect and organize books, pamphlets, manuscripts and other materials in a specific field, such as rare books. Many libraries have access to remote database and maintain their own computerized database.(1)

More & more libraries apply their information management and research skills to arenas outside of libraries for example database development, reference tool development. Information system, publishing, internet co-ordination, marketing, web content management and design and training for database users. In an academic institution and library are inseparable and indivisible concepts witch working for the promotion and evolution of teaching, learning and research for greater use of academic age. An electronic resource is defined as a resource which requires

computer access or any electronic product that delivers a collection of data, be it text referring to full text bases, electronic journals, image collections others multimedia products and numerical, graphical or time based, as a commercially available title that has been published with an aim to being marketed. These may be delivered on CD-ROM, Tape, via Internet and so on. (3) Now a number of techniques and related standards have been developed which allow documents to be created and distributed in electric form. Academic libraries are shifting towards new media, namely electronic resources.(4)

Marketing of library and information services is the process of planning, pricing, promoting and distributing library products to create "exchange" that satisfy the library and the customer is ongoing and dynamic due to be the change in the need patents of the customers and change in library service itself. The process determines the decisions and activities involved meeting the need of customers.(5)



Marketing Fig 0.1 (9)

2. E-Marketing

E-marketing also known as web marketing, online marketing, web advertising, Internet marketing ties together the creative and technical aspects of the internet including design, development, advertising and sales. There is still considerable misunderstanding in most of the library and information sector as to what constituted effective marketing. to same it is still primarily equated with selling and the pursuit of sales, rather than customer satisfaction. many Libraries are still reluctant to make the change necessary to focus on the marketing, even when the need for more active marketing is generally agreed. Marketing of information products and services means transference of information to potential inevitable due to limited budget in all libraries, irrespective size and region. Marketing of information products and services offers great potentials to survive and grow their services. According to the 2003 International Encyclopedia of Information and library science Marketing is "An organized way of offering library services based upon user interest, communication method and feedback that improves what the library is doing." While outreach services are "Provided by the library outside its usual location particularly those intended to attract new users or appeal to groups in the society"

According to Philips kotler "Marketing analysis, planning, implementation and control of carefully formulated programme designed to bring about voluntary exchanges of values with targets"(2) Library marketing means marketing of information products. Marketing approach aims at determining the needs, wants and demands of the target clients through clients through designing and delivering appropriate products and or services more effectively that competitors, so as to active the organization goal.

3. Library products for marketing

E-journal	E-books	Library software
Bibliographic services	Indexing and abstracting services	
Book value	Reference services	
E-database	Electronic publishing on CD-ROM	

Essential role of marketing of library products is to create customer satisfaction with good collection of material and the positive comments made by its customers when peaking to other.

- Website is a best tool of marketing institutes services.
- New events, conference, meeting can be announced on web.
- Posters & advertisements
- Video programs
- Exhibition
- Newsletters

These are promotion methods use for marketing products. (6)

4. Application of Information Marketing

- Through the application of marketing the library can identify the different categories of users and develop appropriate information service and products for them.
- The library shall be able to generate considerable amount of income to supplement is budget for purchase of materials and for modernization.
- Standardization of services, facilities and products can be achieved in a marketing plan.
- The library attracts more user or materials available in the library that are not used by many.
- The speed and quality of library services can be enhanced by offering service through different channels.
- The information products once developed can be used for long term reference with additions and modifications.
- Equal opportunity for access and utilization for all outsiders is ensured in fee based service.

5. Basic step for marketing library services :- (7)

1. Competition for customers
2. Competition for resource
3. Staff being taken granted
4. promote and update image
5. Visibility
6. Valuable community resource
7. Survival
8. Beneficial to library image
9. Rising expectations

6. Professional skill for marketing

Library professional required the following professional knowledge for the marketing information services.

- Perception of user need and ability to obtain feedback from user.
- Technical knowledge such as ability to use the Internet.
- Knowledge of various marketing strategies for promoting information skill.(8)

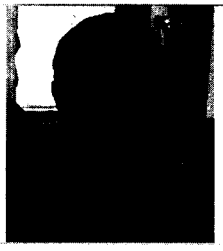
7. Conclusion

Today information played a very vital role in human life. The modern library now called an information market and the library user consumer of information. Marketing is essential in marketing the proper planning, designing and use of such services and products for the better and optimal use of information. The adoption of marketing plan shall help the library improve its relationship with user. The library should give priority to provider in the information era. The library and information service should be user oriented in order to satisfy their information need effectively. The ultimate aim of marketing here is to provide the right information to the right user at the right time.

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Human Resource Planning and Management for Information Management: *An Overview*

Kalisdha, A **Subbiah, M**

Abstract

This paper focuses on the various elements of Human Resources Planning (HRP) in the context of Library and Information Centres. Human resources planning should serve as a link between human resources management and the overall strategic plan of an organization. In this paper the authors discuss about the Human Resources Planning process and quality of products and services in Library and Information Centres.

Keywords : Human Resource Planning and Management, Information management

1. Introduction

Human Resource Planning is the process that helps organisations to provide adequate human resources to achieve their current and future organisational objectives. As we know that planning is an analytical process involving various aspects, so as to produce quality products and to offer best services in libraries and information centres, various plan exercises such as determination of desired goals, assessment of the future in relation to the environmental changes, selection of activities, preparation of written plan document, etc. will have to be done, which will give rise to mobilisation of human resources. The result of HRP is marvelous. This will be reflected in higher turnover, lower absenteeism, fewer breakdowns, lower migration and more than anything else, higher quality of work.

2. Need and Purpose of Human Resource Planning

Large libraries, whether academic, public, special, or national, are becoming increasingly complex to manage. In response to cultural and technological changes, these libraries need an increasingly broad array of talent to achieve their mission successfully. Not only are professional librarians with varying disciplinary backgrounds required, but other professionals are needed such as archivists, conservators, lawyers, fund-raisers, personnel experts, and computer scientists, to name a few. As new technologies are integrated into the fabric of already complex libraries, new problems will emerge in human resource planning, and previously successful solutions will have to be re-examined. Human Resource Planning is the activity of the management which is aimed at coordinating the requirements for and the availability of different types of employees. This involves ensuring that the firm has enough of the right kind of people at the right time and also adjusting the requirements to the available supply.

3. Elements of Human Resource Planning

The various elements of Human Resource Planning are:

- Estimating manpower requirements quantitatively and qualitatively
- Recruitment and selection of personnel.
- Induction and deployment.
- Personnel development.

- Ensuring quality to products and services, keeping customer satisfaction as the primary objective.
- Overall assessment of performance and fine-tuning.

3.1. Estimating Manpower Requirements

Library is a growing organization. With the expanding dimensions of the library and information field and its complexities, estimating manpower requirements for library and information centers is very important. Besides basic background in a subject field, every professional person should have a computer and communication background in addition to library and information science qualifications.

The supporting staff of most libraries and information centers consists of workers with a wide range of skills from para-professional to administrative and clerical. The first step in human resource planning is to estimate personnel requirements for the present as well as for the future, taking into account organizational overall objectives and projected developments. Estimating staff requirements for large institutions has to be done systematically using the methods of forecasting techniques. The top management has to assess the need, getting data for the actual requirements in the different units, from the line managers. In smaller organizations, the exercise is done by the top person from his expert knowledge of the organisation and competence in forecasting.

Estimates of staff requirements of a library and information centre has to be based upon the activities, programs, projects and targets to be achieved over a period of time. The quantitative assessment of requirements over a period of three to five years constitute a particular phase of growth. The qualitative nature of persons required has to be simultaneously assessed, through techniques such as job analysis, job description and job evaluation. The drastic changes occurring now-a-days in libraries and information centres necessitate the introduction and planning of new services such as literature search using CD-ROM, online databases, sales and marketing of library and information centre products, etc. There is a definite link between education and economic growth. Based on the forecasts of educated manpower requirements over a specific period the planners indicate the direction of development of the educational sector over the same specific period.

The planning process may not always give exact forecasts. To be effective it should be a continuous process with provision for control and review. The first step in the manpower planning process is the establishment of a planning horizon. One should know the period for which the manpower plan will apply. Then the specific corporate objectives and strategies should be clear. Based on these estimates or projections for demand and supply, manpower can be made using the approach and methods.

In library and information centres professionals should have an edge over non-professionals. In order to work effectively in modern Information centres, the existing staff should be encouraged to attend seminars of learned societies.

3.2. Recruitment and Selection

Recruitment is essentially a process to discover sources to obtain manpower and to employ effective measures for contacting these employees, which will be forming an efficient workforce. The recruitment process involves five different elements, which include;

- a recruitment policy

- a recruiting organization
- a forecast of manpower requirements
- the development of manpower sources, and techniques for utilizing these sources.

The process of selection involves placement in effective positions. The selection process depends upon effective job analysis and differential recruitment and placement. The selection process involves usually seven steps .

- Preliminary screening of applications.
- Review of application forms
- Physical examination
- Checking references
- Psychological testing
- Interview and
- Internal promotion programs.

3.3. Induction and Development

The term "Induction" means installation or initiation. The new recruit is installed into a position or job, and initiated into the team that makes up the work force of the organization. Induction is the process of introducing new recruits to an organization and explaining their role within it. It usually begins with a guided tour of the building etc. Induction is important because impression gained by new employees during this period can influence their perception of the organization for many years to come.

Once the employee gets his orientation to the organisation, posting the person to the right place wherein he/she would be most suitable is referred to as deployment. The skills, responsibility, ability to work in a team and such other qualities of individuals are important considerations in the deployment of staff. If deployment of personnel were not done carefully, serious problems of conflicts would arise in the organisations.

3.4. Personnel Development

In India, libraries and information centres are operating as constituent parts of various institutional complexes like R & D Establishments, Universities, Government Departments and others, and therefore are largely conditioned and controlled by personnel policies and plans of the parent organizations. To achieve the organisational objectives, targets of growth and development, the human resource development of an organisation has to make a plan to get the best out of its carefully selected employee's.

The various personnel development programs are:-

- Performance Appraisal of staff;
- Training and Development;
- Changing perspectives and attitudes;
- Communication.

3.5. Ensuring Quality to Products and Services

Quality Circles are small groups of employees who normally work together, meeting regularly to agree upon ways of improving quality, productivity, etc. There are international standards available to maintain quality in library and information centres. In India for example using CCF format for creation of database will ensure a standard for data exchange. This in term help us in providing quality service in networking environment.

3.6. Overall Assessment of Performance and Fine Tuning

Planning is not just a one-time exercise. It is a continuing effort to judge its effectiveness in the actual implementation process. While executing a plan, in course of time, it may undergo changes, due to various problems that had not been anticipated while preparing a plan. In practical implementation of the plan, the plan may require modification. Therefore plan efficacy in terms of result achieved should be assessed at periodical intervals. This type of evaluation would identify the strength and weakness of the plan. The weak portion of the plan has to be revised. This type of assessment would permit returning of the plan to ensure success.

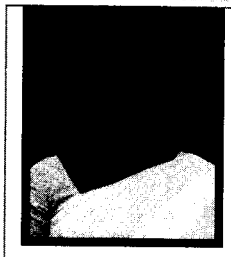
4. Conclusion

We can see a drastic transformation in the consumer market of product oriented society to a service oriented one. In all walks of life more and more emphasis is given to the quality aspect of the service. The complexity of planning across countries, cultures, economies, and new technologies is almost infinite. This makes the art, the gut feeling, the best guess, that much more important. The best that can be accomplished is to predict the probability of multiple successful solutions. If at all a library and Information centre has to be appraised, it will be on the strength of its human resources, which impart quality service.

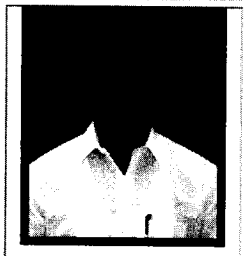
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Leadership in Academic Library

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Abstract

Libraries are knowledge of store house. It is also known as social agencies. Now day's libraries play a crucial role to the library and information centre. Modern society has various needs such as education, research, cultural advancement information spiritual and ideological pursuits past time and recreation .Society have founded various institutions to serve these needs. As an effective human being, leader should have identity authenticity, open mildness, responsibility communicating, reasoning and problem solving abilities concern for others, rest for life energy, maturing, courage, strong, sense of obligation, clarity of mind and expression, integrity etc. this article presently a roll of good leadership in the library and information centre. The paper describes the area of expertise, experiences skills associated with academic development positions in academic library and information centre as basis for identifying leadership competencies that are relevant to academic library and administrator.

Keywords : Leadership, Academic Library, Social agency, administrator, knowledge

1. Introduction

Leadership involves various dimensions and attributes. It requires vision, courage, understanding determination, decisiveness, sense of timing, capacity to act, ability to inspire, etc. A leader is often judge by his mettle in a crisis. For example Winston Churchill during the London Blitz,John F Kennedy during the Cuban missile crisis , Indira Gandhi in the 1971 Bangladesh war, Margaret Thatcher during the miner's strike, Mikhile Gorbacheves break with communism and the cold war. In these turning points, leadership made a crucial difference in modern history. It is the same in cade of leadership in organizations

A person emerges as a leader and not appointed as a leader and there could be leaders of completely unorganized groups. A leader may not have a formal title or authority and he depends on his personal qualities and informal power to influence followers. There is always a mutuality of objectives between a leader and his followers but clash of objectives are likely between a manager and his subordinates. Out of five basic sources of leadership power, namely, coercive power, reward power, legitimate power, expert power and referent power, the first three based on formal organization role are used by managers and the last two which are informal and individual oriented could also be used by leader.

A leader should have identity, authenticity, open mind ness, independence, responsibility, communicating, reasoning and problem solving abilities, concern for others rest for life energy, maturity, courage, strong sense of obligation, clarity of mind and expression , integrity, etc. Leadership is highly complex and elusive trait. Leadership is (often defined as the art of influencing others to strive willingly; to do wha6 the leader wants them to do the mutually compatible objective) with zeal and confidence. It is encouraging and inspiring individuals and teams to give their best to achieve a desired result. Leaders work with and through people to accomplish goals. It is a psychological process of providing guidance for followers. Leadership is one of the most effective tools of management and organization effectiveness depends of the quality of leadership.

2. Function and activity of leadership

Leadership implies and existence of followers, unequal distribution of authority among leaders and group members and commonality of interest between the leader and his followers. Further, leaders have to influence and direct their followers or subordinates. therefore, the main function of leadership is to include or persuade all subordinates Therefore , the main function of leadership is to induce or persuade all subordinates or followers to contribute to organized goals in accordance with their maximum capability, Two major ingredients for skilled art of leadership are the ability to invent and use appropriate motivators and the ability to inspire. Fundamentals principles of leadership is "since people tend to follow those in whom they see a means of satisfying their own personal goals, the more a manager understands what motivates his subordinates and how those motivation operate, and more he reflects this understanding in carrying out his managerial action, and more effective as a leader he is likely to be" some of the common activity and function are mentioned below.

- **Goal setting**: A leader contributes significantly in establishing goals and objective of the organization.
- **Inspiring and Zeal building**: Appreciating the works of the subordinates, a leader inspires them to enthusiastically accept organization goals and contribute more towards goals.
- **Praising: Having** the interest of workers sincerely at heart a good leader past them for their good work.
- **Providing security**: A leader provide some sort of personal security to workers by maintaining a positive, optimistic attitude even in the face of adversaries
- **Representing**: A leader as a representative serves as a symbol of the organization and speaks for the organization, clarifies the organization position and hence compels outsiders to think of the whole organization in term of their impression of the leader. In essence, he represents the organization.
- **Suggesting**: Suggesting often permits the subordinates to retain dignity and sense of participation.
- **Supplying objectives**: A leader defines and supplies objectives that will allow members to work together.
- **Bearing Group responsibility**: A leader act as a surrogate for individual responsibility of his or her subordinates.
- **Catalyzing**: Where some force is required to start or accelerate movement, a leader act as a catalyst and prods subordinates into action.
- **Executing**: As a manager, a leader not only contributes for planning but also takes responsibility for executing the plan.
- **Exemplifying**: A leader saves as a model for others to emulate and functions as an ideologist.
- **Expertise**: A leader is supposed to be an expert in the principal activities of the organization.

3. Leadership in Library and Information Centre

Based on the confidence of long practices, libraries were managed for long time with autocratic or paternalistic style. There was a general acceptance that power and authority rested

naturally at the top of the library hierarchy. It is very much doubtful whether the same autocratic of paternalistic leadership style would be viable today. There has been steady and observed movement away from the autocratic, paternalistic, and hierarchical style of leadership into an era of participation, consultation and delegation. The process of decision making is more widely spread through the organization than before.

The external influences such as increased power of unions, economic pressures, labor and industrial relations legislation have substantially influenced managerial style. Even the general political climate is more hospitable to participation and consultation styles of management based on newer development in theories of human behavior and vehemently opposed to autocracy and authority. As a result "Hard orders are frequently displaced by acts of persuasion and suggestion; authority by influence and autocratic control by a participation matching of interest, skills ideas"

Good result and high performance were occasionally achieved by strictly adhering to orders and following direction from the top, but often such styles led to resentment from those who wished to make a large contribution to decision to decision making. While firmly directed, non-consultative methods are required from special occasions like crises, generally the planning and direction of library teams requires recognition of the value of member participation." The situation in the modern library is such that expertise, creativity, intelligent and constructive thought and qualities of leadership can be found at all level"

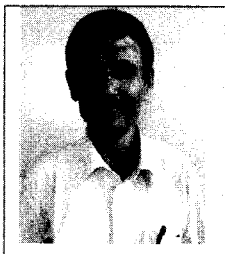
4. Conclusion

Management of libraries and information centre in India is not only a very small subset of overall management in India in terms of leadership styles and managerial quality, but also a logical extension of management of early libraries. The significant difference in managerial quality and leadership style of libraries .The significant difference in managerial quality and leadership styles of libraries and information centre from that of the rest the stream could be traced to certain basic differences in the nature of libraries and information centre themselves. Libraries, they are not profit service organization .Secondly, information centre are of very recent origin. Thirdly, a very large proportion of librates and are supported from public fund. For these reason , the style of management of information centers are more likely to be democratic and participative than gigantic Indian business house. Unfortunately, there is no worthwhile research in library and information science on these aspects to pin pointedly understand the situation

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Librarianship: *An Entrepreneurial Approach*

Mahesh, G T **Mulimani, M. N** **Shamrao Ramanna** **Thimmegowda**

Abstract

The vibrant information service setting has redefined the conventional role of the librarian. More than a caretaker of information, the librarian is now an information specialist, an interpreter of users' sophisticated needs. He is a navigator in the valiant new world of information. Working with information in varied forms and medium, the librarian's role is a proactive one. He guides the user through many sources, uses technology tools to access, search and package information and assists the user in obtaining the information he wants, when he needs it.

Keywords : Librarian; Entrepreneur; information skills; Information Investment

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Marketing and Promotion of Library and Information Services: *Indian Perspective*

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Abstract

Libraries are like a 'temple of knowledge' for the society. The library should promote its services to the public to ensure that they are kept informed of the services provided to meet their library and information requirements. Users' survey must be conducted by the libraries to know the opinion about their satisfaction with the product and services of the library, provided to them. Marketing is the process of planning, pricing, promoting, and distributing goods and services to create exchanges that satisfy the library and the customer. Marketing is an ongoing and dynamic strategy because customer needs and library products change with time. Marketing concepts and techniques play a vital role in academic libraries because library and information centre and marketing both have same goal, "the right service to the right person at the right time".

Keywords : Institutional repository, file formats, NISCAIR, NIPFP, DSpace, SPARC.

1. Introduction

In the age of technology the importance of Information can never be neglected. Information has created a space for itself in the organizational business. In last few years, libraries have been subject to significant pressure due to the information revolution. Information has to be properly collected, organized and disseminated (marketing) for the customer (user) at right time in a right way. What, why, when and how to market information on user perspectives is continued to be a crucial debate for the library and information centre. (**Mishra, C S**)1 The public library is the local centre of information, making all kinds of knowledge and information readily available to its users (The IFLA/UNESCO Public Library Manifesto)2. A successful public library is a dynamic organization working with other institution and with individuals to provide a range of library and information services to meet the varied and changing needs of the community. Information technology has created a new gateway for information services. Multiple formats of information products and services have made libraries and information centres more competitive and alert to fulfill the information needs of users. Due to the impact of the information technology, the adoption of the marketing approach provides a new way and helps to improve services for users and enhance the reputation of library and information services.(Pooja Shukla)3

2. Rationale of the study

Libraries and information centers are facing a time of unprecedented change and challenge. Librarians and information specialists have debated the idea of marketing for the information sector. Several things have compelled us to learn about marketing and begin doing it. Librarianship is experiencing rapid change. Information technology has created a new gateway for information services. Information products and services in a multiplicity of formats have made libraries and information centres more competitive and alert. Libraries are being subjected to significant pressures from the information revolution. Perhaps no other recent innovation has impacted the library profession to such a great extent as Internet. Not only is our world becoming an interconnected global community, but this early use of the Internet has changed the fundamental roles, paradigms, and organizational culture of libraries and librarians as well, which created

profound impact on L&IS by offering new modes of information delivery and a vast information source. There is a continuing evolution of the roles and functions of libraries and librarians, which appears to parallel the growth of acceptance and use of the Internet by library professionals.(IRTPLA) Under such situation and in the age of Information & Communication Technology, marketing has become very necessary and important for public libraries due to variety of users and their growing expectations so public libraries should adopt the marketing techniques to understand the needs of their users and to plan effectively to meet their needs and requirements. Information technology has created a new gateway for information services. Information products and services in a multiplicity of formats have made libraries and information centres more competitive and alert. Libraries are being subjected to significant pressures from the information revolution. Public libraries need to be more persistent in investigating user's needs to develop services that meet their expectations. It is not just marketing of already available services to the users but to find out what the users want. Marketing has become very much essential activity of public libraries to promote its services and maintain the faith among their users. This paper has made an attempt to highlight the main issues of marketing of library and information services in public libraries.

3. Objectives of the study

The paper describes the concept and the meaning of marketing of library and information services by giving some definitions and explores the various facets of marketing of library and information services in public libraries in Indian scenario. The specific objectives are as below

- To study the importance of marketing of library services in Indian context
- To study the factors affecting in marketing of library services
- To study the marketing mix
- To find out the common problem faced by the Library Users to access the information sources.

4. Review of Literature

Lot of studies have been conducted by the scholars on the various aspects of marketing of library and information science products and services. Marketing is an important functional area in business. Products and services that are not marketed effectively may not be heavily patronized. Revenue may be lost and the business will face problems of survival (Mrtey, 2000). So, if marketing is a functional area in business, Shontz, Parker and Parker (2004) implied that "there has been some controversy over whether marketing is an appropriate activity for libraries, or whether marketing should be restricted to for-profit businesses?", and - citing the worthwhile article1 of Kotler and Levy in January 1969 in Journal of Marketing - concluded that marketing insights could be applied to all kinds of organizations. Marketing of library services and products becomes imperative and must not only be vigorously canvassed for, but also must be conscientiously executed. The fast growing sectors of the economy of the world such as fast foods, banking, advertising and electronics, information and communication technology got to where they are today not because they offer free services and products, but because of their "flexibility", "compromise" and "borrowed-leave" attitude (Adeyoyin, 2005). Snoj and Petermanec (2001) opined that librarians need to comprehend marketing orientation as well as have know-how of marketing as a process. Possession of marketing skills will contribute to better performances, more aggressive marketing and professional library and information service.

5. Meaning and Concept of Marketing

Marketing aims to identify the client base, and to determine and fill its needs, wants, and demands by designing and delivering appropriate products and services. The main focus of the concept is the client, and the goal is client satisfaction. Marketing is a planned approach to identify and gain the support of users and develop appropriate services in a manner which benefits the users and and in the case of academic libraries, further the aims and objectives of academic libraries. Marketing includes selling, advertising, physical distribution, sales promotion, etc. Some of them are given below: According to Kotler, marketing is: "Marketing is the analysis, planning, implementation and control of carefully formulated programs designed to bring about voluntary exchanges of values with target markets for the purpose of achieving organizational objectives. It relies heavily on designing the organizations offering in terms of the target market's needs and desires and as using effective pricing, communication, and distribution to inform, motivate and serve the markets." Stanton defines the marketing as: "Marketing is a total system of interacting business activities to plan, price, promote and distribute want satisfying products and services, and present to potential customers."

Marketing is the process of planning, pricing, promoting, and distributing goods and services to create "exchanges" that satisfy the library and the customer. Marketing is an ongoing and dynamic strategy because customer needs and library products change with time. Marketing concepts and techniques play a vital role in academic libraries because library and information centre and marketing both have same goal, "the right service to the right person at the right time". The main focus of the concept is the client, and the goal is client satisfaction. Marketing has become very much essential activity of public libraries to promote its services and maintain the faith among their users. Some of the important reasons to adopt marketing are given following:

- To identify the users and their requirements of information product and services.
- To let the users be aware of the being of the library and its services.
- Rising cost of information products and services.
- Lack of the public sponsorship and subsidy, the need to find alternative sources of revenue.
- Development of information technology and its application in libraries.

Marketing is a means of ensuring that libraries, librarians, and librarianships are integrated into both today's and tomorrow's emerging global culture. Marketing is not separate from good practice. It is good practice".(Krishan Kumar, 1985). The marketing concept rests on four main pillars, namely target market, customer needs, coordinated marketing, and profitability." (Kotler, 1994).

6. Marketing of LIS Services

The information industry has grown dramatically in services, revenue, and coherence over the last decade. Though the marketing of information services is a concept of comparatively recent origin, it has now emerged as an important area for libraries and information centers. Marketing has become very essential and important in the field of library and information service. Public libraries have a huge variety of users and their expectations from the libraries. Marketing includes selling, advertising, physical distribution, sales, promotion. The library user has turned into the consumer of information and multiple formats of information products and services are seen in the libraries. Library users are transforming into customers with rising expectations, diverse needs and wants, and choices. Marketing aims to identify the client base, and to determine and fill its needs, wants, and demands by designing and delivering appropriate products and services. Therefore

marketing is essential in making the proper planning, designing and use of such services and products for the better and optimal use of information. As Kotler points out, organizations such as museums, universities, libraries, and charities need to market their causes and their products to gain political and social support as well as economic support. One of the major barriers to operating a profitable information business is the lack of business expertise among librarians and information scientists. Marketing is a comprehensive term that describes all the processes and interactions that result in satisfaction for users and revenue for the information firm. Revolution in information and technology forced to market the library services and it became essential so as to (Dr. M. Madhusudhan)

- Promotion of the use of information resources;
- Create perception of need and thereby create demand;
- Ensure the optimum use of information.
- Improve the image and status of the libraries and library professionals.
- Tackle the problems of rising costs of reading materials, journals, and databases;
- Cope with the information explosion;
- Introduce cutting-edge information technology systems in library services;
- Balance shrinking funds;
- Save libraries from devaluation
- Save libraries from declining reader-support;
- Uphold the dictum that information is power.

6.1. Strategy Elements

The term 'Marketing' purely relates to promotion for profit and in particular for money and services of libraries can be treated as the product or business and users of the library as consumers and customers. The main difference in business marketing and marketing of library services is that in library we are not doing it for any profit or to earn money, the main focus is on to increase the usage of the services, and in business marketing the main focus is on to get profit in form of money through marketing. All marketing decision-making can be classified into four strategy elements, referred to as the marketing mix or the Six P's: People Product, Price, Place, and Promotion and Process.

6.2. People

People are the staff who occupies the key position in influencing customer's perceptions of product quality because of the simultaneity of production and consumption in services the continuing education. In fact the service quality is inseparable from the quality of service provider. An important marketing task is to set standards to improve quality of services provided by employees and monitor their performance. Without training and control employees tend to be variable in their performance leading to variable service quality. Training is crucial so that employees understand the appropriate forms of behaviour and trainees adopt the best practices of the analogy.

6.3. Product

Product means the satisfaction of the customer rather than a physical good. The products of the libraries are the things that can be offered to a market to satisfy the needs.These may range

from books, periodicals, reports to electronic documents and other allied services from traditional ones like circulation, inter library loan, reference service to access to international databases, online researches and CD Rom searches. It also includes the items like books, periodicals, films, CDs, etc and the information, reference, and ancillary services that add value such as personal assistance, referral services, online database searches, document delivery, and interlibrary loan.

6.4. Price

Pricing is the marketing activity that determines the price of the product on the basis of costs as well as market factors such as distribution channels,discount structures, competition, prices, ability or willingness of customers to pay, and so on. As it is elsewhere, price is important in marketing in the world of information. However, it is most controversial topic for implication of marketing concept in the libraries because the libraries are service organizations and working without profit motive. Pricing of use of the library is usually that of the time and effort the user spends traveling to the library, as well as the time and effort spent. From the customer's viewpoint price is a determinant factor because most customers depending on their income level consider the price before they purchase the product. Price for the product is set when the organization introduces or acquires a new product. Price can be revised to match the change of the product. It is flexible and dominant element, which determines the revenue/profitability/market share for the organization.

6.5. Place

It represents the distribution channels that an organization utilizes to convey its own physical products or services to the end users. Place of service, based upon knowledge of the market of a library, is essential in order to identify users and their discrete information needs and wants. To expand the service area, the library may have branches, bookmobiles, or electronic access, etc.

The distribution of the library's products refers to 'When' 'Where' and 'How' service is made available for the user.

6.6. Promotion

The basic aim of library promotion is to select a technique that can encourage the recipient to respond either by buying or requesting further information, or by filling the promotional material away for the use in the future. While these four factors are important individually, their real significance lies in the mix, the unique way they are combined into a careful plan or strategy. Promotion moves the products towards the customers. It stimulates demand and increases sales. Promotion covers those techniques used by the libraries to inform, remind and attract the users about the library services. Promotion is essentially the means of informing to users what you do and what you can do. The benefits for those who promote their library services include: increased usage, increased value in the organization, education of users and changed perceptions.Promotion includes utilizing persuasive information about general information services, and communicating this information to target market segments that are potential users. Five kinds of promotion include: publicity, public relations, personal representatives, advertising, and sales promotion.

6.7. Process

Process means procedures, mechanism and flow of activities by which a service is acquired. Process decisions radically affect how a service is delivered to customers. The service in continuing

education includes several processes, e.g. first contact with customers, administrative procedure regarding course delivery, preparation, delivery and evaluation of the courses. In library and information centres, new technology can be employed to provide better services at lower costs and high quality staff is to be recruited. The staff should be treated well and be communicated clearly because their attitudes and behaviour are the keys to service quality and differentiations.

7. Constraints in Marketing of Library Services

Following are the constraints in marketing of services of library products

7.1. Carnegie's Syndrome

Carnegie's syndrome still exists. Users still view libraries as a place to obtain free services. Many libraries have a nominal membership fee which hardly amounts to any significant revenue generation. Very few private libraries have a charging policy for library use.

7.2. Lack of Needs Assessment

Many times librarians are not able to assess the requirements of the users. The libraries are mainly involved in developing and managing resources in the library without realising what information product or service will be of value to the users.

7.3. Lack of Trained Human Resource

Libraries in India lack trained marketers. Normally, the library staff holds qualifications in library and information science along with graduation or post graduation in other subjects. With the application of information technology (IT) in libraries and information centres, library staff have been quick to acquire the necessary skills for working in a computerised environment. However, marketing management skills, which are essential for a commercial approach in the library are lacking in library professionals. Therefore, inculcation of a marketing orientation to the library staff is very essential. Library science curricula should be suitably changed to widen the subject of management in greater detail giving importance to topics on marketing, PR and quality management to equip future library professionals.

8. Challenges of Marketing of Library Services

Marketing is important for every library and information product manager and service provider for success in the market. The Libraries must use marketing techniques to understand the needs of their users and to plan effectively to fulfill their requirements and needs. The ultimate aim of marketing here is to provide the right information to the right user at the right time. There are some challenges and difficulties to adopt marketing in public libraries .Here are some of the major challenges:

- Lack of funds.
- Lack of awareness about marketing and its implementation in public libraries.
- Lack of training and knowledge of marketing tools and techniques.
- Marketing is a complicated problem for libraries because of their wide range of products and services from traditional format to digital format.
- Variety in audience that ranges from children to seniors, students to faculty, public officials to business people etc.

9. Conclusion

Libraries are like a 'temple of knowledge' for the society. The library should promote its services to the public to ensure that they are kept informed of the services provided to meet their library and information requirements. Users' survey must be conducted by the libraries to know the opinion about their satisfaction with the product and services of the library, provided to them. Library should arrange a way by which the suggestions about the product and services of the library can be obtained .It may be either a suggestion box or direct communication with the users. By these methods, feedback can be obtained and it can be very helpful to fulfill the requirements of the users. The working of libraries should be user friendly. There should be one reference desk in the library to solve the queries of the visitors. Every library should maintain one visitor book in the library, in which the visitor should write the remarks about the library and its services. There should be one suggestion box in every library. The success and survival of public libraries is dependent on getting the users to use the library resources and services because a library without users is useless. If libraries try to follow all these methods systematically, the usage of library will surely increase.

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Marketing of Information Products and Services in Modern Libraries: *A Study*

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Abstract

The concept of marketing is widely applicable in library and information environment. In this modern age, the library and information services are user oriented. It also describes user's topic such as customers' priorities, expectations, individuality, responsiveness, relationships, quality of services, professional skills and competencies and value added services. It is a total solution for library and information. There have been enormous developments in marketing of library and information services around the world. The "service trinity", i.e. users (customers), the staff (service provider) and information resources and system should be taken care of from the view of these services. In the modern age, the library and information services (LIS) are customer (user) oriented. It is concluded that the modern libraries are information markets and the library users are consumers of information. The ultimate objective of the marketing of library and information services should be the dissemination of the right information to the right customer (user) at the right time.

Keywords: Marketing, Library Products and Services, Information marketing

1. Introduction

The library plays vital role in higher education and that have been well recognised by our librarians, education commissions, committees, planners and by all others concerned with the growth and development of higher education in the country. Realising the library and its role in higher education, the UGC and The national knowledge commission given a very strategic role to libraries and information centres to provide all the information and knowledge support to the process of economic development and growth in 21st century. The issues of this century such as globalisation, privatisation, and liberalisation should not be neglected by higher education system; therefore the marketing of information products and services in higher education should gain importance. The concept of marketing is widely applicable in modern library and information environment. The modern library is now generally called an information market and the library user is a consumer of information. The library should give priority to provide excellent customer service enhancing its image as information provider in the information era. "Right information to the right person at right time" assists in improving the ability of information professionals, to take the right decision which assist in achieving the aims of the organization. Slogan like "Information is Power" proves that without information countries can not develop or a developed country cannot stay developed for a long time.

A librarian always provides desired information to the user. In the context of library and information centres, the products are books, journals, videotapes, audiotapes, monographs and other resources it possesses to meet the information needs of its clientele. There are some unique reasons that require marketing of library and information services and it will help in, Management of Libraries, Commitment to Customer Satisfaction, Understanding Customers, and Welcoming of User/customer, Improving libraries and librarians Image. This paper discusses the developments taking place in marketing of modern library and information services. Further, it tracks outlines of the features and essence of marketing of library and information services.

2. Basic Steps for Marketing of Library and Information Services

Libraries and information centres of all types and sizes are faced with the need to market. Librarians and information professionals must learn to effectively market and advertise their services.

2.1. Competition for customers - Libraries are part of a highly competitive service industry. Competition comes from mega-bookstores, online book dealers, consultants, the Internet, and individuals who feel they can go it alone. Libraries are no longer the only information show in town. Free web access to information is here to stay and non-library and fee access information providers won't hesitate to market to library customers.

2.2. Competition for resources - Libraries of all types have to compete with other organisations or departments for funds. Public libraries have to vie for public monies that provide for their existence. Special libraries find their funding is frequently targeted during parent organisation budget cuts. Marketing library services benefits the bottom line.

2.3. Maintain your relevance - Libraries need to market themselves to remain connected with their communities and have some bearing on real-world issues and present-day events.

2.4. Stop being taken for granted - Libraries need to convey what is unique about the access and services they provide. Both customers and librarians cannot assume that libraries will always be available.

2.5. Promote an updated image - Librarians are not perceived as well-trained, technologically savvy information experts. Most customers do not see the demanding information management responsibilities of a librarian.

2.6. Visibility - Librarians are not on the radar screens of many people who think of themselves as information literate. People who are in positions to employ librarians are not reading much in their professional literature about a librarian's value.

2.7. Valuable community resource - Libraries are and should be viewed as essential and valuable community resources. People need to be made aware of the services and products that are provided and their comparative value. Librarians should be the resource that the local power structure goes to for information.

2.8. Rising expectations - Library users expect recognition, attention, and appreciation for their individual information needs. Customers also have ever-changing needs and wants, which makes the library market as dynamic as retail markets. Marketing helps to create an environment in libraries that fosters customer consciousness among employees.

2.9. Survival - Libraries depend on the support of others for their existence. A library must communicate and work with its customers and governing/funding entities to provide information about what the library is doing and to enable the library to learn about the community it serves.

2.10. Beneficial to library image - Effective marketing can among other things: increase library funds, increase usage of services, educate customers and non-customers, change perceptions, and enhance the clout and reputation of the library and its staff (Steadley, 2003).

3. Need for Marketing of LIS Products and Services

- Balance shrinking funds;
- Cope with the information explosion;

- Create perception of need and thereby create demand;
- Rising prices of reading martials
- Ensure the optimum use of information;
- Fewer Resources and Information Explosion;
- Greater Demand
- Improve the image and status of the libraries and library professionals;
- Introduce cutting-edge information technology systems in library services;
- Promotion of the use of information resources;
- Save libraries from declining reader-support;
- Tackle the problems of rising costs of reading materials, journals, and databases;
- To establish the value of information;
- Uphold the dictum that information is power

As information has become an important salable commodity, libraries should no longer be considered as a non-profit organization and be encouraged to market their services and products, so as to generate financial resources on their own. Academic libraries today rely on their own host organization for their operational cost. In order to become self sufficient to some extent academic libraries have to give serious the cost incurred from their services and also make profit from the same.

4. Prerequisite for LIS Marketing;

For LIS marketing any commodity including the information commodity certain prerequisites are needed. In the case of information commodity the following conditions may be taken into consideration:

- A well-developed store or collection of data or information
- Repackaging of the data of information into marketable commodity
- A target community which would need the information/commodity
- Creation of the awareness about the information/commodity
- Creation of the demand for the said information/commodity
- Marketing of the said information/commodity
- Consumer satisfaction with information/commodity.
- Constant supply of information/commodity
- Collecting feedback
- Conducting research regarding Changing need of customers and improve the quality of information/commodity.

5. Objectives of Information Services

The Objectives of information services in the following words:

- To keep the users abreast of current development in their respective areas to interest or fields of specialization.

- To inform about the current additions to the information centre.
- To provide information this may help to solve technical problems and to promote technical advances and modernization.
- To provide relevant information and comparative data about particular products or process.
- To review and evaluate the developments in a specific subject field scientific, technical and techno-economic.
- To provide an exhaustive list of documents wise or without annotations or abstracts on a specific topic.

Fulfilling these objectives in a reasonable services are provided and at as low a cost as possible.

6. Types of Library and Information Products and Services

Library and information centres offer varieties of information services based on the information resources they posses and to which they have access elsewhere.

B. Guha (1983) enumerates eight types of library and information services based on various approaches and activities. They are:-

- Current Awareness
- Condensation
- Location Service
- Condensation & Repacking
- Reference Service
- Evaluation and Emphasis
- Back-up Services
- Maintenance Service.

The specific modern library and information products and services in broader categories include:

- Abstracting service
- Access to Internet
- Accessing and downloading on-line databases
- Audio-Video Service
- Bibliographic service
- Circulation of New journals in -the field
- Consultancy service
- Current Awareness Service
- Data Compilation
- Indexes and Catalogues
- Lending of Books and other -products

- Newspaper clippings
- Notification of forthcoming title
- On-line service
- Publication Marketing
- Reference service
- Referral service
- Reprographic service
- Reservation facility
- Selective Dissemination of Information (SDI)
- State-of –the-art report
- Training the users
- Translation Service
- Trend Report

The above services have specialized characters that pose problem to the professionals to market, as they are not tangible in nature. The different characteristics of information services are discussed here in detail.

7. Vehicles for promotion of Marketing in LIS:

Some of the important vehicles for promoting the LIS products and services are:

- Library can use communication channels like television, radio, posters and news-papers
- Working environment, including library ambience, uniform of the personnel, physical setting of the library, healthy surroundings which bring a positive impact on the mind of the users for library.
- A library can advertise about its products and services in serials like news-papers, scholarly journals magazines, newsletters, radio, television and on internet etc. advertise in fact, will help in image building of the libraries.
- Design and develop of library brochures and leaflets having aesthetic sense so that the users of the library get attracted to do it.
- Design of good visual communicative posters which can grab the attention of the users towards library products and services.
- Library should organise, book exhibitions, lectures, quiz, debates, user awareness programs, orientation programs, seminars, workshops, conferences, etc.
- Library should create its own website and serve to its user community 24X7.

8. Purpose of Marketing Information Products and Services

Libraries and information centres have accumulated enormous amount of literature. There is a greater need to exploit the utility of these sources. The basic purpose and need for adopting the marketing concept and its tools in the library and information centre environment are governed by the following factors:

Understanding the Users: Marketing will be successful when the professionals understand their patron's wants and needs as clearly as possible. Marketing tools provide ways and means to assess the needs of the users and their seeking patterns. This helps one to have a proper perspective of the information users.

Sustaining the Users: One has to strive to retain the existing users, which is shrinking. The modern marketing concept and techniques concentrate more on retention of the existing customers who in turn can bring more customers.

Enhancing User Sophistication: New technological advances have enabled one to have information in a more sophisticated manner. Users are becoming more sophisticated in seeking the information and using it.

User-Oriented Services: Marketing offers tools and strategies that are user-oriented in designing and offering products and services. Marketing provides information to create segments of the users and offers the desired product or service thereby increasing the ability to perform in the competitive world.

Product and Service Quality: The best way to satisfy the user is offering quality products and services. Service quality as per 'Darlene E. Weingand', (1995) is a perception resulting from attitudes formed by customer's long-term, overall evaluations of performance.

User Satisfaction: The ultimate aim of a library or an information center is to satisfy the information needs of the users it serve. It can be achieved only through systematic efforts to mobilize the resources and offer effective information services. Understanding the user in terms of his information needs of the users it serves.

9. Challenges faced by Librarians

There are, challenges and difficulties faced by users, but it is also very important to consider the challenges to information librarians. Here are some of the major challenges:

Create a positive image: One of the biggest challenges faced by information librarians is to create a positive image as most users hold negative attitudes towards librarians. For decades, people thought of librarians as "trained" or "skilled" but not necessarily as "professionals" and have no idea about the qualifications or training requirements (Ajileye-laogun,2004).

Be proactive: Language problems may hinder users from seeking assistance offered by the library users have to rely on friends rather than librarians for information or instruction. All professional librarians have got to communicate with users about their services because exchanges between the service agent (librarians) and the customer (users) can elicit information about customer requirements, and also permit the services agent to explain the organization's products and how these can meet the customer needs (Rowley, 1998).

Build good relationship: There is no real shortcut to providing good information services to users. According to (Curry & Copeman 2005), quality reference service involves a relationship between the user and librarian within a "Cycle of Dimension of Service": willingness to assist user; knowledge (how to assist user); assessment (of user's need), and action (physically moving with the user).

Create a welcoming environment: Librarian needs to develop the ability to create a welcoming environment, be patient, and build confidence with the users. When librarians are friendly and welcoming and helpful, users are encouraged into the library, whereas, in a library where the librarians are unfriendly and lazy, users are driven away.

Know how to communicate well with users from different cultures: Information librarians need to learn ways of styles because the way people communicate varies widely between one aspects of communication style is language usage. For instance, one user who had huge fines for a book he borrowed because he misunderstood the concept of returning a book.

Respect for cultural differences (Wang & Frank 2002) recommend that information services in libraries that are sensitive to and encompass differences in culturally influenced styles are more likely to be responsive to the information needs and interests of users. As information librarians become more aware of cultural differences, they will become better listeners and communicators and could communicate better with users from different cultural background.

10. Difficulties to Marketing Library and Information Services

Most librarians do not market their libraries, do not know how to market, or do not know how to do it well.

- **Old models** - Many librarians work on the old model of existence by mandate.
- **Humility** - Librarians may be reluctant to capitalize on their strengths and knowledge, while the general public often does not see the value that information professionals could bring to sophisticated information challenges.
- **Myth** - There is a belief that libraries do not need to be promoted in any special way because their importance to society should be apparent to all.
- **Old expectations** - Librarians and libraries are limited by their traditional image; that libraries offer books for lending and provide programming for children, but do not contribute to more sophisticated information needs.
- **Lack of training and education** - Often librarians do not promote library services well due to lack of training and knowledge of marketing tools and techniques. Although marketing is more widely discussed and accepted professionally than in the past. Despite the growing literature on library marketing, there remains a lack of familiarity with the total marketing concept among librarians.
- **Confusion** - There is confusion about what the term marketing means. Much of this has to do with the interchangability of terms such as 'promotion', 'public relations', 'publicity', and 'marketing'. There is also confusion about marketing libraries; the perception is that marketing is a business tool and not applicable to library settings.
- **Fear publicity** - Librarians are often reluctant to borrow from the private sector. They have a fear of commercial publicity and see marketing as manipulative, a waste of time and resources, and unprofessional.
- **Passive vs. active stance** - Rather than selling the library on its value and letting people know what the Library and Information Centre offers, librarians often wait for customers to come to them. Rather than pushing out responses to anticipated information needs to customers, librarians wait for customers to stop by the facility or stumble across the library web site.
- **Complicated for libraries** - Because of their wide range of products and services from books to Internet access, and an extremely diverse audience that ranges from students to faculty, etc.
- **Money and attitude** - Lack of funds is often used as a reason not to market. Marketing is also a matter of improving the customer's experience of library services. The attitude of the

library director and the staff as they interact with customers is what shapes customers' experiences and 'markets' the library to those customers.

11. Suggestions

The library should promote its services to the user community to ensure that they are kept informed of the services provided to meet their library and information requirements. Users' survey must be conducted by the libraries to know the opinion about their satisfaction with the product and services of the library, provided to them. Library should arrange a way by which the suggestions about the product and services of the library can be obtained. It may be either a suggestion box or direct communication with the users, or getting suggestion by email. By these methods, feedback can be obtained and it can be very helpful to fulfil the requirements of the users.

12. Conclusion

Libraries and information centres are facing a time of unprecedented change and Challenge. Recent technological developments are creating new forms of Information, new sources of information and new ways of providing information bypassing traditional institutional like libraries. There has been an increasing Pressure on libraries to mobilize resources and become self-reliant. Library users are transforming into customers with rising expectations, diverse needs and wants, and choices. The notion of services has also changed, from basic to value added, from staff assisted to self -service, from in-house to outreach, from free to priced, from reactive to pro-active, and from mass customization to individualized service. As in such an environment librarians are finding new ways of serving users or customers effectively and efficiently. The principles of marketing have gradually been accepted both as relevant and beneficial to the library environment. Marketing provides an opportunity to see as to how they can offer effective and efficient services to their users or customers. There have been many developments at international level, which have directly or indirectly contributed for the growth and development of marketing in modern library services. The ultimate aim of marketing here is to provide the right information to the right user at the right time.

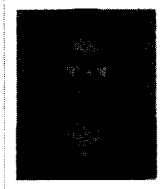
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Marketing of Library Products and Information Services in Indian Academic Libraries

Gangadhar, K.C **Nagaraja A** **Vasantha Kumar, M** **Pratibha S.N**

Abstract

This paper deals with the marketing of library and information services in the academic scenario. In the modern age, the library and information services (LIS) are customer (user) oriented. Therefore, tailor-made services has to be designed considering users' priorities, expectations and needs should be taken into account. The services should be value added according to the current requirement of the users. In this corporate world, modern E-libraries are information markets and the library users are called as consumers of information. To promote our resources, various methods can be deployed in marketing them. The ultimate objective of the marketing of library and information services should be the dissemination of the right information to the right customer (user) at the right time.)

Keywords : Library services; Information services; Marking; Market; Management

1. Introduction

Earlier the concept of marketing was restricted to selling a product and later on, it is totally changing and even applicable in the environment like other service centres such as Education, Health, Transportation, Insurance, Banking and even to Library & Information Science sector. It is a way of serving the user community for maximal use of its resources to its users by adopting required new ways and means to deliver the services. Due to the advent of ICT, It is very much required to attract the user to say what we have, what services you will get at the time, where the user is turning his head towards internet. This subject is getting more emphasis as if emerging as a new Subject.

2. Customers/Clients/Users of Library and Information Centers

In an academic library, the primary clients are the staff and students. There is general or administrative staff, including library staff, with a wide range of needs. If it is an Institution with R&D facility or a University, there is a chance of users from other educational institutions also. In case of external users, usually online facilities are restricted.

Academic Library clients are varied. They can be grouped under various categories by age, discipline of study, origin, ability (or special need) and designation (Student-UG/PG/Staff/Research Scholar) etc.. Clients range from traditional book readers to exclusive netizens. We need to chalk out programmes to deliver the services as per their ability and demand.

In designing the services, various parameters have to be kept in mind. They are like depending on their need, expectation etc.. Clients may use the Library in various methods. Some may borrow, some take photocopy /borrow, some senior professors may expect services to deliver on their desktop, some are well aware and do not need any guidance and some may depend on Library staff for everything. Researchers are required to educate about the Resources available, Search method, making them alert of new research things going on in their field i.e. updating.

3. Changing needs and Requirements of Users

It is a challenge for Library and information professionals to check 'Who are our customers',

'What they want', and 'What are their social characters, values, desires, aspiration'. The advancement of information and communication technologies (ICTs) has enabled education and technology in self-help and do-it-yourself activities in libraries as elsewhere. In the present academic system, Teachers role has changed to Facilitators as such for Library professionals. We need to direct the users to resources and educate them in accessing, downloading them. (Of course, many times the new generation is much better than us!)

In this approach, many libraries have come forward to adopt the application of marketing concepts in their services. In designing the marketing mix and developing the marketing plan, the 4Ps have become more important to Libraries – Product, Price, Place and Promotion. Any Library using marketing techniques to develop its operations should focus on its products/resources (including services); the price paid/amount invested, which may be in terms of money, time or energy; the promotional strategies may include publications, displays and participation in events, physical facilities to access the resources or place from which services are made available and distribution methods including E-resources.

Relationship marketing, in particular, reflecting the mutual interests of libraries and the clients they serve, is being seen as a concept for libraries to embrace. Libraries, after all, are built on relationships [2]. Marketing is directly linked to the clients' perceptions of the services the library offers and the library's interpretation of the clients needs [3]. In developing and maintaining relationships, it is essential that all clients are identified and their needs understood. Market research is a useful tool for discovering and understanding client needs and identifying better ways to meet those needs. In the change process involved, it is always easier to change oneself than it is to change others.

4. Library and Information Products

4.1. Communication

Rowley (1998) divides communication channels into personal and non-personal. Personal communication channels are those in which two or more people communicate, and word of mouth is the primary means of communication, although other media such as e-mail are significant. Non-personal communication channels include TV, Radio, Posters, Newspapers, etc.

4.2. Atmospherics

This term is coined by Philip Kotler (1975) who defines Atmospherics as "the designing of buying and consuming environments in a manner calculated to produce specific cognitive and/or emotional effects on the target market." In other words, the working environment, library ambience, appearance of employees, the physical setting, lighting, work environment, noise levels, etc. These must be healthy and suitable to make a positive impact on users. Atmospheric considerations are often neglected in many libraries and information centers. It is not always a matter of extra cost but simply a matter of thoughtfully designing space in the library, placing of relevant guides to use, etc. This may help in attracting and maintaining users.

4.3. Advertising

Advertising is important for promoting library services. A library can advertise its products and services in Newspapers, Scholarly journals, Magazines, Newsletters, Radio, Television, Web, etc. Advertisements help in image-building. They can be in a short message, or staff can write longer articles on new and existing library services. Librarians can appear on local Radio and TV,

highlighting the new role the libraries play in the present era (Jaafar, 1998). There are a variety of ways of advertising online. Traditional print advertisements include brochures, pamphlets, newspaper advertisements, etc.

4.4. Brochure

The design and presentation of brochures and leaflets should be aesthetic, colourful, attractive and should be distributed freely to all our new students, faculty and visitors. The language should be simple and should hold the interest of the user.

The brochure entitled "Know Your Library" is a very popular medium of dissemination of information about our resources and services. A copy of the brochure is also available for download from library web site. This brochure provides a detailed account of all our activities, rules, resources and services.

4.5. Leaflets

Leaflets include guides to the library and its special collections, Web guides, Reading list on IT, and so on. Other brochures can be kept in the library at a location, so that anyone who enters the library is attracted to that corner.

4.6. Posters

Posters offer good visual communication. They can draw attention when displayed at prominent locations and provide brief information about an event, service, etc. Old and defaced posters should be replaced on a regular basis.

4.7. Newsletters

The library can convey information about new acquisitions, new services, events and activities, fee changes, etc. Information regarding library can be included to convey a message to readers about the alertness of the library in updating and communicating small but important pieces of information. In fact, they are an excellent marketing tool because they list all the activities of a library. With ICT facilities in the library, an e-newsletter can be produced. The text of the newsletter can also be included on the library website.

4.8. Orientation Programmes

Arranging an orientation programme for new students both at undergraduate and postgraduate levels in the beginning of the academic year would be a good click. Chief Librarian has to address the new entrants and explain them the important role a library plays in higher education in Science and Technology. An audio-visual presentation is made to introduce them to the facilities, rules, resources (print and electronic), and services of the library. Training sessions are also to be organized whenever a new product or service is introduced.

4.9. Library Tours

Library tour for new and existing members can be used to promote the library services. All the new entrants are taken to the library tour in small groups to physically show them the library resources, how to access these resources and various other services that they can avail during their studies. Live demonstration of e-resource is one of the important components of the tour.

4.10. Extension Activities

Activities such as book displays, lectures, quiz, debates, seminars, competitions, exhibitions, etc., can have a positive impact on the image of the library and can motivate people to come to the library and promote the use of its products and services. Celebrating Library Month/Day i.e.. by Organizing National Library Day/Week can be an effective way to promote the library. A library can create awareness of its importance in society.

4.11. Promoting in Electronic Environment

Libraries, especially in large cities like Delhi, and Bombay use ICT tools in designing, developing, and disseminating services to satisfy their users. They also use ICT to promote their products and services. ICT-based channels include library websites and email.

4.12. Websites

Library websites can be accessed by users at any time. The websites contain details about the Library, including the Collection, Subscriptions, Service policy, Terms and Conditions, etc. It may also have graphics and multimedia advertising that can have an impact on visitors. The library website should be continuously updated to avoid an adverse effect the image of the library. The website can also be interactive, so users can communicate with staff. For this purpose, a directory of staff members should be posted on the website (Mahajan and Chakravarty, 2007).

4.13. Electronic Mail/Mailshots

E-mail communication establishes personal contact between the Library staff and clients. Users will get fast response and thus they rely more on Libraries. According to Natarajan (2002), e-mail is the most universal application on the Internet and it can be used for direct communication with potential users. There are many benefits to using email as a promotional tool. Mailshots are an effective medium that create personalized services, with information about library activities and events, membership renewal (Singh and Krishan Kumar, 2005).

4.14. Bulletin Board

Display of 'Thought for the Day', News Headlines, 'Today in History' on the notice board attract not only School children but also every student who is in thirst for knowledge.

4.15. Newsgroups

Libraries can use Newsgroups or Discussion groups to build awareness among its clientele. According to Moorthy and Karisiddappa, (2000) a message (an article) is posted to the entire newsgroup. Other interested persons can reply/comment on the message. The topic can range widely, but each group is confined to one subject.

This is an offshoot of email and is a many-to-many email system. It is medium for messages of interest to a community of online users (Moorthy and Karisiddappa, 2000). This service can be used by libraries for disseminating information to online users.

4.16. E-Commerce

A Library can also sell its products online through online charging and towards charge credit fee to access E-resources or Fine payment. E-commerce has redefined the way business is

conducted. Well-known Universities across the world started E-commerce facility and users are more satisfied as it saves time. Benefits of e-commerce for Libraries include-A very large customer base and that reaches many different countries. Maintaining a website is relatively cheap, and results in reduced prices, more competition, current information, quick access and sales caters to the customers' wide and varied interests, saving travel time. Bookstores around the world are offering their holdings over the Internet. For example, Blackwell maintains a database of more than 1.5 lakh active titles (Moorthy and Karisiddappa, 2000).

4.17. Blogs

Blogs are continuously-updated websites, created by individuals or organizations. They are generally free. A library can use blogs to promote its products and services by making it appealing and informative (Mahajan and Chakravarty, 2007). Special alerts about new resources special services can be included in the blog entries. To get feedback, comments and suggestions can be invited from visitors.

5. Digital Library Services

In addition to arranging Printing, Scanning facilities; providing facilities to access Electronic/Online resources in the Library, Delivering the information needs of user like soft copies of Question paper, Courseware, Articles from the online databases to their desktop is very helpful in bringing the reader more nearer to the Library.

5.1. Information Alert Services

The library offers a number of Current Awareness Services (CAS) to inform and alert its users. A weekly/fortnightly list of recent additions of Books, Pamphlets, Reports, Standards, Annual Reports and faculty publications added to the collection is put on the library website. It displays important information of interest appearing in journals, newspapers, newsletters and other sources. The library also displays announcements of forthcoming conferences and international events and list of articles of general interest scanned from the current issues of journals received.

5.2. List Services (Servs) and E-mail

IIT Bombay maintains several list services (mailing lists) to cater to different communities of users,e.g. faculty, research scholars, etc. These lists aim to broadcast a message to a large number of people within the institute or beyond the boundaries of the institute. The library makes good use of all these list services to communicate with the users particularly when a new e-resource is introduced or a service is launched. These services are also useful for informing about New Arrivals or inviting users to a seminar or a demonstration organized by the library. It is an extremely important medium to market library resources and services.

5.3. Web-based Instructions, FAQs

The library uses its website optimally to provide appropriate instructions so that users are able to use various resources and services effectively. A link to FAQs attempts to answer general queries that users normally ask. Other web-based instructions provided are as given below:

- Guidelines for fair use of E-Resources at IIT Bombay
- Submission help (for institutional archive)
- FAQs (online submission of theses)

5.4. Virtual Reference Desk/Ask your Librarian

All our users as well as others can ask any question related to the library using the link "Ask your Librarian" through our website. This link serves as a virtual reference desk.

5.5. Training Seminars and Workshops

Organizing training sessions and workshops for the users whenever a new product, database or service is introduced. These programmes include presentations, demonstrations and exhibitions and are organized at the institute level as well as at the department level depending upon the relevance and need.

5.6. Vendors' Participation

One of the important methods of user awareness is active involvement of the publishers and vendors. It is different from vendors selling their products. They regularly visit the institute to interact with library staff and the users to update them with new developments and/or features added to their product. Publishers or their representatives are also invited to give a detailed presentation about that resource followed by a live demonstration. Many publishers / vendors request the library to let them conduct training sessions to update users about the new features incorporated in their product. It is very much required in case of E-products also help the library in monitoring the usage and maintaining the statistics required while conducting an evaluation of the e-resource.

5.7. One-on-one Appointments

It is an excellent way to get to know the library users personally and to understand their information needs better. It also gives user an opportunity to informally interact with library staff and clarify any of his doubts, queries and to better understand as to how to use various resources and services of the library resulting in the enhanced usage.

6. Conclusion:

What users really expect from Library?

Library clients want basic services. They want competence, reliability, responsiveness, timeliness, honesty and a caring approach and better and skillful service at last. Students want information content for assignments, research or knowledge acquisition. They want assistance with assignments and research support. They want e-books and e-journals and real books and real journal articles, training and motivation in resource discovery, IT skills and equitable service delivery. Marketing today embraces an integrated value proposition.

Present student generation is fast in a hurry and they want everything on hand. Immediately after entering the Institution assume the Library as an icon in general, as a Kalpatharu, a haven within an alien world. Students tend to be crisis-driven in their approach to the Library, are task-oriented, but lack information seeking skills and frequently find the Library a source of frustration. At that time, we should extend our helping hands with warm welcome which in turn, they remain as our permanent customer and retain longer relationship.

From the foregoing study it is concluded that market approach to information services and products is an endeavour to accelerate the services to provide the researchers and scholars with

the required information support. The budget cuts and the advent of sophisticated technology in the Government sector have opened up the new vistas for Private Universities where ample information resources are made available which is a new trend in marketing information products and services to attract students. But God sake, commercial vendors are not yet entered in delivering information service sector as the users do not mind paying for the services if they are useful and provided at reasonable cost at right time. Therefore, the marketing policy of the academic libraries that too in higher education needs 'careful planning, structuring, execution and evaluation with regular review'.

Libraries are changing as not expected. They are being forced to explore the possibilities of cost recovery and profit potentials for their survival in terms of investment on print/E-resources and manpower. Libraries must change according to changing market conditions by designing service, products and develop communication methods and a feedback mechanism to improve service. The only way of survival of Libraries in this competitive era is framing the whole system i.e.. Collection, Preservation, Delivering the goods as per the users' needs.

Service with Smile is a Value-added Service. Guiding them in right direction in search of information resources is a first step in this direction.

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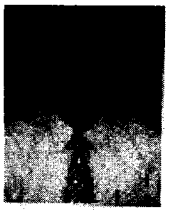
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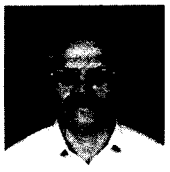
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Marketing of Library Products in Academic Library

Raju .I. Gadad **Sangeeta S. Kusugal**

Abstract

Marketing is not a new concept, in present scenario, but when we talk about library milieu it is totally new. Due to this librarian has to get marketing knowledge. In recent years, marketing has been gaining importance in libraries throughout the world. Self-support policies, increasing competitiveness in the marketplace, rising customer expectations, and widening access to information are some of the main reasons for this trend. Marketing of Library products is nothing but offer a right user to right book in right manner at a right time is called Marketing of Library products. The concept of marketing is totally profit oriented, but Library is non-profit organization. In marketing vendors always search for benefit, in Library user satisfaction is benefit to the Librarian.

Keywords : Marketing, Library Products, Non-profit organization, Academic library

1. Introduction

Marketing is not a new concept, in present scenario, but when we talk about library milieu it is totally new. For the reason that of "**library is non-profit organization.**" Consequently Marketing is profit oriented. Availability of internet facility at less cost, attracting library users, and making them dependent as a result users are becomes indolent. The reason is he/she can get reliable and update information in fraction of the second. Beyond this as a Librarian we have to confine them from internet to library. This is only possible through providing marketing to library products. Due to this librarian has to get marketing knowledge. In recent years, marketing has been gaining importance in libraries throughout the world. Self-support policies, increasing competitiveness in the marketplace, rising customer expectations, and widening access to information are some of the main reasons for this trend. To survive in such an environment, library and information centers must identify their users' needs and integrate this information into the everyday workings of the library.

Here this paper mainly examine on marketing concept in Library science. This paper based on secondary information (data) and analytical.

2. Market concept and library

In simple sense the place of which permit to sell and purchase the goods. Goods in the sense it may be a tangible or intangible, and help the customers to get required thing and to get the benefits to manufacturers for their products. Marketing is going to help the vendor to promote their commodities. It is not a new concept, because man is a social animal. He depends on others for something, to get that something from others means he has to give something to others. It is nothing but just like substitute policy we might see this propensity or policy in an ancient period. Hence Marketing of Library products is nothing but offer a right user to right book in right manner at a right time is called Marketing of Library products. The concept of marketing is totally profit oriented, but Library is non-profit organization. In marketing vendors always search for benefit, in Library user satisfaction is benefit to the Librarian.

Some of the concepts which are relating to the marketing, we may apply these concepts to Library as follows:

Marketing	Library
Products	Reading materials
Customer	Readers
Demand	User requirement
Profit	User satisfaction
Mediator	Librarian
Advertisement	Extension activities

3. Components of the Marketing

- **Products**

Product means manufactured goods it may be a tangible or intangible, which are to be put up for sale, the vendors will make their products an attracting for better benefit in terms of branding, advertising etc. it is in marketing framework. Thus in Library the products are reading materials it may be a primary source, or else secondary source, these library products are kept to reference purpose. Here librarian doesn't get any benefit in the form of money because library is non-profit organization. He can get profit in the form of user satisfaction.

- **Customer**

One who have a requirement of the products and also he should have ability to purchase that product, is called customer. In Library the users/reader are called customer. Users of the Library are Vary from library to Library we shall categories them as follows:-

Academic Library	Public Library	Special Library
Teaching staff	Children	Scientist
Students	Adults	Assist. Of the Scientists
Non-teaching staff	Age old people	Etc...
Research scholars	Students	
	Professionals etc...	

- **Benefit**

Benefit is nothing but Profit. Vendor can get this benefit from the sold product. In the form of cash, chaque, etc... but library is non profit organization, Librarian can't get any kind of money the user satisfaction is main motto of the librarian he should serve for them, that is the main profit for librarian.

- **Supplier/ Mediator**

One who provides the right product to the right customer, at right time in a right manner is called as Mediator. Library context Librarian him play this role in particular for this first, he should know aboutWho are our users, What are the needs of that user, What type of reading materials may satisfy their needs.

- **Demand**

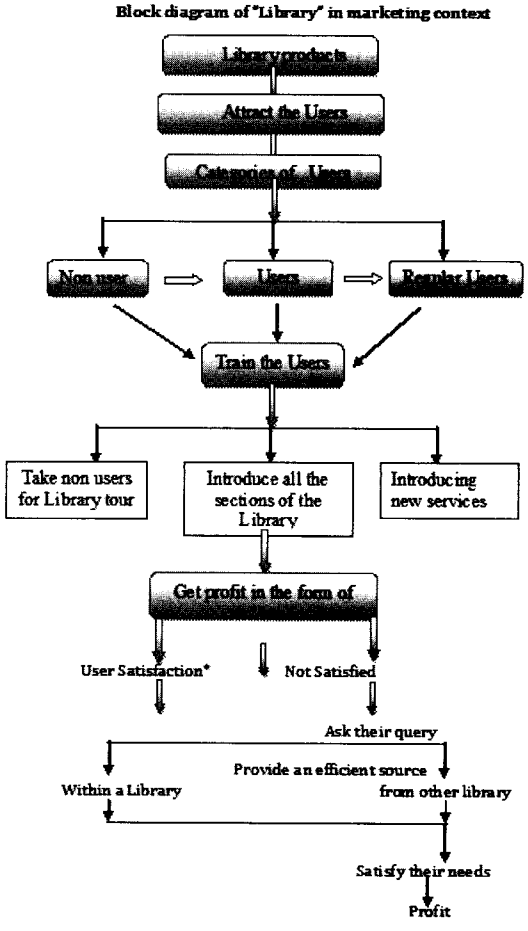
Demand is a capacity of customer, which shows that an ability of the customer. In marketing environment demand may case supply, production, etc... thus in Library user demand also considered as an important factor which going to help to librarian to fabricate the library collection.

- **Advertisement**

Advertisement is main add to provide customer to our products. In marketing, the place which is allow to customer to get their required things. The role of vendor is considered as an important here because he has to sale his products means follow some strategy in the form of providing brand etc... to their products then only it's possible to attract the users. Library context Librarian has to make this toil in providing customers to library products.

- **Promotion**

Promotion is the activity that covers all aids to sales. Promotion stimulates semen and increases sales. Usually promotion moves the product toward the customers. It involves mechanisms that in form the target groups about resources available, services and products offered by the libraries/ information centers. Questions to ask regarding promotion. To whom is the promotional material directed? What is the message? What promotional mechanisms are available? What points are to be considered in the design of a promotional package? What is the role of the library staff in promotional activities?. Normally libraries are not involved in promotion activities, directly, but they use advertising, point of sale displays, publicity and personal contact for existing users for expansion of their services. Brochures, Leaflets, Posters, Newsletter are some methods for promotion of library information products and services.



Block diagram of "Library" in marketing context

"JNANA SOUDHA" K.L.E. University's Jawaharlal Nehru Medical College

The enriched medical library forms an important constituent of the K.L.E'S Jawaharlal Nehru Medical College and Research centre at Belgaum. Now a deemed university under the name of K.L.E. university. Born along with JNMC I the year 1963. On the campus of Lingaraj college Belgaum the creation and education of the Jnana Soudha was inspired by ideas like – acquisition of relevant knowledge intellectual exploration and flights into the limitless skills of the research the interiors of this building have the necessary infrastructure suitable for study into varies aspects of human health, care and cure. As on today this library offers to any aspirant in the field, a pool of 22,000 books, which are meticulously chosen for there contents, added to this, are 8,000 back volumes of relevant fields, and this unit has been subscribing to as many as 186 well-known national and international journals.

Other attractions to study in Library are:

- The hellinet consortium: it offers 1000+ full text journals
- rare books
- Audio/visual materials and equipments
- Digital library with 60 computers having 1MB less line internet connection-

Services:

- Department Library services
- Book bank Library services
- Microfilm reader services
- Binding services
- Reprogramming services
- A/V services
- Medline IPA services
- OPAC and EPAC the Library search engine
- HELINET Databases (OVID and SCIENCEDIRECT)
- Access to Internet, email and CD-ROM Databases

Library at Glance (2012):

Built up Area	12,000
Seating Capacity	350
Total No. of Books	22,000
Total No. of Journals	186 (Indian – 65, Foreign – 121)
Bound volumes	8051
Audio cassettes	51
Video cassettes	134
CD-ROMS	165
Dissertation	895

Thus this Library is one of the well known medical libraries in Belgaum district. Students may get update information by the broachers which is going to publish regular basis. Most of the Jnana soudha Library services are online bases an users can get reliable information through internet.

Marketing of their products

Jnana soudha, JNMC Medical College Library it has an enriched collection pertaining to the Medical science subject. Main objective of this library is to provide users to their products. Hence they are spending lacks together money for overall development of the library and to provide better services to users. Here they are using some strategies in providing marketing to their products. Which are going to helps them in attracting an users to library.

Strategies are as follows

- **Advertisement:**

An adds playing a crucial role in an attracting the customers, which is also going to help the customers to know about the particular product. Thus in Jnana soudha, Librarian providing update information about library with the help of broachers, prospectus, library website etc... which is assist the users to get new things and new services of the Library.

- **Branded products**

Brand is indicates quality of the products, which is going to help the customers to get the particular products without any hindrance. E.g. at time of purchasing footwear everybody will approach for Lunar's, Paragon, Lanceor, etc... compony products. Even illiterate person can approach these companies' products, Because of its quality. Jnana soudha Librarian has been subscribing well known national and international medical science subject online and print version journals. E.g. Indian Journal of Human Genetics, Journal Of Interventional Cardiology, Medical Education, American Journal of Medicine.

These are the reputed journals going to help the medical science students, teaching faculty.

Table 1: Reputed journals helping the medical science students, teaching faculty

Sl.No	Subjects	No of Journals	National	international
1	ANATOMY	6	3	3
2	ANAESTHESIA	5	1	4
3	BIOCHEMISTRY	4	3	1
4	CARDIOLOGY	9	1	8
5	CARDIOTHORACIC SURGERY	7	1	6
6	PULMONARY MEDICINE	5	2	3
7	COMMUNITY MEDICNE	12	9	3
8	DERMATOLOGY/SKIN & VD	9	3	6
9	E. N. T	6	1	5
10	FORENSIC MEDICINE	9	7	2
11	MEDICAL EDUCATION	4	1	3
12	MEDICINE	16	6	10
13	MICROBIOLOGY	6	1	5
14	NEUROLOGY	9	2	7
15	NEUROSURGERY	3	0	3
16	OBSTETRICS AND GYNAECOLOGY	7	1	6
17	OPHTHALMOLOGY	5	1	4
18	ORTHOPAEDICS	6	1	5
19	PAEDIATRICS	9	3	6
20	PATHOLOGY	8	2	6
21	PHARMACOLOGY	6	3	3
22	PHYSIOLOGY	6	1	5
23	PLASTIC SURGERY	3	1	2
24	PSYCHIATRY	7	1	6
25	RADIOLOGY	4	1	3
26	SURGERY	9	2	7
27	UROLOGY	8	1	7
28	HOSPITAL ADMINISTRATION	1	1	0
	Total No of Journals	**189**	**60**	**129**

Database services

At present Jnana soudha subscribed HELINET online database, which consist thousands together full text articles relating to the medical science subject. User can download these articles without any charge. For this database they are spending Rs. 1,30,000 /-per year.

Online services

Computers are acquired each and every field of the society, even library also not for from the computers. Now a day's most of the students won't to come and sit hours together in library. Due to the popularity of internet they want to get required information within fraction of the second. Thus in Jnana soudha they been introduced **Electronic Public Access Catalogue (EPAC)** the library search engine, which is a web enabled search engine that can be accessed on intranet, internet. EPAC can be used to browse/search for an item (book/non book) along with its details and the availability, in a library can also be searched and accessed through EPAC. The library homepage can be accessed at the URL: http://10.0.0.150/EPAC/EPAC selog.asp.

Conclusion

Marketing is essential in making the proper planning, designing and use of such services and products for the better and optimal use of information. The library should give priority to provide excellent customer service enhancing its image as *information provider* in the information era. The library and information services should be user-oriented especially when we are designing them to satisfy the information needs of industrial people. Marketing of library and information services includes customer (users) priorities, expectations, individuality, responsiveness, relationship, quality of services, professional skills and competencies, value-added services, etc. Therefore, university libraries must develop a process for understanding the information needs, wants and opinions of clients from the industries, and develop products and services which satisfy those information needs.

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Mobile Alerting Service for Commerce PG Students of Kuvempu University: *A Case Study*

Dharani Kumar, P **Biradar, B.S**

Abstract

Present study is a kind of innovative and experimental method of providing information alerting service for commerce students of Kuvempu University. This is a case study to provide information alerting service by using basic mobile technology and Web technology. For the present study we use way2SMS as a SMS service provider and chosen 108 respondents from the Department of Commerce, Kuvempu University as a registered member, and provide this service up to six months. Data shows that 42.9% of male and 18.6% of female respondents daily receive alerting service and 51% of male and 64.4% of female receives 1-2 messages every day. Whereas, 55.1% of male and 49.2% of female respondents prefer to receive only commerce related messages. Further study also highlights that 91.83% of male and 79.66% of female like to receive information on competitive examination followed by carrier opportunity information (male 83.67% and female 81.35%). Study concludes that improvement must be needed to upgrade the service and all the respondents mention their valuable suggestion for further improvements.

Keywords : Mobile Alerting service, Commerce information

1. Introduction

In recent past many of research libraries, documentation centres and Universities introduced and started to provide many modernized/specialized and innovative services for the betterment of students and research community. The services such as Selective Dissemination of Information, database service (Online and CD ROM), online literature search service and RSS feeds are some of few specialized services successfully provided by academic institutions. In addition to these a new kind of innovative service is practiced by very few institutions and individuals to alert the user about latest developments in their respective field of study along with related discipline, such a service is called 'alerting service'. Of course it's not a new term or concept, since from the beginning our traditional libraries one or other way providing current awareness service to user by alerting the user about recent arrivals in the library. But in today scenario due to the impact of telecommunication technology and a revolution in the mobile technology made it possible to communicate good piece of information in timely manner as quick as possible and instantly. At the same time there is a high demand for authenticated and reliable information from the academic fraternity. Due to many reasons our user community is in a cross road to choose reliable information that to very essential for their study, research and for successful life leading. Keeping in view the above issues, by considering both the technological developments and the importance of information among the user an experimental study has been conduct to provide alerting service for Commerce students in Kuvempu University by using free SMS service provider called 'Way2SMS'.[1]

2. Need of the Study

We are living in information age where the information resources are proliferating and individuals are faced with diverse and abundant information resources in their studies, work place and in their lives. Information which is available through libraries, mass media and internet is increasingly comes unfiltered. Especially in higher education, where students are more responsible and autonomous in their learning. It is about optimizing the students wellbeing and learning by

activity supporting students to achieve a range of skills, which enable them to understand the appropriates of a variety of information sources, access them efficiently, evaluate the information and use them effectively.

When we look into the library services from traditional to modern/specialized services our libraries pass through different stages. Earlier we depend on traditional information retrieval tools like Catalogue, Classification, Bibliographies, Abstracting and Indexing services to search the information. In India after 1970's very few research institutions took initiation in application of computer technology to library housekeeping activities and start to provide OPAC service, database service (both online and CD-ROM), automated indexing service (PRECIS and POPSI) Online abstracting service (e.g. Chemical abstract, Biological abstract and LISA), NUCSI online, and INB (Indian National Bibliography) etc. Later 1990's onwards World Wide Web made a revolution in knowledge and information domain by providing comprehensive to pinpointed information just by a one mouse click through search engines and Meta search engines. After all these developments, our user community still in cross road to chose reliable and authenticated information which is available through online. Keep in mind the problems and prospects of user in information search, an attempt has been made to provide alerting service by using both web technology and telecommunication technology, especially mobile phone as a service device. At present in India mobile phone is very cheap and cost-effective device in terms of purchase, service and connectivity. After analyzing all the issues there is a huge demand by the user to know the latest trends and developments in their respective field of study, so an attempt has been made to provide alerting service through mobile phone in the tech savvy era.

3. Objectives of the study

- To provide mobile alerting service to the students of Commerce discipline
- To know the awareness about the services offered by the library.
- To know the preferred subject topics in alerting services.
- To know the frequency of receiving alerting service
- To know the satisfaction level of alerting service by commerce students; and
- To invite suggestions to improve the alerting services.

4. Scope and Limitation of the study

The study totally concentrates on students of the Department of Commerce, Kuvempu University. For the present study researcher has chosen 108 respondents from the Commerce department. The study limits to search the Commerce related information on both online and in print medium and send the bibliographical information (URL address in case of online information) through SMS by using mobile technology and free SMS provider like way2sms.com. This alerting service limits to search the information on New book released, Journal article, research articles published in seminars/conference, general articles published in other serial publications, International/National/Local Seminars/Conference/Workshops to be held in Commerce discipline, Information about useful Commerce databases, Job opportunities in different sectors, information about competitive examinations etc. pertaining to purely Commerce discipline.

5. Methodology

For conducting this study researcher opted both experimental and survey method of

research. At the beginning we search free SMS service providers on the web, and identified that Way2sms is a best free SMS service provider among other service providers. The criterion behind the selection is provision of sending the number of characters i.e. length of the message. In case of Way2sms one can send up to 140 character in a single message, apart from this, it is more user-friendly, secured and free. In the next stage of the study we identified the interested user from the Commerce department who like to receive alerting service, and their interested topics are recorded. Later we create a free account in Way2sms by providing research team single operative phone number along with account holder details and register all 108 user phone number and name details in way2sms database. After the successful registration start to search the web for user required information in Commerce discipline and identify the URL's and copy and paste it into way2sms 'message send box' and send the message at a time to all 108 user those who register for alerting service. Apart from the online search, frequently made a visit to library and identify the latest and new arrivals of books and periodicals, noted the bibliographical information and typed it in way2sms message box and send it to the user. We provide this service for our users up to six months (August to January 2012 i.e. from the beginning of first and fourth semester). At the end of their semester exam, keeping in view the study objectives we designed the structured questionnaire which includes questions to explore the preferred subject topics of the user along with satisfaction level of Commerce alerting service, and the same should be distributed and data should be collected. An attempt has also made to interact with the respondents to know their grievances in exploring the library information resources.

6. Data analysis

For the present study 108 questionnaires were distributed for all the registered members of commerce alerting service which includes 49 male and 59 female respondents. The data collected has been analyzed in the form of tables and graphs by using SPSS package.

Table 6.1: Awareness about library services

Awareness about library services	**Male** (N=49)	**Female** (N=59)
Circulation	24 (49.0%)	27 (45.8%)
Book bank	29 (59.2%)	34 (57.6%)
Periodical	15 (30.6%)	32 (54.2%)
CAS	19 (38.8%)	20(33.9%)
News paper clipping	29(59.2%)	35 (59.3%)
SDI	7 (14.3%)	3 (5.1%)
Alerting service	6 (12.2%)	10 (16.9%)
Carrier opportunities	21(42.9%)	23(39.0%)

Table 6.1 highlights the awareness of library services among the respondents. Data shows that majority of the male (59.2%) and female (59.3%) respondents have awareness about news paper clipping service and book bank service i.e. male (59.2%), female (57.6%). Whereas 49.0% of male and 45.8% of female are aware about circulation service and carrier opportunity service (male 42.9%, female 39.0%) which is provided by the University library. Only 38.8% of male and 33.9% of female are aware about current awareness service followed by periodical service (male 30.6%, female 54.2%). Compared to male (12.2%) respondents, 16.9% of female respondents are aware about alerting service prior to this study.

Table 6.2: Frequency and Average alerting messages

	Male (N=49)	**Female** (N=59)
Registered members	49(100%)	59 (100%)
Frequency		
Daily	21(42.9%)	11 (18.6%)
Weekly	16 (32.7%)	20 (33.9%)
Bi-weekly	4 (8.2%)	9 (15.3%)
Alternative days	7 (14.3%)	11 (18.6%)
Average alerting messages received every day		
1-2	25 (51.0%)	38 (64.4%)
3-4	15 (30.6%)	10 (16.9%)
5-6	2 (4.1%)	1 (1.7%)
More than 6	6 (12.2%)	7 (11.9%)

It is evident from the table 6.2 that all the respondent's (100%) willingness to register themselves in commerce alerting service. In case of frequency of receiving alerting service data shows that compare to female (18.6%), quite a good percent of male (42.9%) respondents daily received the alerting messages, the reason behind this is most of the female respondents use the registered phone number during class hour only, later they switch on to another number. Whereas, equal number of both male (32.7%) and female (33.9%) respondents receive alerting messages in weekly mode, followed by bi-weekly and alternative days.

At the initial stage of the project we used single account to send mobile alerting messages to all the respondents, later due to the act of TRAI (Telecom Regulatory Authority of India) sending SMS is restricted to 20/day, which leads to decrease in the number of sending messages. To overcome this problem we create another four accounts in way2sms has been started to send mobile alerting messages. Available data shows that 51.0% male and 64.4% of female respondents received 1-2 alerting messages every day and 30.6% of male and only 16.9% of female received 3-4 messages every day, very least percent of respondents received more than six messages everyday (male 12.2%, female 11.9%).

Preferred subject topics

One of the major objectives of the study is to know the preferred subject topics of the respondents while receiving the alerting service. Table 6.3 highlights that 91.83% of male and 79.66% of female respondents prefer to receive only competitive examination information whereas, 83.67% of male and 81.35% of female respondents like to receive job opportunity information followed by commerce related information (male 55.1%, female 49.2%). Whereas very few respondents seek information related to other discipline, general knowledge, politics, social issues, sports and entertainment.

Table 6.3: Preferred subject topics

Subject topic	**Male** (N=49)	**Female** (N=59)
Only commerce related	27 (55.1%)	29 (49.2%)
Other discipline	11 (22.4%)	12 (20.3%)
Job opportunity	41 (83.67%)	48 (81.35%)
Competitive examination	45 (91.83%)	47 (79.66%)
General knowledge	18 (36.7%)	26 (44.1%)
Politics	7 (14.3%)	5 (8.5%)
Social	4 (8.2%)	6 (10.2%)
Sports	5 (10.2%)	8 (13.6%)
Entertainment	8 (16.3%)	11 (18.6%)
Information required		
Syllabus oriented	29 (59.2%)	21 (35.6%)
Higher education	24 (48.97%)	11 (18.6%)
Carrier opportunity	41 (83.67%)	48 (81.35%)
Competitive examination	45 (91.83%)	47 (79.66%)
Research oriented	13 (26.53%)	11 (18.6%)
Conference/seminars	32 (65.30%)	29 (49.2%)
Online services	28 (57.14%)	22 (37.28%)
Link to the databases	21 (42.85%)	19 (32.20%)
Link to the online journals	18 (36.73%)	17 (28.81%)
Books released	30(61.22%)	26(44%)
Latest trends in banking & commerce	19(38.77%)	14(23.7%)
Corporate information	18(36.7%)	14(23.7%)

Apart from the preferred subject topic researcher made an attempt to know the specific information needs of the commerce students. Data summarized in the table 6.3 shows that 91.83% of male and 79.66% of female like to receive information on competitive examination followed by carrier opportunity information (male 83.67% and female 81.35%) whereas, 65.30% of male and 49.2% of female like to receive information on forthcoming conference/seminars. Further 59.2% of male and 35.6% of female prefer to receive syllabus oriented information followed by higher education (male 48.97%, female 18.6%). Least percent of respondents like to receive mobile alerting messages on new book releases, online services, link to the databases and link to the online journals etc.

Satisfaction level of CAS

Further respondents were also asked to mention the level of satisfaction by the commerce alerting service (CAS) regarding the information sought by the respondents. Summarized data in the table 6.4 shows that 38.77% of male fully satisfied with competitive examination information followed by carrier opportunity and conference/seminar information (each 36.73%). Whereas 26.53% of them fully satisfied from syllabus oriented information followed by new books arrival information (26.53%) and information related to higher education (24.48%). In case of female respondents 35.59% of them fully satisfied from carrier opportunity information and 33.89% on competitive examination. Whereas meager percent of both male and female respondents satisfied from all other information, which is disseminated through mobile alerting service for Commerce students of Kuvempu University.

Table 6.4: Satisfaction level of CAS

Services	Male (N=49)				Female (N=59)			
	A	B	C	D	A	B	C	D
Syllabus oriented	13 (26.53%)	07 (14.28%)	09 (18.36)	20 (40.81%)	08 (13.55%)	08 (13.55%)	05 (8.47%)	38 (64.40%)
Higher education	12 (24.48%)	08 (16.32%)	04 (8.16%)	25 (51.02%)	06 (10.16%)	00	05 (8.47%)	48 (81.35%)
Carrier opportunity	18 (36.73%)	16 (32.65%)	09 (18.36)	08 (16.32%)	21 (35.59%)	16 (27.11%)	11 (18.64%)	11 (18.64%)
Competitive examination	19 (38.77%)	17 (34.69%)	09 (18.36)	04 (8.16%)	20 (33.89%)	15 (25.42%)	12 (20.33%)	12 (20.33%)
Research oriented	07 (14.28%)	05 (10.20%)	01 (2.04%)	36 (73.46%)	00	07 (11.9%)	04 (18.6%)	48 (81.35%)
Conference/seminars	18 (36.73%)	07 (14.28%)	07 (14.28%)	17 (34.69%)	07 (11.86%)	17 (28.81%)	05 (8.47%)	30 (50.84%)
Online services	08 (16.32%)	13 (26.53%)	07 (14.28%)	21 (42.85%)	10 (16.94%)	08 (13.55%)	04 (6.77%)	37 (62.71%)
Link to the databases	09 (18.36)	07 (14.28%)	05 (10.20%)	28 (57.14%)	03 (5.08%)	12 (20.33%)	04 (6.77%)	40 (67.79%)
Link to the online journals	08 (16.32%)	06 (12.24%)	04 (8.16%)	31 (63.26%)	05 (8.47%)	06 (10.16%)	06 (10.16%)	42 (741.18%)
Books released	12 (24.48%)	13 (26.53%)	05 (10.20%)	19 (38.77%)	09 (15.25%)	13 (22.03%)	04 (6.77%)	33 (55.93%)
Latest trends in banking & commerce	06 (12.24%)	09 (18.36)	04 (8.16%)	30 (61.22%)	00	08 (13.55%)	06 (10.16%)	45 (76.27%)
Corporate information	05 (10.20%)	09 (18.36)	04 (8.16%)	31 (63.26%)	11 (18.64%)	08 (13.55%)	06 (10.16%)	45 (76.27%)

A=fully satisfied, B=Satisfied, C=Partially satisfied, D=Not satisfied

Improvement needed to upgrade the service

After providing commerce alerting service up to six month researcher aim is to collect the feedback from the respondents regarding the improvement needed in mobile alerting service along with suggestion. For this purpose researcher put some expected reasons before the respondents to know their comments on it. Data in the table 6.5 shows that 38.8% of male and 50.8% female opined that 'post the latest news only' and 38.8% male and 44.1% of female opined to say 'increase the number of messages' every day. Further 20.4% of male and only 8.5% of female opinion is provide the exact URL of the link page followed by provide link to the exact page (male 14.3%, female 11.9%).

Table 6.5: Improvement needed to upgrade the service

Improvements	**Male** (N=49)	**Female** (N=59)
Post the latest news only	19 (38.8%)	30 (50.8%)
Provide exact URL of the link page	10 (20.4%)	5 (8.5%)
Provide link to exact page	7 (14.3%)	7 (11.9%)
Increase the number of messages	19 (38.8%)	26 (44.1%)
Suggestions		
Do not break the messages	25 (51.0%)	38 (64.4%)
Try to send the messages in working hour	6 (12.2%)	6 (10.2%)
Do not send the messages in class hours	15 (30.6%)	17 (28.8%)
Send the messages from any one number	10 (20.4%)	19 (32.2%)
Send the messages only in holidays	5 (10.2%)	4(6.8%)

7. Suggestions

At the end of questionnaire researcher collects the valuable suggestion from the respondents. It is interested to note that all the respondents respond to the questionnaire and

shares some suggestion to improve and uplift the quality of alerting service. Table 6.8 reveals that 51.0% of male and 64.4% of female suggest that 'do not break the messages' and 30.6% of male and 28.8% female suggest that 'do not send the messages in class hours'. Further 20.4% of male and 32.2% female suggests that 'send the messages from any one number' otherwise it will confuse and irritate the respondents. Some respondents suggest that try to 'send the messages only in working hours' and send the messages 'only in holidays'.

8. Conclusion

The main objectives of today's libraries are to obtain self-sufficiency in their resources and to provide an optimum level of services to reach more potential users and encourage the use of library resources. Libraries are service institutions, they provide information services to the users .The use of ICT in designing and delivery of library services, achieves economy, ease, extension (or expansion) and efficiency are most essential in the IT era. ICT helps to provide traditional library services more efficiently to innovate new facilities and capabilities in library services to transform the nature of library services. In this direction alerting service is a new boon to small libraries to University library. Anyone can offer this kind of innovative service for the betterment of academic fraternity with basic IT knowledge. Further this study is not only for academic community it is more suitable to provide community based information service for any community, but the lack of interest by the library professionals to learn and implement this kind of simple and easy method of information dissemination is a big problem in LIS field. The reason behind the successful implementation of this kind of innovative service is lack of dedication, updateness and lack of willingness towards service motto. This study concludes with considering the student's suggestion, it needs to be update and alter the service exigency and improve in the next stage of project.

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Patent Information Service for Innovation: *A Strategy for Organizing Scholarly Knowledge in the Library*

Sangayya S Sirurmath **Shiddayya S Shirur**

Abstract

A patent is a form of intellectual property. It consists of a set of exclusive rights granted by a sovereign state to an inventor or their assignee for a limited period of time, in exchange for the public disclosure of the invention. In this paper discussed the growth, importance, procedure and enactment of patent acts & laws of different countries, and special reference to India. Finally how library and information centers can provide patent information services through the web portal.

Keywords : Patent, Innovation, Act, Law, Library, Information, Service

1. Introduction

A patent is a form of intellectual property. It consists of a set of exclusive rights granted by a sovereign state to an inventor or their assignee for a limited period of time, in exchange for the public disclosure of the invention. The procedure for granting patents, requirements placed on the patentee, and the extent of the exclusive rights vary widely between countries according to national laws and international agreements. The exclusive right granted to a patentee in most countries is the right to prevent others from making, using, selling, or distributing the patented invention without permission *(WIPOs)*. Under the World Trade Organization's (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights, patents should be available in WTO member states for any invention, in all fields of technology, (TRIP) and the term of protection available should be a minimum of twenty years *(TRIPs)*. Nevertheless, there are variations on what is patentable subject matter from country to country. The word patent originates from the Latin patere, which means "to lay open" (i.e., to make available for public inspection). In modern usage, the term patent usually refers to the right granted to anyone who invents any new, useful, and non-obvious process, machine, article of manufacture, or composition of matter. The intellectual property rights are also called patents in some jurisdictions: industrial design rights are called design patents; plant breeders' rights are called plant patents and innovation patents. Particular species of patents for inventions include biological patents, business method patents, chemical patents and software patents.

2. Significance of Patent

A patent gives right to the patent owner to prevent others from making, using, selling, or importing the invention defined in the claims of the patent, thus preventing competitors from competing in the manufacture and sale of the invention. A patent controls the activities of all potential competitors in the country of the patent, while a contract or license only controls the activities of those who are actually parties to the contract. It would be virtually impossible to create the protection obtained from a single patent through contracts alone. Once a patent is granted, it allows the patent owner to sell the right to the patented invention outright, or license the rights to produce the invention for a lump sum or for a stream of royalties, or both. A patent also allows the patent owner to prevent the patented invention from being produced or marketed by anyone else, thereby securing the market for the patented invention for the patent owner.

Patent Acts of Different Countries

Canada	Patent Act	Germany	German Patents Act
India	The Patents Act, 1970[1]	New Zealand	Patents Act 1860 (24 Vict No 14) The Patents Act 1953 (No 64) [2]
UK	The Patents Act 2004 (c 16) The Copyright, Designs and Patents Act 1988 (c 48) The Patents, Designs and Marks Act 1986 (c 39) The Patents Act 1977 (c 37) (see Patents Act 1977 (as amended up to and including 1 January 2010)) The Patents and Designs (Renewals, Extensions and Fees) Act 1961 (9 & 10 Eliz 2 c 25) The Patents Act 1957 (5 & 6 Eliz 2 c 13) The Patents Act 1949 (12, 13 & 14 Geo 6 c 87) The Patents and Designs Act 1949 (12, 13 & 14 Geo 6 c 62) The Patents and Designs Act 1946 (9 & 10 Geo 6 c 44) The Patents and Designs Act 1942 (5 & 6 Geo 6 c 6) The Patents, Designs, Copyright and Trade Marks (Emergency) Act 1939 (2 & 3 Geo 6 c 107) The Patents and Designs (Limits of Time) Act 1939 (2 & 3 Geo 6 c 32) The Patents &c. (International Conventions) Act 1938 (1 & 2 Geo 6 c 29) The Patents and Designs Act 1932 (22 & 23 Geo 5. c 32) The Patents and Designs (Convention) Act 1928 (18 & 19 Geo 5 c 3) The Patents and Designs Act 1919 (9 & 10 Geo 5 c 80) The Patents and Designs Act 1914 (4 & 5 Geo 5 c 18) The Patents and Designs Act 1907 (7 Edw 7 c 29) The Patents and Designs (Amendment) Act 1907 (7 Edw 7 c 28) The Patents Act 1902 (2 Edw 7 c 34) The Patents Act 1901 (1 Edw 7 c 18) **The Patents, Designs, and Trade Marks Acts 1883 to 1888** The Patents, Designs, and Trade Marks Act 1883 (46 & 47 Vict c 57) The Patents, Designs, and Trade Marks (Amendment) Act 1885 (48 & 49 Vict c 63) The Patents Act 1886 (49 & 50 Vict c 37) The Patents, Designs, and Trade Marks Act 1888 (51 & 52 Vict c 50)	USA	United States patent law: Patent Act of 1790 Patent Act of 1793 Patent Act of 1836 Patent Act of 1922 Patent Act of 1952 Patent and Trademark Law Amendments Act of 1980 Patent Reform Act of 2005 (not enacted) Patent Reform Act of 2007 (not enacted) Patent Reform Act of 2009 (currently pending legislation)

3. Indian Patent Act

The Indian Patent Office is administered by the Office of the Controller General of Patents, Designs & Trade Marks (CGPDTM). This is a subordinate office of the Indian government and administers the Indian law of Patents, Designs and Trade Marks. The CGPDTM reports to the Department of Industrial Policy and Promotion (DIPP) under the Ministry of Commerce and Industry and has five main administrative sections: Patents, Designs, Trade Marks, Geographical indications and Patent Information System. The patent office is headquartered at Kolkata with branches in Chennai, New Delhi and Mumbai, but the office of the CGPDTM is in Mumbai. The office of the Patent Information System is at Nagpur. The Controller General, who supervises the administration of the Patents Act, the Designs Act, and the Trade Mark's Act, also advises the Government on matters relating to these subjects.Under the office of CGPDTM, a Geographical Indications Registry has been established in Chennai to administer the Geographical Indications of Goods (Registration and Protection) Act, 1999. The Indian Patent Office has 75 Patent Examiners, 70 Assistant Controllers, 7 Deputy Controllers, 1 Joint Controller, and 1Senior Joint Controller, all of whom operate from four branches. Although the designations of the Controllers differ, all of them (with the exception of the Controller General) have equal authority in administering the Patents Act. An Indian Patent Examiner is mandated to search for prior art and for objections under any other ground as provided in the Patent's Act, then to report to the Controller, who has the power to either accept or reject Examiners' reports. Unlike the system at the USPTO /EPO/JPO, Examiners at IPO have only recommending power and the controllers are empowered by statute either to accept or refuse their recommendations. This means that only Controllers have the power to grant or refuse patents in India.

3.1. Indian Patent Amendments Act

Amendments (in 1999, 2002, 2005, 2006) were necessitated by India's obligations under TRIPS, allowing product patents in drugs and chemicals. A controversial provision of this amendment was on software patent-ability, which was later withdrawn in another amendment (Patents Act, 1970, as amended by Patents (Amendment) Act, 2005). It is clear from the legislative history and interpretation of provisions in the Patent Act, 1970 (as amended in 2005) that the Patent office should not allow intrinsic patent-ability of computer programs. But there is evidence suggesting that the Patent office has acted otherwise.(patent JWIP) Patent Rules 2003 were amended in 2005 and again in 2006. Some of the important features of both the 2005 & 2006 Rules are the introduction of reduced time lines and a fee structure based on specification size and number of claims, in addition to a basic fee. Term of every patent in India is 20 years from the date of filing of patent application, irrespective of whether it is filed with provisional or complete specification.

3.2. Geographical Indications Tags

India, as a member of the World Trade Organization (WTO), enacted the Geographical Indications of Goods (Registration & Protection) Act, 1999 has come into force with effect from 15 September 2003. GIs have been defined under Article 22(1) of the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights(TRIPS) Agreement as: "Indications which identify a good as originating in the territory of a member, or a region or a locality in that territory, where a given quality, reputation or characteristic of the good is essentially attributable to its geographic origin." (Business Standard) The GI tag ensures that none other than those registered as authorized users (or at least those residing inside the geographic territory) are allowed to use the popular product name. Darjeeling tea became the first GI tagged product in India, in 2004-05, since then by

September 2010, 132 had been added to the list.(TOI),(Hindu),(TOI),(Indian Exp) All the items with GI tags are listed below:

State	Items	State	Items
Andhra Pradesh	Guntur Sannamchilli, TirupatiLaddu, Hyderabadihaleem and Gadwalsarees	Himachal Pradesh	Kinnauri shawl
Karnataka	SandurLambani embroidery, Kasuti embroidery, Ilkalsarees, Channapatna toys, Hoovina Hadagali jasmine, Monsooned Malabar coffee, Monsooned Malabar Robusta Coffee and Coorg Green Cardamom, Molakalmurusarees, bronze ware, Navalgund Durries, Mysore Ganjifa cards, Mysore silk, Mysore agarbathis (incense sticks), Bidriware (metal design), Mysore rosewood inlay, Mysore sandalwood oil, Mysore Sandal Soap, Mysore traditional paintings, Coorg orange, Mysore betel leaf, Nanjangud banana, Mysore jasmine and Udupi jasmine.	Maharashtra	Nashik valley wine, Mahabaleshwar strawberry and Paithanisarees
Kerala	Kasaragodsarees, Kuthampullysarees, MattuGulla, Aaranmulakannadi.	Rajasthan	Bikaneri Bhujia
Tamil Nadu	Salem Fabric, Kancheepuram Silk Sarees, Madurai SungudiSarees, BhavaniJamukkalam, Coimbatore wet grinders, ThanjavurVeena	Uttar Pradesh	Banarasi brocades and sarees and hand-made carpet from Bhadohi, Meerut Scissors got this tag in january 2013.
West Bengal	Darjeeling tea		

The following is the annual trend in patent applications for the last several years in India

Particulars	1999-2000	2000-01	2001-02	2002-2003	2003-04	2004-05
Patents Filed	4824	8503	10592	11466	12613	17466
Patents Examined	2824	4264	5104	9538	10709	14813
Patents Granted	1881	1318	1591	1379	2469	1911

(http://www.startupdunia.com)

Of all the patent applications that originated in India, Maharashtra accounted for the maximum number of applications, followed by Delhi, Tamil Nadu, Andhra Pradesh and Gujarat. Some of the leading patent applicants were CSIR, Sun Pharma, Jubilant Organosys, Hewlett Packard, Matrix Laboratories, Biocon India. The major countries such as Japan, USA, Korea, China, EU, Germany, Canada, Australia, Russia, UK, Brazil, **India**,France, Mexico and Norway.The number of patent filings in India increased by year to year between 1995 to 2004. Even though the percentage

increase seems pretty big, the actual number of patent filings is pretty small as compared to some of the rest of the countries. People need to be educated about the patent filing process. The significance of patents needs to be highlighted and the process of searching and applying for a patent should be made extremely easy.

4. Digital Databases

The following digital databases are widely used national and international level

Multi-national Patent Databases

Name of the Database	Remarks
Alexandria	Extensible, global storage facility for high quality scientific, technical, and business information. An open analytics platform, initially populated with patent data (Fairview Research)
Aureka	Enterprise-wide IP research, analysis and management platform (Thomson Reuters)
CAplus	Most authoritative worldwide coverage of patent information in many scientific disciplines (Chemical Abstracts Service)
Delphion	(Thomson Reuters)
DEPATISnet	Provides free access to bibliographic data from an expanding number of issuing authorities (CH, EP, FR, GB, JP, US, WO) as well as full-text German patents and patent documents in PDF format. (German Patent and Trademark Office (DPMA))
Derwent World Patents Index	The most comprehensive and extensive database of value-added patent documents published in the world. (Thomson Reuters)
Designs in orbit.com	Global industrial designs search and watch service covering BX, CA, CH, CN, DE, ES, EU, FR, GB, JP, KR, RU, US, and WO. (Questel)
Dialog	An online information service with more than one billion unique records including in-depth repositories of scientific and technical data, patents, trademarks and other intellectual property data
EAPATIS	Eurasian Patent Organisation web database with free access (with registration) to abstracts and bibliographic data to EAPO patents, and paid access to full specifications of patents from 30 issuing offices, including EAPO, all former Soviet Union nations, and Soviet Union patents and invention certificates back to 1924.
edital.com	Search trademarks, domains, and designs online and cover more than 250 registers. Elaborate statistics and insert your legal opinion directly online with the help of the wizard.
edital.comEquerion	Equerion offers back-files, monthly updates or the development of new patent/trademark databases of official IP data from any Latin American countries plus several other regions. All these contents and databases are available in XML format and they are ready to be distributed, licensed, acquired or embedded in a wide range of ways. For more information about existing/on-development databases (e.g. Argentina, Brazil, Chile, Colombia, Greece, Mexico, Panama, Paraguay,

	Peru, Portugal, Uruguay, United States and Venezuela), www.equerioncorp.com/ipdatabases.
Esp@cenet -	EPO Service to search and download patents.
European Patent Foundation	A continuously updated database of all patent applications filed in the European Union since 1978, in an easy to understand and search platform.
IFI CLAIMS Classic	Complete and reliable US patent data carefully curated with standardized and probable assignees, legal status, and over 50 years of rich chemical indexing and title enhancements.
IFI CLAIMS ClassicIFI CLAIMS Global Patent Database	A comprehensive global patent database available through the CLAIMS Direct Web Service. The database combines information from multiple national and international sources into a single normalized proprietary ST.36-based XML format. Legal status, US reassignments and referenced images are also included.
Innography	Correlated patent, litigation and business search and analysis.
INPADOC	Patent Family and Legal Status.
IP.com	The Intellectual Property Library is a free international database of over 10 million patent and patent-related publications.
IPEXL Patent Search	A free patent search service with a focus on Asian patent offices and multilingual support.
Linux Foundation Patent Commons	Database of IT patents which the proprietors have pledged not to enforce if open-source conditions are met.
MAREC	MAREC is a subset of the Alexandria repository, a global storage facility for high quality scientific, technical and business information (Fairview Research). MAREC consists of 19 million patent documents in different languages, normalized to a highly specific XML format (IRF)
MARPAT on STN	Complex, but robust, database of chemical Markush structures from patents; used for comprehensive patent retrieval through structure searching (CAS)
MicroPatent	PatentWEB and TrademarkWEB (Thomson Reuters)
National patent collections	Available for ARIPO, Argentina, Brazil, Cuba, Israel, Mexico, Morocco, Republic of Korea, Singapore, South Africa, Spain, and Viet Nam including full-text search and document images for many collections. (World Intellectual Property Organization)
Nordiskapatent	Free database allowing searching of patents from Denmark, Norway, Sweden and Finland. Only available in the local languages.
orbit.com -	This advanced version of QPAT is the new IP platform for any specialist looking for immediate answers and best practices. Very user-friendly, Orbit.com combines the most comprehensive coverage and powerful interface. Search Questel's famous FamPat database and key content, and cover 60+ million documents grouped in 40+ million inventions with 18+ million images from 90+ patent authorities PLUS 20+ full texts integrating the legal status, all in native or machine-

	aided translated English. In addition to the express and regular search interfaces, search citations, legal status, and industrial designs, order worldwide file histories and patent copies, monitor patent and legal status, analyze graphs and stats, and manage your portfolio. ALL IN ONE. (Questel)
PatBase	A comprehensive full text searchable patent database covering over 30 million patent families (Minesoft)
Patent Fetcher	Free U.S. and Foreign patent publications in PDF form.
Patent Integration	This service packages provides a standard patent searching of 16 million U.S., Europe, International publication and Japanese patents, a visualizing patents population on the basis of text-mining technology, and a creating rich patent chart.
Patent Lens	Free database from the Australian Cambia organisation, offering full text and status searching of WO, EP, AU and US patents.
Patents.com	A comprehensive free patent search site
PATENTSCOPE® Search Service	Free full-text search and first publication worldwide of PCT international applications from 1978 to present as well as access to PCT file contents and national phase entry data for 40+ offices.
PATONline	The subscription database from the Technical University of Ilmenau may be accessed in either English or German and contains full-text documents (PDF/TIFF) from DE, EP, WO, US, JP, DD, FR, RU, SU, and GB. Documents from other countries can be requested online.
PharmaValet	A database of approved US and Canadian drugs and their associated patent information. Extensive search capabilities by drug or patent. Features include: expiration, approval, and extension dates, Patent Family and Legal Status (containing SPC and Patent Term Extension info), synonyms and chemical structures, therapeutic class, integrated paragraph IV data, and more
PROPIS	Subscription database from P & TS of Switzerland, offering both patents and non-patent technical and scientific literature.
RAPID	A subscription multi-source solution to manage patent and non-patent monitoring results. Simple and intuitive interface, compatible with key information providers, collaborative workspace, gives access to all patent information (PDF, legal status, european register mosaic view).
Research Disclosure	Operated by Questel, provides a cost effective way of creating defensive publications to stop others from patenting inventions. The concept is simple: by publishing details of an invention, you create citeable prior art stopping others from patenting the idea. The RD service is fast, effective and inexpensive; full paper and immediate online publication start at $120. RD's 51 year archive of defensive publications is a well-recognized prior art search resource. Patent Examiners are required to search Research Disclosure by PCT mandate.
STN International	Premier online database service providing science, technology, and patent information.

SurfIP (IP Office of Singapore) -	International free patents, trademarks and designs search service with a bias towards Asia.
Thomson CompuMark	Trademark and Copyright (Thomson Reuters)
Thomson Innovation	A single, integrated solution that combines intellectual property, scientific literature, business data and news with analytic, collaboration and alerting tools. (Thomson Reuters)
TotalPatent	30 full-text and 100 bibliographic patent authorities, searchable in original language or English machine translation; 50+ million PDFs that are searchable, bookmarked, multi-page, and condensed; 40 million patent families; multiple search options including a true semantic search that works with your search expertise and gives you full transparency and control of the concepts it suggests; integrated and linked to a variety of related solutions including *PatentOptimizer™*,*Chisum on Patents*,BizInt Smart Charts for Patents, SciVerse Scopus™, and more. (LexisNexis)
WIPS	Subscription database from Korea offering patents from various major nations.

B. Single-authority patent databases or online official journals

Name of the Database	Remarks
Albania Bulletin of Industrial Property	Since 2004
Argentina - Searchable Patent Journal.	Issues since 2004.
AU Published Patent Data Searching	Previous official Australia database still required for some older documents.
Auspat	Newest Australian patent search and status database to gradually replace older systems
Australia patent specification server	Access to A, B, or C specifications by number only
Australian Official Journal of Patents	Old law patent journal for applications before 5th July 2002
Austria Publications Server	Search by number or IPC
Austria status database	Search by number only, more data may be available with paid subscription
Belize Intellectual Property Journal	(2003 to date)
Brazil patent databases	Select "Pesquisar Base de Patentes" for normal patent database, "Pesquisar Base de PatentesemAniversario" to search patents expiring on a single day or within a date range.
EPATRAS (Belgium)	status and translations of EP patents valid in Belgium
EPOLINE	Online European Patent Register - online access to status and legal

	data of EPO documents from A publication on. Does not cover national phase status details for which it is necessary to check the relevant national authority status databases.
IP Philippines Patent Online Search System (PHILPAT)	Contains Invention, Utility Model, and Design patents dating from 1948. Abstract information for patents under new law (1998) in about 50% of records.
Italian Patent and Utility Models	(FILDATA Web Site)
Italy SPC Bulletin	Monthly announcements of application and grant.
Japanese Industrial Property Digital Library (IPDL)	Includes Patent Abstracts of Japan, with searchable English-language titles and abstracts since 1976, and status and automatic full-text translation into English since 1990. Also includes the online Patent & Utility Model Gazette, from which it is possible to retrieve specifications of all Japanese patents and utility models since the beginning of the Japanese IP system, but by number only
JP-NETe-	All bibliographic and abstracts with full citation and legal status information of Japanese unexamined patents dating back to 1989 are available in English language with no time lag in publication date; see World Patent Information 31 (2009) 131-134 for more information.
Korean Intellectual Property Rights Information Service (KIPRIS)	A free patent information search service covering all Korean IP information (English abstracts of Korean patents since 1979 and machine translation of Korean patent & utility model publications since 1983) of the Korean Intellectual Property Office (KIPO) and patent information of EP, JPO, USPTO and WIPO. (Korean Institute of Patent Information (KIPI)
PatentSurf.net(USA)	Surf U.S. patents by discovering natural relationships
Recueil des Brevets d'Invention (Belgium)	Belgian official journal (1997 - 2008)
Republic of Ireland SPC database	Search by number, date, product and applicant.
Revistas da Propriedade Industrial (Brazil)	Last 500 issues of official journal
Slovakia SPC database	English language search form
Slovenia SPC database	English language search form
Supplement to Australian Official Journal of Patents	New law patent journal for applications after 5th July 2002.
Swissreg	databases of all forms of IP in Switzerland, select from left of screen. "ESZ" = SPC.
UK Intellectual Property Office SPC search	Retrieve information on UK Supplementary Protection Certificates by patent or SPC number only.
USA Patent term extensions lists	US equivalent of SPC, official database

USPTO Databases	Main US official patent database site, with separate databases for granted patents and published applications. Also includes design patents (US equivalent of registered designs), plant patents, defensive publications, and statutory invention registrations.

C. Single Technology Databases – Biotechnology

Name of the Database	Remarks
CAS Registry BLAST	A specialized platform using NCBI BLAST to search the biological sequence content of the CAS Registry database. CAS Registry includes sequences indexed both from the patent and non-patent literature content of CAplus . CAS Registry BLAST is accessible via STN Express. (STN)
DNA Data Bank of Japan	Published nucleotide and/or amino acid sequences for genes. Includes patent information.
DNA Patent Database (USA)	Free Georgetown University database of US DNA patents.
Entrez cross-database search	By the US National Center for Biotechnology Information. A resource for searching various free databases, including nucleic acid and protein sequences from patents.
European Bioinformatics Institute metasearch page -	Search various free databases on different types of biological information, including EP patent abstracts and nucleotide and protein sequences from patents.
Federal Bio-Technology Transfer Directory	Searchable archive
GENESEQ	A patent sequence database produced by Thomson Reuters, containing nucleic acid and amino acid sequences from patents since 1981 from 41 worldwide patent-issuing authorities, including WO, US, EP, JP, DE, IN and CN. Each record contains standardized terminology and bibliographic data, enhanced titles, English language abstracts, and manually-captured sequence information. (Thomson Reuters)
GQ-PAT	GQ-PAT - A patent sequence database containing nucleotide and protein sequences taken from patent databases from global patent offices (EPO, USPTO, WIPO/PCT), publicly available bio-sequence databases and web resources including GenBank® from the US National Institutes of Health, the Nucleotide Sequence Database (EMBL-Bank) from the European Molecular Biology Laboratory, and the DNA Data Bank of Japan (DDBJ). (GenomeQuest)
Patent Lens sequence search facility	A utility provided by CAMBIA, using NCBI BLAST to search sequences from US patent publications.
Patome -	A patent sequence database containing sequence data in patents from WO, EP, US, JP, with annotation and analysis data.
PCTGEN (World Patent Application Biosequences database) -	A patent sequence database comprising information on nucleic acid and protein sequences submitted to the World Intellectual Property Organization (WIPO) by patent applicants. The database is based upon

	data provided by the WIPO Published Sequence Listings web service. (FIZ Karlsruhe)
PSIPS (USA)	USPTO site to download sequences too long to include in full in patent specifications.
USGENE	A patent sequence database providing search access to all available peptide and nucleotide sequences from published applications and issued patents of the United States Patent and Trademark Office (USPTO). Sequence data are available in USGENE within 3 days of publication by the USPTO. The SequenceBase Corporation is the producer of the database.
WIPO Published Sequence Listings	Nucleotide and protein sequence listings in WO applications

D. Single Technology Databases – Pharmaceutical

Name of the Database	Remarks
Electronic Orange Book (USA)	American Food and Drug Administration free public database of approved drugs, often including key patent numbers and expiry dates
DrugPatentWatch.com	Comprehensive information on drug patents and their expirations. Datasets include international patent families, PCT and foreign priority, clinical trials, annual sales, patent expirations, failure to pay maintenance fees, ex parte and inter parts reexamination, interference, disclaimer, and Paragraph IV challenges.
FDA Suitability Petitions (USA)	Lists of substances submitted for approval as generic drugs
Genericsweb	Site for the generic pharma industry has subscription patent databases concentrating on pharmaceutical patents, with particular stress on tracking patent and SPC expiry dates. Health Canada Patent Register - information on drug patents in Canada.
Health Canada Patent Register	information on drug patents in Canada.
Medicine Information Central Patents (UK)	UK National Health Service database on drug patents in the UK. Registration required.
Orange Book Companion (USA)	Subscription database on legal and regulatory information on drugs approved in the US, including details of related patents.
DoE Patents (USA)	Database of patents held by the US Department of Energy

E. Meta-search Tools

Name of the Database	Remarks
ipInsiders Patent & IP Search Toolbar	Free patent and other prior art search tool and collection of free online patent databases. Includes more than 100 patent and non-patent information search fields; intellectual property link directory to patent search engines and databases, supporting tools for patent information searching and analyzing, IP information providers, IP forums, groups

	and communities, tools for trademark, brand and domain name searchers; national patent, trademark and design databases, patent classification finders.
National Informatic Center (NIC) http://pk2id.delhi.nic.in	Provides free on line access to INPADOC-EPIDOS database to the registered users. The INPADOC-EPIDOS database is produced by the European Patent Office (EPO). It is possible to conduct bibliographic searches through this site. The bibliographic data includes publication number and date, priority number(s) and date(s), application number and date, International Patent Classification Code (IPC), name of inventor, applicant's name, title of the invention and other details. This database is claimed to be the largest database on patents, dealing with patent applications filed or granted in 65 countries. The database is being updated weekly, subject to availability of data from the member countries. Nearly 30,000 new records are added every week.
European Patent Office: Europe's network of patent databases http://ep.espacenet.com	This site is hosted by European Patent Office, which provides the free access to all European patent applications filed and granted by EPO. The site also provides access to EPO's collection of patent databases named Globlepat of about 60 countries, more than 30 million patents and also to Japanese abstracts. In addition to this the site also guides to the databases of the National Patent Offices sites of espacenet of the members of EPO, where one can search on patent database of national patent offices of the members of EPO. Abstracts and claims of patents except few countries are also available on the site free of cost; all European patents and patent for some other countries; full text documents along with images (150 million pages) are also available on site for free access.
US Patent & Trademark Office http://www.uspto.gov	Patent searches on patents issued by USPTO since 1976. This site provides facilities to conduct key word searches on abstracts and full texts. Searches based on specified fields are also possible. The site provides wide range information on the activities at USPTO
http://www.library.ubc.ca/patscan/	This site provides free access to more than 1.4 million patent documentsissued by Canadian Patent Office (CIPO) since 1920. Database is available in English and French. Search can be done in any field individually or simultaneously.
Department of Intellectual Property, Thailand http://www.ipic.moc.go.th/search5.html	Patents granted in Thailand can be searched in Thai and English Language.
World Intellectual Property Organization (WIPO): PCT Database http://pctgazette.wipo.int	Search patents filed through PCT route since Jan 1998.

5. Conclusion

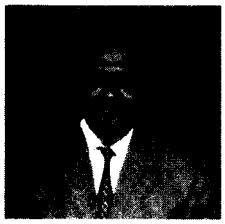
Indian patents office has to implement modernize information retrieval and dissemination

system in its website. Theknowledge commission of India has recommended some measures regarding the functions and system have not been implemented. The India patent office should enforce the rules and regulation mentioned in the act.

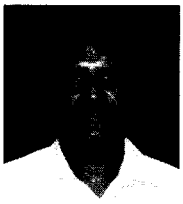
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Professional Developmental Activities and Next Generation Libraries: *A Review of Literature*

Pansngiat Passah

Abstract

The concept of technology is not new to any field anymore. This stands true especially in the field of librarianship which had once experienced the advent of automation as a result of technological advancement. The library professionals working in different libraries not only have to go through colossal changes but also have to learn how to get adapted to those changes as well. One way for the library professionals to be competent enough and to fulfill the high demands of the users is by taking part in updating activities popularly known as professional development activities. Therefore, this paper attempts to bring to light those activities and also to answer such questions as why should they participate and what are the barriers for them for not participating.

Keywords : ICT, LIS Professionals development, Librarianship.

1. Introduction

Libraries and the field of librarianship are in a constant state of change. Today, rapidly evolving technologies, the continual appearance of new reference and research tools, and an ever-expanding body of knowledge demand that librarians devote considerable attention to maintaining their currency and gaining new skills. This means that even after attaining a library science degree and being trained for a particular position, a librarian must seek continuing education throughout his or her career in order to remain well-skilled and knowledgeable. A librarian may gain new skills and knowledge through a wide variety of means. Librarians pursue some professional development activities, including classes, workshops, and conferences, formally through an institution or organization, while other activities, such as reading, participating on listservs, and communicating with colleagues, are pursued informally. An individual's information needs, as well as the availability of educational opportunities, determine the types of activities a librarian might undertake at any given time. For instance, sometimes librarians are motivated by information needs that are closely related to their immediate job responsibilities, while at other times they are motivated by a more general desire to gain knowledge in a particular area (McConnell, 2002).

Information technology change has enabled academic libraries to bring new promises and ideas to serve their patrons in extraordinary ways. It is an ongoing force or catalyst that drives academic librarians to provide better library services and access to new resources. Like other professionals, academic librarians will be still struggling to stay current with technological developments and new achievements in social and scientific fields. Through involvement in their campus learning and research opportunities, the academic librarians can learn of the latest developments and keep up with new subject knowledge in various academic fields as well as new applications in information technology. Although they may still feel overwhelmed from time to time by the challenge to keep up with the latest developments in information technology and with knowledge of various subjects, they need to take advantage of every means to enhance their skills in discipline knowledge as well as information technology. The academic librarians can better deal with the challenge by combining going to professional conferences and seminars, taking credit and non-credit courses in class and online, with engaging campus professional development activities. These activities will benefit their work in reference desk and collection development and better

understand the information need of their patrons such as faculty and students. By maintaining a proactive attitude and strong interest in getting involved in campus scholarly activities, the academic librarians can be well prepared for their daily challenging information requests. The librarians need to explore and take advantage of all kinds of professional development and scholarly opportunities on campus to answer the today's challenge. The learning opportunities can include participation in students' presentations and degree defenses, campus and departmental in-service workshops, visiting scholar presentations, and campus research activities such as research showcases (Zhou, n.d.).

Publication explosion, evolution of new sophisticated information technologies, and highly educated population require special training and education on the part of the librarians to cope with the specialized needs of the growing information society. Our population is increasingly becoming better educated. It is obvious that corresponding to the quality of education, demand for library services also increases. In an educated society library users demand high level personalized services. All these goals can only be achieved while we keep ourselves up-to-date in information providing techniques, which could be achieved through continuing professional education. Continuing Education is essential for all library personnel, professional as well as supportive, whether they remain within a position category or are preparing to move into a higher one. Continuing education opportunities include both formal and informal learning situations, and need not be limited to library subjects or the offerings of library schools (Chaudhary, 2001).Many library researchers approach this issue by pointing out the importance and needs of professional development for academic librarians. Cassner and Adams (2006) indicate that professional development is essential for academic librarians to stay up-to-date with skills, knowledge, and competencies.

However, it should be realized that there might be various kinds of activities which the library professionals can take part in but this step depends totally on their willingness to participate and their professional commitment. Other important aspects related to professional development are: - motivation for the library professionals to participate and the barriers towards their participation, which sadly have not been given that importance which it requires.

2. Review of Literature

Relevant literature were reviewed and clubbed together under the following heads:

- Professional Development Activities
- Various types of Professional Development Activities.
- Motivation for participation in Professional Development Activities
- Need for participation in Professional Development Activities
- Problems/ Barriers in participation in Professional Development Activities.

3. Professional Development Activities

According to BPS Learning Centre (n.d) continuing Professional Development is defined as any process or activity that provides added value to the capability of the professional through the increase in knowledge, skills and personal qualities necessary for the appropriate execution of professional and technical duties, often termed competence.

Continuing Professional Development Units (2002) considers attending and participating in a conference, workshop, institute, seminar, symposium, or other similar training event that addresses educational concerns and which is organized by an approved provider, as professional

development activities. Making a presentation at a conference, workshop, institute, seminar, symposium, or other similar event, whose goal is the improvement of skills and knowledge, are also included on the list.

Webb (1991) uses the term "professional development" to describe a constant process in which the individual seeks to enhance his or her abilities, skills and knowledge, and/or to develop new ones. Bryant (1995) writes that "personal professional development" is a process of growth in the specialized knowledge and skills that contribute to the conduct of our vocation and that relate primarily to the needs of the individual, rather than those of the employing organization. Finally, Broadbent (1987) states that "continuing professional development" includes advanced degree seeking, management and communications training, and all other efforts, whether formal or informal, by which the individual upgrades his or her knowledge and abilities.

3.1. Various Types of Professional Development Activities

Different authors have categorized the various kinds of activities differently. Some of them are as follows:

Dannelly (1994), for example, speaks of "systematic" and "opportunistic," or "entrepreneurial," opportunities in the area of collection development education. Though she does not define her terms, systematic opportunities seem to refer to those that are offered on a regular basis, such as institutes, conferences, and other programs, most of which are offered annually. The entrepreneurial opportunities she discusses are activities that may be used as continuing education situations, even if they are not generally perceived as such. Examples of these activities are focus groups, library committees, professional associations, collegial interactions outside the organization (visits to other libraries, for instance), and electronic communications such as e-mail, listservs, and electronic newsletters. Several authors mention electronic communication as an effective means of attaining information in our technology-driven world. Bell (2000), for instance, identifies strategies for developing a "current awareness program" that meets one's personal information needs and requires minimal effort. These days, e-mail, listservs, and electronic newsletters are highly valuable and widely utilized tools for librarians, though one must be careful to avoid becoming overwhelmed or spending too much time sifting through useless information.

Another author who provides categories of types of professional development activities is Weingand (1994). In an article on continuing education for reference librarians, Weingand classifies continuing professional education into two broad areas: personal career development, which may also be referred to as continuing education, and in-service training, which is often known as staff development. Though she is successful in describing the importance of professional development in our profession's "new paradigm," she does not provide examples of the types of activities one might undertake; likewise, she does not provide explanations of the above terms, except to say that the distinction lies between a focus on the individual's needs and a focus on the needs of the organization.

Bryant (1995) discusses the most types of professional development activities, placing them into four main categories: work-based opportunities, including actual work experience, in-house training, mentoring, writing and research, and committee work; activities in professional associations; informal learning, such as interpersonal networks, visits to other libraries or information services, and reading; and short courses and exhibitions like those often offered through professional organizations and universities. Even from the few authors discussed here, it should be evident that the types of activities discussed and the frameworks for thinking about professional development can vary substantially from one researcher to the next (McConnell, 2002).

3.2. Need For Participation in Professional Development Activities

According to The Australian Library and Information Association (n.d.), professional development demonstrates the individual practitioner's personal commitment of time and effort to ensure excellence in performance throughout his or her career. The dynamic and changing library and information environment demands that library and information professionals maintain and continue to develop their knowledge and skills so that they can anticipate and serve the information needs of society and their individual clients. Professional development includes many learning experiences - within and outside the workplace - which aim to increase knowledge, develop library and information skills and attributes and broaden the range of vocational competencies. Learning activities may relate to an extension of general or specialist areas of library and information management education, development of the body of knowledge underlying professional practice, development of the reflective practitioner, development of research expertise, or studies from another discipline which lead to personal and professional development.

Bryant (1995) and Watkins and Drury (1994) are of the opinion that if practitioners want to move out or upwards, then, they have to develop a range of skills which can realistically be transferred to other roles or other sectors. Skills may be acquired by using a variety of means including keeping up with the professional and research literature, attendance at training events or upgrading qualifications. Engaging in a strategic programme of Continuing Professional Development enlists the professional in a process of lifelong learning which, the literature assures us, is the key to developing as a professional and achieving career success (Ball, 1994; Pritchett, 1994).

Farmer and Campbell (1997) argue that the workplace of today is in a state of perpetual change and that individuals across the professions are faced with economic cutbacks, managerial re organization and staff downsizing. In order to cope with/adapt to these changes, professionals have been forced to consider the issue of continuing professional development (CPD).

Huckle (2000) notes that we work in an increasingly complex and competitive environment; the ability to anticipate and respond to changing demands for skills and services has become crucial to ensure that we remain in a commanding position; the skills, and understanding that we acquire through formal academic study have only a limited life span; the challenge for all of us is to recognize the need for ongoing (lifelong) professional development and to identify strategies for making use of most of the opportunities that are available.

Gaddagimath (2006) stated that Librarianship is caught in the midst of dynamic changes with respect to collection, preservation; control and dissemination of recorded knowledge appear to be at risk in a world where uncertainty, contingency and the transforming nature of information technology impact especially electronic media and Internet are increasingly dominant. As a result, the library managers are encountered with twin challenges of managing print collections and simultaneously developing digital resources and network based information services.

Information and library science is an interdisciplinary field. The library's clientele is a diverse one, including students and faculty, community members, and scholars and researchers from every discipline. In order to provide quality services to that population, librarians need to commit themselves to continuous learning. The saying, "Knowledge is boundless" describes a universal realm of knowledge seeking. Knowledge and scholarship provide the common ground on which the members of the academic community meet. The great flexibility of professional development initiatives -- formal or informal, large or small, virtual or real -- ensures that library professionals will be well versed in the skills essential to promoting the advancement of both their

patrons and themselves. What is most important is that those professional development opportunities be provided (Pan and Hovde, 2010).

3.3. Motivation for participation in Professional Development Activities

According to the study made by McConnell (2002) participants named many different motivations for pursuing professional development, and all mentioned multiple reasons for its significance in their own lives. Some responded that professional development is simply necessary for being able to do their job, and several spoke of its importance for gaining new knowledge and keeping up with changes in the profession. Another common motive for professional development is that it enables the librarian to hone his skills and to fill deficiencies, both of which lead to better service for library users. Along with the desire to provide effective service and to be a better librarian, many also stated that they pursue professional development for the sake of personal growth and intellectual curiosity.

A librarian's motivation for continued learning involves a mixture of social responsibility, desire for advancement, professional pride, a concern for future libraries, the need to keep abreast of new knowledge and technology, as well as an interest in supplementing professional training (ALA, 1980)

A study of 731 library professionals and paraprofessionals who were participating in continuing education programs found that professional competence, patron service, collegiality, and personal concerns were the prime motivating factors for participation (Smith & Burgin,1991)

3.4. Problems/Barriers in Participation in Professional Development Activities

Barriers to participation are factors that interfere with or restrict an individual's ability to participate in learning activities (Chan & Auster, 2003). These barriers have been categorized as follows: situational, or those barriers arising from one's situation in life (e.g., lack of time and family constraints); institutional, or practices and procedures of the educational institution that hinder participation (e.g., inconvenient scheduling and cost); dispositional, or attitudes and dispositions toward learning (e.g., disinterest and health constraints; Cross, 1981); and informational, or lack of knowledge about the learning activity (Darkenwald & Merriam, 1982).

A 1998 survey of the general Canadian population focused on the reasons for nonparticipation among adults who reported needing some job-related formal training but did not take it. The most frequently cited reasons were lack of time, expense, inconvenient time or location, and lack of employer support (Sussman, 2002). Stone (1969) asked 138 professional librarians to rank deterrents to participation in professional development activities. The poor quality of the activities was ranked as the most important deterrent, followed by remote or inconvenient location. The other deterring factors, in order of importance, include lack of

- Available time
- New and creative ideas
- Leadership
- Publicity about the event
- Administrative support
- Financial support for transportation costs
- Release time and
- Enjoyment

4. Conclusion

It can be concluded by saying that technology will keep on advancing and changing day by day but the need of the hour is to find a way to cope up with this. The libraries are also embracing these technological changes very rapidly and as such it is raising concerns in the mind of the library professionals of how to be at par with them. This does not mean that only the new changes should be accepted neglecting the basic foundation of librarianship, instead new changes should be welcomed by making the base or foundation stronger. There are various ways through which library professionals can keep themselves up-to-date if they have the will to do so and for that they must have professional commitment. It is high time for the organization, in which they work also to realize the importance of professional development activities. Once these things are apprehended then the new generation libraries will be embraced by the library professionals in true sense and hence they will grow without any hurdle.

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QR Code (Quick Response): *A Catalyst for Promoting Library Services*

Sanjay B.Munavalli **Vanita S.Munavalli**

Abstract

In this information literacy and lifelong learning era mobile technology and QR codes are emerged as a boon for promoting library services with low cost solution and easy to use .In this paper attempt has been made to explain QR readers, generators and applications in library services.

Keywords : QR, Code generator, Code reader, library service

1. Introduction

QR code is a new means of encoding access to information which is now a buzz word all over the world. The Web page typically advertises a product or service but can promote anything such as a concert or other local event. It can be used to elicit feedback or schedule an appointment. QR codes are found in newspapers, magazines, on business cards, all types of promotional materials, as well as store shelves. Unique Identification Authority of India has introduced QR codes on Aadhaar Cards. Some companies create billboard-sized QR codes because the QR app uses the phone's camera and can scan the QR matrix at a distance. In near future QR codes can play catalytic role in promoting library services because of its cost effective and easy to use nature.

2. Concept of QR Code

The concept of a QR code was created in 1994 by Japanese company Denso Wave, a subsidiary of the car manufacturer Toyota. The codes were created to track vehicles during the manufacturing process, and designed so that their contents could be decoded at very high speed, hence the choice of the words 'Quick Response'.

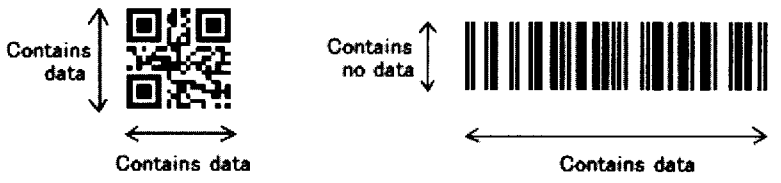
3. Meaning

Technically it referred as a matrix code or two-dimensional bar code. Alternative terms for QR code include 2D barcode, graphical tag, jag tag, and black and white square.

4. What is QR?

In general a code consisting of a pattern of black and white squares which can be read by a mobile phone, computer, etc., and is used as a label to provide further information about something. The QR (Quick Response) Code is a two-dimensional (2-D) matrix code that belongs to a larger set of machine-readable codes, all of which are often referred to as barcodes, regardless of whether they are made up of bars, squares or other-shaped elements.

5. How the QR Code Works



2-D Barcode **1-D barcode**

Unlike 1-D barcodes, the QR Code is a 2-D matrix code that conveys information not by the size and position of bars and spaces in a single (horizontal) dimension, but by the arrangement of its dark and light elements, called "modules," in columns and rows, i.e. in both the horizontal and vertical directions.

6. Advantages of QR Code

- **Fast, omnidirectional scanning:** Position-detection patterns in three corners of a symbol allow the QR Code to be read from any angle within 360 degrees, eliminating the need to align the scanner with the code symbol. The position-detection patterns also eliminate any background interference, ensuring stable high-speed reading.
- **High-capacity data storage:** A single QR Code symbol can contain up to 7,089 numerals—over 200 times the amount of data as a traditional 1-D barcode.
- **Small size:** A QR Code can hold the same amount of data contained in a 1-D barcode in only one-tenth the space.
- **Error correction:** Depending on the error-correction level chosen, a QR Code symbol can be decoded even if up to 30% of the data is dirty or damaged.
- **Many types of data:** The QR Code can handle numerals, alphabetic characters, symbols, Japanese, Chinese or Korean characters and binary data.
- **Distortion compensation:** A QR Code symbol can be read even if its image is on a curved or otherwise distorted surface.
- **Linkability (Structured Append):** A QR Code symbol can be divided into up to 16 smaller symbols to fit long, narrow spaces. The smaller symbols are read as a single code, regardless of the order in which they are scanned.
- **Direct Marking:** The QR Code's high degree of readability under low-contrast conditions allows printing, laser etching or dot-pin marking (DPM) of a symbol directly onto a part or product.

7. QR-Code Readers

7.1. KAYWA Reader

- **Instructions:** You can download the KAYWA reader directly to your PC or MAC and then use blue tooth or a USB cable to transfer the files to your mobile phone (requires registration) or you can download it directly to your mobile phone by visiting the following web address: **http://reader.kaywa.com/** - Kaywa will then check to see if your mobile phone is compatible with their software.
- **Compatibility:** From the KAYWA website, it appears that only Motorola, Nokia, Samsung and Sony Ericsson mobile phones are supported.

7.2. Nokia Reader

- **Instructions:** Alternatively, if you do not have the software, you can use the following method to download it; visit the Nokia N80 device page on the Nokia website. On the left hand menu, select 'Phone Software', then 'Smartphone'. Scroll down the page until you see 'Barcode reader'. Follow the link and instructions and you can download the software to your PC. You will then need to download the Nokia PC Suite in order to

transfer the files to your mobile phone. Additionally, if you have the download application on your mobile phone, you can use that to get the reader.

- **Compatibility:** From the Nokia website, it appears that only the Nokia N80, N93, N93i, N95 and E90 support the reader. These will more than likely change as new phones are released with better image capturing software.

7.3. i-nigma Reader

- **Instructions:** You can download the reader directly to your mobile phone by visiting the web address: **http://www.i-nigma.mobi/** which will automatically detect if your mobile phone is compatible - or you can send a SMS (text message) containing **i-nigma** to: **+44 7797 882325** and you will be sent the link to the software.
- **Compatibility:** The i-nigma reader is supported by the following mobile phone manufacturers: Dopod, HTC, i-mate, LG, Mio, Motorola, Nokia, Orange SPV, Palm, QTek, Samsung, Sony Ericsson, T-Mobile, Cingular, O2, Sprint, Swisscom, Verizon, Vodafone and more.

7.4. Lynkee Reader

- **Instructions:** If you are looking to download the lynkee reader, point your mobile phone at **http://m.lynkee.com/** and once loaded, select your device from the drop down list.
- **Compatibility:** The lynkee reader can scan multiple forms of mobile barcode, including QR-Codes, Datamatrix and EAN13. The lynkee reader is available on a wide variety of modern smart phones including iPhone, Blackberry, Sony Ericsson, HTC, Motorola and Nokia.

7.5. UpCode

- **Instructions:** You can download the reader directly to your mobile phone by visiting the web address: **http://www.upcode.mobi/** - or you can send a SMS (text message) containing to: **+358 50 3100075** (no word required) and you will be sent the link to the software. Alternatively, you can download the software directly to your PC or MAC via the UpCode website.
- **Compatibility:** The UpCode reader is supported by the following mobile phone manufacturers: Motorola, Nokia, Samsung, Sony Ericsson, Siemens, Panasonic, Blackberry, LG, HTC and Vodafone.

7.6. Quick Mark

- **Instruction:** In order to download the reader, you are required to register for an account before you get access to the download.
- **Compatibility:** The QuickMark reader is supported by the following mobile phone manufacturers: Apple, ASUS, AT&T, BenQ, CHT, Cingular, CMCC, Dopod, Emobile, ETEN, Fujitsu-Siemens, GIGABYTE, HP, HTC, HUAWEI, iDo, i-mate, Lenovo, LG, Lobster, Mio, Motorola, Nokia, O2, OKWAP, Orange, Panasonic, Pantech, Qtek, Samsung, Siemens, SoftBank, Sony Ericsson, Sprint, Swisscom, T-Mobile, UBiQUiO, UTStarcom and Vodafone.

8. QR-Code Generators:

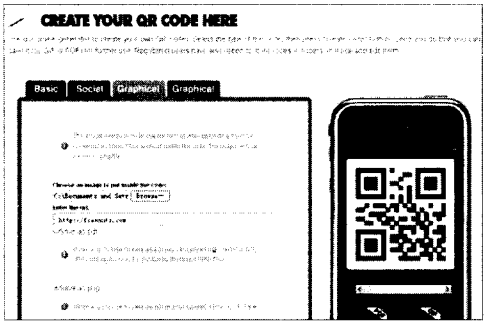
8.1. ZXing Project



Source: http://zxing.appspot.com/generator/

The QR Code Generator from the ZXing Project is workable for the following information types: Calendar event, Contact information, Email address, Geo location, Phone number, SMS, Text, URL, Wi-Fi network.To add a Geo location, you can enter the latitude and the longitude, paste a Google Maps link, or find one in the map.

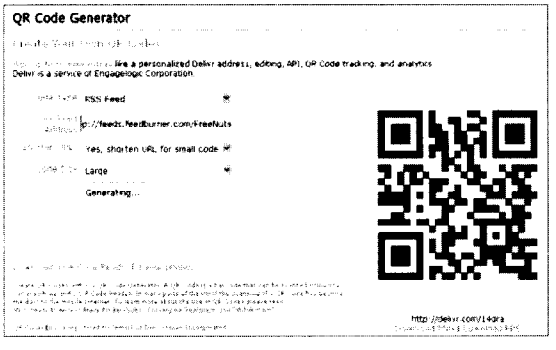
8.2. BeQRious



Source: http://beqrious.com/qr-code-generator/

With BeQRious, you can generate many types of QR codes: URL, Email address, Phone number, Text, Contact information, SMS, YouTube, Services, Graphical (to put an image into your QR code for a URL),Google Maps. The Graphical is the most cool feature of the BeQRious QR Code Generator.

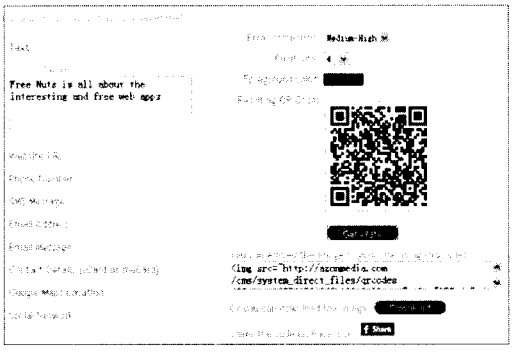
8.3. Delivr



Source: http://delivr.com/qr-code-generator/

The Delivr QR Code Generator is workable for the following information types: URL, Services (such as Twitter, Face book, Flickr , etc.),Google Maps, Contact information, Email address, Phone number, SMS to phone number, SMS to short code, Text, RSS feed. So, the special features of Delivr are services, SMS to short code and RSS feed. You can shorten the URL with the delivr.com domain, choose the QR code size (Small, medium or Large), or download the QR code as PNG or EPS file.

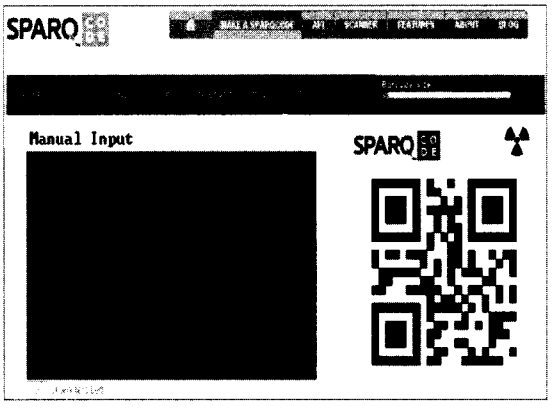
8.4. Azonmedia



Source: http://azonmedia.com/qrcode-generator/

The Azonmedia QR code generator supports the following code types: Text, URL, Phone number, SMS, Email address, Email message, Contact details (vCard & meCard),Google Maps(location search is available),Social networks (such as Facebook, Twitter, Delicious and some other services).For the QR code, you can change its error correction quality, point size and color, download the image, or embed it into your website or blog.

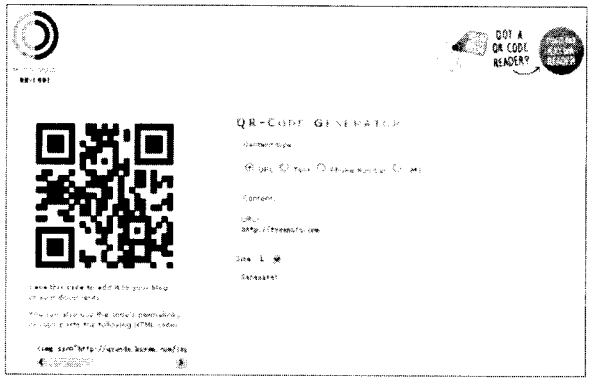
8.5. Maestro



Source: http://www.sparqcode.com/static/maestro

Maestro is a free online QR code generator which is available for you to convert the following information types: Phone number, SMS, Google Maps (location search is available) , URL, Contact information (MeCard, BlackBerry Pin and BlackBerry vCard),Text (RAW),App Store (for Apple, BlackBerry, Android or customized),Calendar event (vCal).The QR Code will be generated instantly after you enter the information.

8.6. KAYWA



Source: http://qrcode.kaywa.com/

KAYWA is a simple website for you to generate 4 different QR code types: URL, Text, Phone number, SMS. You can choose a size (S, M, L or XL) for the QR code.

9. How to use QR Codes?

QR Codes are scanned by a mobile device (in most cases). Anyone with a latest model Nokia N series or similar phone is likely to have a barcode reader installed. Most people with I-phones install the readers and many of the Japanese brand mobile phones have QR Code readers built it.

10. QR Code Applications in Libraries

- Provide point- of- use instruction at point-of-need locations.
- Have step-by-step instructions on machines like photocopiers and printers
- Post QR codes by study rooms. Students would be able to check the availability of study room, and then book it from their cell phone while standing in front of the room.
- QR codes in the stacks could bring up a list of Lib Guides on topics related to books in the call number range area.
- QR codes in the stacks could show where the e-books would be on the shelves.
- QR Codes around campus could link to digital libraries or items from special collections related to the different buildings.
- Direct users to a service that's specifically aimed at mobile devices users, such as a chat or IM reference service, or the mobile version of the library's catalog or databases.
- QR code to the online Ask a Librarian site could be posted at the physical reference desk and at all public access computer workstations.
- Library tours-QR codes can be placed in different areas of the library so visitors can access information relevant to that particular space. Audio tours can also be provided this way.
- Library Maps-Instead of just a map that has, Reference, Reserve, Computer Lab on it, put QR codes for every area that has a web page, so that the patron can go directly to that web page for more information.
- Library reviews-if someone has done a review on a book or item, a QR Code can be put on that item, linking to the review.

- Link to phone number on a web page so people don't have to dial the number on their phone.
- Link to a web page associated with an event by placing a QR code for the web page on the event's poster.
- QR codes can be posted at public service desks to advertise services: Laptop checkout, fines, and book renewal information could be posted at the point of service, the Circulation Desk, for instance.
- Help Desk information could be posted on QR codes.
- Tag exhibits ("Mobile Tag Close up").
- Librarians can tag pre-formatted tailored searches for events and exhibits.
- Add QR codes to poster, flyers, and other library instructional or promotional materials.

11. Few points which are taken into account before implementing QR Codes

- All users are not aware of them
- All users are not having required devices and software.
- Main information need to be provided in a conventional way.
- Display of the information to be checked constantly.
- Effective pedagogical uses of QR Codes.
- Accessibility to disabled people

12. Guidelines for Using QR Codes

- **Identify your specific on-line content.**
- The library needs to make sure that the targeted on-line content will be useful or interesting to patrons.
- **Make sure your on-line content is appropriate and optimized for mobile devices**
- The website to which a QR Code links needs to be set up so that its content displays properly on mobile devices.
- **Identify and Test the QR Code Location.**
- The use of the code is determined by posting the codes in a specific location.
- **Create and link the QR Code.**
- Many websites offer free QR Code generation, linking, and reading
- **Take necessary steps to allow tracking and assessment of usage**
- GA (Google Analytics) offers free website tracking that is granular enough to provide more than enough usage data to assess the effectiveness of the program.
- **Embed the QR Code into the signage, and post in the desired location(s).**
- The code can be cut and pasted into Word files, pdf's, and virtually any other graphic design application.
- **Track and assess usage.**

- Regardless of whether Google Analytics or some other tracking application is used, follow the usage data for your QR Code to see whether it is being used.

13. Conclusion

More than 90% of us keep our cell phones within arm's reach 24 hours a day, 7 days a week, and 365 days a year. More than 70% of us actually take our cell phones to bed with us. Over 70% of us now use our cell phones as alarm clocks. A study by Unisys revealed that if we lose our wallet, we report it missing in 26 hours. If we lose our cell phone, we report it missing in 68 minutes. (Darwill.com).It is interactive and very simple to use. QR codes can be quickly scanned by appropriately-enabled mobile phones which have a QR code reader. Readers are freely available and quick to download as mobile phone applications and some of the latest phone models and hand-held gaming devices even come with QR code readers pre-installed. In arriving years QR codes are best friends of library professionals to promote their information services using this cost solutions. Unique Identification Authority of India has introduced in it's Aadhaar Card project.

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Challenges Faced in Maintaining E-Resources in the Modern Digital Environment: *A Study*

Anand Ranagattimath **Sangeeta Kusugal**

Abstract:

This paper analysis digital library's newly emerging services in the modern libraries and the challenges faced in digitizing and managing the e-resources in changing digital environment. For this the reason the paper converse and defines the meaning of e-resources and digital library. Further, it shows the challenges/problems faced in digitizing the resources and not only digitizing it also shows the problems faced in accessing these e-resources. The paper exhibits how to overcome the problems and what are others means/sources through which we can get access to these e-resources. This paper gives emphasis mainly on the needs and requirements of the users in accessing the e-resources by using the new services of the modern libraries in the digital environment by using methods of observation and by discussing with the users as informal interview by the digital librarian and modifying the services as per the users and making the digital environment as modern libraries.

Keywords : Digital libraries, E-Resources, Modern Library, Digitizing

1. Introduction

Over the recent years, modern digital libraries and information centers have been greatly affected changes in Information Technology (IT), and in the changing rate of information is still accelerating in this epoch. IT is now coming up with: new products, processes and machines that can be used independently, customized information packages, CD/DVDs, personals computers and reprographic equipments; external dependents, database online information system; cooperative library information networks and electronic information processing system such as the electronic book, journals, magazines etc. IT has been able to abridge time and space dimension in communication. In order to cope with the present development in IT, modern libraries are now adopting various electronic resources for its collection developments to fulfill the requirements of different users in a better way. However to achieve the goals of an ideal information system there is a need to select, evaluate and organize the e-resources in the best possible way as to provide maximum ease, both to the users and the staff for its access and retrieve at all times.

Electronic information has gradually become a major resource in every update library. Electronic information has diversified the ways of communication, storage and retrieval of information, demands of users and information management system in the libraries.

2. Digital Library and Modern Services

Rapid evolution in information technologies has revolutionized the role of libraries. As a result, libraries face new challenges, competitors, demands, and expectations. Libraries are redesigning services and information products to add value to their services and to satisfy the changing information needs of the user community. Traditional libraries are still handling largely printed materials that are expensive and bulky. Information seekers are no longer satisfied with only printed materials. They want to supplement the printed information with more dynamic electronic resources. Demands for digital information are increasing.

Digital libraries in India will start gaining attention in the present century. We are heading towards an environment from print documented library to digital environment libraries. A library's existence does not depend on the physical form of documents. Its mission is to provide information of past and present literature and help in reshaping the future by maintaining the documents either in the print or in the form of e-resources. This mission is unlikely to change in the near future. Digital libraries come in many forms. They attempt to provide instant access to digitized information and consist of a variety of information, including multimedia. The main difference between digital libraries and traditional physical libraries is that a digital library is entirely computer-based. In many aspects of life we benefit just as much from the way one computer interacts with another as we do when a person interacts with a computer. This is equally true of digital libraries. A "software agent" is a useful general term to describe the many different ways systems can interact with digital libraries. These include:

- **Other libraries:** Any library that cannot service a query can easily pass that query on to other libraries and return the results of the query.
- **Virtual learning environments**: As the delivery of on-line courses includes more and more granular material it will be essential to keep track of this dispersed material. Digital libraries will be able to keep resources in safe, searchable repositories and respond to delivery requests on demand. The resources will remain in the library at all times and be delivered dynamically from secure, accountable sources.
- **Bibliography and email agents**: Teachers can submit searches to build bibliographies but these can be "active" bibliographies that will find and deliver objects or will inform the student which library has the book or journal or when it will be returned by the current borrower. Increasingly, the users of digital libraries will be software agents acting on behalf of people rather than the people themselves.

3. Planning for Digital Library

A digital library committee should be formed to plan for its creation and maintenance. The members must be from various library departments, and, if necessary, consultants can be hired. There are at least two ways of developing a digital library: converting a traditional library into a digital library, and direct development of a digital library.

Planning includes: IT Infrastructure, Digitization, Access, Staffing, Furniture, equipment, space, Services and Funding. Planning mainly involves identifying various tasks related to creating a digital library collection, developing strategies for handling these tasks, identifying required resources and formulating a timeline for accomplishing these tasks. If there is a need to have a large digital project, you may consider conducting a feasibility study to assess the viability of the project before detailed planning.

The outcome of the feasibility study could be a formal proposal for obtaining management approval or grant for the project. The important task in creating a digital library collection is the conversion of the source materials available in hardcopy into a digital format. There should be a clear cut statement about the related requirements and their processes, namely:

- How to convert the source material into required digital format.
- What are the digitization requirements?
- The workflow involved in digitizing the source material
- Identify the resources and money required for creating and maintaining digital collections.

- What type of information technology (IT) infrastructure is required for establishing and maintaining the digital collections?
- What are the personnel requirements and
- What are the financial requirements involve for setting up and maintaining the collection.

4. Need for digital library

- Expedite the systematic development of procedures to collect, store, and organize, information in digital form.
- Promote efficient delivery of information economically to all users.
- Encourage co-operative efforts in research resource, computing, and communication networks.
- Strengthen communication and collaboration between and among educational institutions.
- Take leadership role in the generation and dissemination of knowledge

5. Digital Library and Digitization

The terms digitization (for digital collections) and digital library goes hand in hand and the elements that form both concepts cannot be separated. But they are not the same thing. Debate rages among information and knowledge professionals as to what constitutes a digital library and what is digital collection. Digital libraries can be considered as enabling technologies with which to create and manage collection of digital materials so that it can be found and used. In another words it is to make these materials more broadly, quickly and efficiently accessible. The term "digital library "is also often used to describe any multi-media management system holding digitized information, but this does not mean it will deliver true library application functionality. Thus, these digital library components must also be tailored to capture, encode, and deliver information according to the standard practices adopted by the library industry. Because of the rapid pace of technological change, some standards are concrete and others are emerging.

6. Problems of digitization:

There are mainly two problems involved in digitization:

- Lack of technical knowledge and support.
- Lack of sufficient funding.

- **Lack of technical knowledge and support**

  The technology required to provide digital library services continues to change rapidly as researchers and commercial vendors expand the kinds of content and access services that might be included. As the technology changes and improves, an institution's vision and requirements for a digital library evolve accordingly. The software to support these services is complex and dynamic. It is difficult for an average academic library, with limited technical resource to manage the development and growth of a practical, real-world, production digital library that meets its unique requirements.

- **Lack of sufficient funding**

  Building and managing digital libraries involves huge financial resources. The budget allocation of most of the university libraries is not sufficient for the digital library research

and development. Hundreds of millions of dollars have already been spent on digital library research and development activities throughout the world. Digitizing the existing library materials also involves a huge expenditure.

7. Some other problems of library digitization are:

- **Software Development**

  Large academic libraries may be able to develop their own software, perhaps in collaboration with university researchers and IT departments. But many libraries do not have the resources to build a complete solution, and a comprehensive commercial solution is often too expensive. Moreover, due to the various and expanding content and services, no single product can meet all the requirements of even a basic function of a digital library (Lund, 2001)

- **Copyright Issue**

  Access to the information in digital libraries is generally less controlled than it is in physical collections (Witten and Bainbridge, 2003). Though copyright is a major issue for printed resources.

- **Organization of collection**

  Digital libraries are organized collections of information. Downloading information from the web and organizing them into focused collections and making the material more useful to others is a prime application area for digital libraries.

- **Illegal and harmful materials**

  Web information is a big portion of any digital library and some material in the web is illegal and harmful and clearly inappropriate for public presentation. Violence and pornography are two major issues in this aspect. It is difficult for our academic libraries to prevent the usages of those materials.

- **Cultural sensitivity**

  Most digital information are produced by people from European and North American backgrounds, yet the majority of people in the world live in countries that have a different culture than them (Witten and Bainbridge, 2003).

8. Why specialized staff

Within a digitisation project, converting materials into a digital form is the most important activity, along with metadata creation. Digitisation staff need to understand technical theory and have the hands-on skills required to operate equipment.

If the digitisation activity is going to be outsourced, then it is important that the Project Manager has an understanding of the digitisation process, so that communication is clear regarding contracts, expectations and outcomes.

Issues that need to be understood by technical staff include:

- The functionality of digitisation equipment (e.g. for audio, identifying an analogue-to-digital converter which operates at a suitable sample rate and bit depth)
- Workflow management and working as part of a team

- Handling procedures for potentially fragile original materials and associated conservation issues
- Techniques used to obtain an optimal digital surrogate from an original (e.g. for photographs, the calibration of monitors, scanners and cameras)
- The creation and use of different file types related to capture, archiving and delivery
- The optimisation of digital files before delivery.

Specifically, digital librarians are required for the purposes outlined below, among a host of emerging functions:

- To manage digital libraries;
- To organize the digital knowledge and information resources;
- To disseminate digital information from computer-held digital information;
- Provide digital reference services and other electronic information services;
- To provide knowledge mining from the emerging knowledge warehouses;
- To handle the tasks of mass digitization, digital storage process and digital preservation;
- To provide universal access and retrieval of digital knowledge, ultimately access to all knowledge resources available in digital form;
- To catalogue and classify digital objects and digital knowledge.

9. E-Resources

E-resources are those electronic products that delivers a collection of data, be it text referring to full text basis, e-journals, image collection, other multimedia products and numerical, graphical or time based, as a commercially available till that has been published with an aim to being marketed. These may be delivered on CD-ROM, on tap via the Internet and so on. According to Barker, there are three types of documents used in digital resources.

- Static- Static are the most basic, they contain fixed information and never change their form (such as traditional online data)
- Dynamic-Dynamic documents also contain fixed information but also able to change their outward form, the way embedded material is presented to users (such as multimedia CD-ROMs).
- Living -Living documents are able to change both their form (outward appearance) and these embedded information (such as information contain on the web.)

The electronic resources are systems in which information is stored electronically and made accessible through electronic systems and computer networks. Electronic resources are e-Books, e-journals, e-newspapers, databases, bibliographic database, etc. Due to growth of information communication technology most of the document are available in Electronic format also.

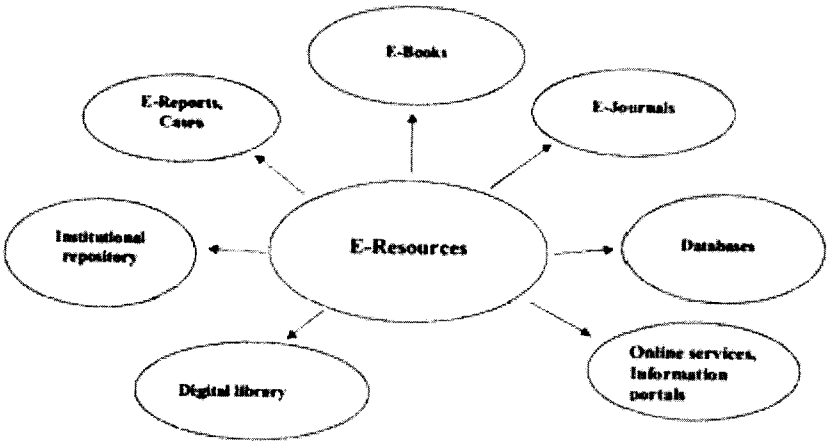


Figure showing the types of e-resources

10. Role of the Digital Library in e-resources management:

The adoption of e-resources has made great advantage over the library services. In fact, most of the users are satisfied with such facilities since he can easily retrieve their required information within a short period of time. However, libraries face a number of challenges as they seek to continue offering the high level of services that users have come to expect. Some of the challenges facing with e-resource management are discuss below.

- **Preservation-** Though the e-resources are enabling information to be created, manipulated, disseminated and located with increasing ease, preserving access to this information posses a great challenge. Unless, preservation of digital information is actively taken, the information will become inaccessible due to changing technology platform and media instability.
- **Lack of professional skills-** Due to lack of management and technical skills, the library professionals is not able to handle the e-resources. The professional staffs are required to constantly update their own knowledge and skill base so as to work in today's rapidly changing digital environment.
- **Inadequate library fund-** Most of the libraries have inadequate fund for acquiring e-resources and so the users do not get their needy information at the right time. Libraries are at a disadvantage when acting alone in this environment and there is need for cooperative purchasing through library consortia.
- **Technical infrastructure-** In a digital information service system, infrastructure such as software, hardware, internet facilities and other physical equipments are required to provide easier, faster and comprehensive access to information. Therefore, libraries in the digital age need to enhance and upgrade current technical architecture to accommodate e-resources.
- **Lack of cooperation of staff members-** The support and cooperation of staff members, programmers and technical staff are very essential to provide effective service in a digital

environment. As such, the library staff should not only be technically competent but should also user-friendly-approach.

11. Problems in accessing e-resource:

- Interviewees observed that **researchers' needs and expectations** are driving new access arrangements. On the other hand, a few librarians identified a lack of demand as a barrier to providing access to e-resources.
- **Licensing restrictions** are seen by librarians as the key barrier, with 80% of HE respondents saying this was a very important factor. Few libraries seem to have negotiated individual JISC Additional Authorised User licences.
- **Technical issues** are a problem, with only 40% of libraries surveyed having the IT infrastructure in place to allow walk-in access for visiting researchers.
- **Overcoming barriers**: librarians believe that progress is being made providing visiting researchers with access to e-resources, but that much remains to be done. A number of suggestions made by respondents are reflected in this report's recommendations.

12. How digital library/librarian will help in overcoming the problems faced by the users

Selection is not a new term to librarian and staff as they have been doing it since long back the libraries started acquiring printed material. However libraries are now focusing to adopt e-resources information technology approaching towards the e-resources rather than printed materials as technology developed. In fact, the emergence of Internet, particularly, the www (World Wide Web) has a triggered proliferation of web based full text online resources as a new media of information delivery. As the web has grown, not just in popularity and use, but also in content, librarians are trying to meet the needs of the user and identify new resources, such as online databases, web based resources, collections in digital library, e-books, e-journals etc.

Evaluation of resources assumes a greater importance due to the large e-resources such as e-journals, database, e-text, etc available on the net. Authority, currency, intended audience, ease of use accuracy etc are some responsible criteria for evaluation of e-resources. Moreover, extensiveness of the content, accessibility, quality of technical support, cost, conditions of licensing agreement are also other responsible factors which should taken into account.

In any Library Information System (either traditional or modern library system), organization of resources is also one of the important and crucial works to function smoothly the library services. As such, the system manager should have good professional skills to organize the available resources effectively. In a modern digital library information system, the professional should have skills like computing, database management, networking, and other management skills relating to IT environment. Therefore, the system manager should keep in mind the following points while organizing the e-resources

It is known that libraries and information centers are not able to procure, organize and disseminate vast amount of information due to lack of adequate fund and budget. Nowadays, consortia subscription to e- resources through consortia of libraries is a viable solution to increase the access to e-resources at a lower cost. Library consortia refer to cooperation, co-ordination and collaboration among the libraries or institution for the purpose of resource sharing. The libraries all over the world are forming consortia of all types and at all levels with an objective to take advantage of global network to promote better, faster and most cost effective ways of providing e-resources to the information seekers. The collective strength of consortia members facilitates to get

the benefit of wider access to electronic resources at affordable cost and at the bests terms and conditions.

13. Conclusion

The study showed that the use of the Internet and electronic resources have created a great impact upon users of DL. The rapid developments in information communication technology have facilitated the convergence of new electronic devices and formats. Information has been embedded in a variety of ways and forms in various kinds of electronic resources. Digital technology can, indeed prove to a valuable instrument to enhanced learning and extend the reach of information resources to those who seek them, wherever they are, but only if we develop it as an addition to an already well stocked tool kit, rather than a replacement for all of those tools which generations before us have ingeniously crafted and passed on to us in trust. A rapid change in information seeking behaviour and use of Internet and On-line access of E-resources have become the vital part of various information needs. The users develop the skills and knowledge to use the e-resources and services. The On-line journals ie e-journals are the most important for the research community. It is proved that the on-line journals save the times of the users. Many users are suggesting to subscribe more on-line journals and e-resources of various publishers. Lack of training among users and proper infrastructure in the libraries is a major demotivating factor in the use of internet, e-resources and e-journals in digital Library. This study helps to improve the facilities and services related to On-line access to E-resources.

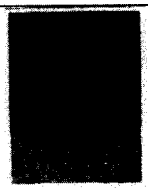
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Consortium: *A Helping Hand for Library Budget*

MahabaleshwaraRao Baikady **Sagender Singh Parmar**

Abstract

The birth of e-environment in publication and expansion of knowledge both has brought a revolution in online databases, e-journals; e-books etc. This has provided the user with the easiest format of accessing the information. On one side with the demand of this information era providing user with these e-resources becoming the necessity of libraries. The other side e-resources are making their space in the library budget which is crunching the budget of libraries. Because of budget crunch and thought of resources sharing for the fulfillment of users requirement, libraries has come up with the phenomenon of consortium (applicable for subscribed e-resources) which in turns helping the libraries in increasing their individual power of buying. This paper is going to discuss the concept of consortium, how consortium playing the role of helping hands for library budget and consortium initiatives in India.

Keywords : Library, e-Resources, Consortium and Budget.

1. Introduction

Today, the pound of information has become the ocean and the river of information is flowing till the top. We are in the era of information explosion where information overload, knowledge explosion, information and communication technology become the buzz words. Everybody is seeking for scholarly and authentic information which should also be accessed at a faster speed. Present e-environment has taken place because of ICT (Information Communication Technology), which is not only transforming the existing libraries but also helping in the emergence of digital libraries, providing the users with the required information on the palm of their hands like never before. Emergence of e-resources has totally transformed the phenomenon of creation; transmission and storage of information. Gone are the days where users have to wait for the interested article to receive through courier, published in printed form. The abundance of e-resources made libraries to look towards the consortia networks to provide the users with the required information.

2. What is Consortium?

Consortia is the plural form of consortium, but is often used in place of the singular form. Synonymously, the term is used as alliance, coalition, collaboration, co-operation, partnership. It can be termed as co-operative association of a number of libraries of common objective, sharing their resources and meeting the information need for their users. It is a collective effort to increase the buying power of individual library. This helps in a long term resources sharing and providing opportunity to maximize the co-operative collection building. When a mother library of a user fails to fulfill his information requirements, it can be met with the resources of other library if library is a member of consortium model.

According to the Oxford English dictionary 'consortia' means a "temporary co-operation of a number of power, companies, etc., for a common purpose. It is an association of similar types of organizations/institutions who are engaged for producing and servicing common things for providing services for a specific purpose of its users." "Library consortia are basically, organizations formed by several libraries coming together with some kind of formal structure to do things none

could do effectively on their own". A library consortium formation can be local, regional, state, national and inter institutional level.

3. Why Consortium?

Institutions and library clients expect their libraries to obtain new electronic resources while simultaneously maintaining or growing traditional print collections. With the passage of the time e-resources has made a suitable space in the library budget. As making those e-resources available to the users became the need of present libraries. The prices at which these e-resources (e-journals, e-books and e-databases) are available are truly high. This made libraries to develop the concept of consortium. If a library goes for individual subscription of a journal/database it has to pay the entire cost. But if a library become a member of a consortium network and subscribed the same journal/database, it will get the same for discounted rates and even can share the cost of technical requirement and training support require during the initial stages of subscription of material.

Libraries cannot satisfy the requirement of all its users on its own. Neither it can sustain only on its own method of resource generation nor can it complete the user requirement only with the available budget. With this point of view library co-operation has started, which has given way to inter-library loan so that both the libraries can meet the requirement of their user by sharing each other resources. This sharing paved the way for document delivery service. With the passage of the time this sharing has developed the libraries networks (DELNET, ERNET, INFLIBNET, etc.) and from networks to now consortium. The requirement of library consortium is because of:

- Diversity of user's needs
- Information explosion
- Financial crunch of libraries
- Impossibility of self-efficiencies
- Population explosion

One point always library should bear in mind that library consortium doesn't mean the division of e-resources cost between the member library. It stands to provide the required e-resources to the libraries of same objectives at a discounted rate.

4. Consortium as a Helping Hand for Library Budget

Access to resources is now considered more important than the collection building. Every library differs from one another in its collection, information need of users, working style, source of finance, processing of information etc. A consortium, with the collective strength of resources of various institutions available to it, is in a better position to resolve the problems of managing, organizing and archiving the electronic resources. The financial advantages of library consortia in various aspect of library prove how consortia act a helping hand for the library budget, can be summarized as following:

- **Financial Benefits:** Common reason that libraries join consortia is to gain some financial benefits. Every library consortia have one common goal that is pooling their collective financial resources to leverage greater economic control over their market place. To reduce the cost of library operations by obtaining a group purchased price for information product.
- **Digital Storage of Resources:** Investing on infrastructure to provide space for growing

print resources always remains an issue for many libraries. Storing the archiving of resources in digital format save space requirement and will definitely going to save the cost.

- **Getting e-Resources at Discounted Rates:** Library consortium are commonly formed to negotiate joint purchases (e.g. of equipment, software, books and licensed electronic databases and resources) and to share resources. Thus save money if purchased jointly.
- **Long Term Subscription - Saves Cost:** Consortia ensure continuous and long term subscription to the subscribed journals. Individual library may take withdrawal decision of particular information material if he can't bare the cost. But being a consortia member, if a library gets the same material at a discounted rate it may think on continuous and long term subscriptions to the subscribed resources.
- **Increase the Cost Benefit of per Subscription:** Library when purchase the e-information resources through consortium, the amount spending on per journal/databases reduced as library purchase them on negotiated prices.
- **Promote the Rational Use of Funds:** The percentage of amount which a library saves from being a consortium member can be used for improvement of library infrastructure, in providing new library services, etc.
- **Joint Research Projects - Reduce Budget Burden:** Joint research projects between the member libraries on the same research problem can also save the amount and helps in library budget. This would be more if library take the project individually.
- **Expand in Inter-library Loan Services - Share the Cost:** Consortium member library has right to make use of resources of other member library. Which improve the inter-library loan services and library need not to subscribe the resources which are maintained by other member library.
- **Demonstrate Reduced Cost:** Where funds are limited, to reduce the cost of member library operations, consortia act as an agent on behalf of member libraries to seek a group purchase price for information resources that is lower than that which any one institution could achieve alone. This helps the libraries to maximize their resources within a limited budget.
- **Saves Duplication Cost:** Duplication of materials (cost), time and efforts can be minimized and access can be maximized.
- **Reduced the Staff Training Expenses:** Library can save the cost of training providing to its staff on usage of subscribed resources. Libraries can share the expenses by conducting collective training program for their staff, as the resources they have subscribed are the same.

5. Discussion

Library budget always remain critical aspect for librarians to meet their user's needs. Sometimes because of tight budgets, library has to cut down the subscription of e-resources, which even it feels to be maintained. Becoming a member of a consortia model, a library will get the product at the bargained amount from the producer. India does not have a rich tradition of consortia arrangements or resources-sharing amongst libraries. But in the 1990s, the emerging changes in publishing industries and phenomenal increase of web based resource forced libraries to move towards partnership. Therefor a few efforts have been made at different levels to provide share web based resources amongst research, academic and technical libraries in India.

After launch of the "Indian National Digital Library in Engineering Sciences and Technology (INDEST) Consortium" in 2003 and "UGC-INFONET Digital Library Consortium" in 2004, availability and accessibility of e-resources increased phenomenally in centrally-funded technical institutions (IITs, IIMs, IIITs, etc.) and universities. Some of the important consortia are:

- CSIR consortia(Council of Scientific and Industrial Research)
- FORSA (Forum for Resource Sharing in Astronomy and Astrophysics)
- HELINET (Health Science Library and Information Network)
- IIM'S library consortia
- INDEST (Indian National Digital Library in Engineering, Science and Technology)
- UGC-DAE consortium for scientific research
- UGC-INFONET
- MCIT (Ministry of Communication and Information Technology) library consortium
- ISI consortia etc.

Each consortia model deal with different discipline as per its scope, e.g. UGC-INFONET - academic, HELINET - medical. The library as per its discipline/scope can select consortium network. Consortia which always help the librarian in the bargaining of e-resources at a lesser price can be said as a helping hand for library budget. It aid to cut down the cost of e-resources so that library need not to feel itself handicapped during the subscription period of e-resources because of budget pitfall.

6. Conclusion

Consortia are tools, which will aid in exploiting the features of the e-resources as well as in effecting savings. Consortium becomes a major force in information delivery and they need to focus on their obligation to further the common aspiration of libraries to provide equitable and affordable information to all. Libraries have come up with the phenomenon of consortium which in turns helping the libraries in increasing their individual power of buying.

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Coping-up with Digital Rights Management Technology in Digital Library Application

Trupti More **Aparna Rajendra**

Abstract

Digital Rights Management (DRM) is a technology used for controlling access to digital collections, protecting original works from modification, avoiding downloading, facilitating reasonable access, and tracking its uses. DRM is useful for restricting the unauthorized access to digital contents brought out by these content providers. There are a number of technology protocols that can govern the authorized use of digital content and manage any consequences of use. An attempt has been made in this article to introduce the issues concerning the information dissemination by the digital libraries with in-house implemented as well as embedded rights management and technological protection measures. It focuses on the aspects of the digital libraries, which are not only interacting with the resources of other communities as consumers of digital publishing but also taking on the role of information disseminators of their own digital works. It addresses the role of a digital library in both as a consumer and a creator or disseminator of digital material.

Keywords : DRM, Information Security, Digital Library, IPR, Content Management.

1. Introduction

Digital Rights Management (DRM) technology puts deliberate barriers on easy access of information. It compromises libraries mission of providing free access to information. DRM system allows the publisher to interfere in the reader's freedom of accessing information. To avoid intellectual property right infringement content owners use a technology that can control the use of their content. DRM technology protocols govern the authorized use of digital content and manage any consequences of use of information. Primary purpose of DRM is to control access, use and distribution, and thereby protect the interests of copyright holders in the online environment. Technical measures help in protecting against accidental and deliberate breaches of the economic, quality, and confidentiality interests of content owners. Digital Library transactions with several technological access control measures are depends on the kind of data to be safeguarded and their environment and circumstances of use. Access control services built into the Digital Library can significantly reduce risks of misusing the digital contents. Digital library services also carry the responsibility of protecting document owners, users and themselves from misusing of their contents.

2. What is DRM?

The core concept of DRM is compressed in one explanatory definition given by Christopher Harris (2012): "DRM refers to a technology that works to protect digital content. This could include, for example, locking content to an account, requiring a password to open a file, making use of a hardware key, or applying digital watermarks. In general, DRM can usually be described as being either active or passive. Active DRM, like that used on many e-books, actively prevents content from being read or copied to unauthorized devices. The content is encrypted so that the only way to access it is through an authorized reader. Passive DRM usually uses watermarks to subtly alter the content to show ownership or to allow identification of the original source in the case of infringement."

Accordingly, the main characteristics of application of DRM technology are-

- Digital Rights Management technology used by publishers of digital content in the form of music, video or electronic texts to control the works in which content users are supposed to change or make use of information without authorization.
- DRM makes it possible to sell the rights to use the digital content, rather than selling the media object itself. The consumer purchases a license granting certain rights to him. Technical enforcement of license terms only allows downloading of digital items. A license is a digital data file that specifies certain usage rules for the digital content. Usage rules defines criteria about frequency of access, access expiration date, restriction of transfer the access to other devices, copy and print permissions etc. These rules are again combined with certain access models, such as rental access or access on subscription, trial access before buy, pay per usage access etc.
- DRM manages rights regarding copyright laws for protecting digital content.
- DRM is used to protect digital data from unauthorized users. Digitally protected contents prevents unauthorized access, also authorized users are not allowed to supply the protected contents to any non registered user, even registered user can use the contents for limited time period only.
- DRM is a form of cryptography, used for protecting information from unauthorized use by transforming it so that only the authorized receiver can read it only on a specific device, or for a set number of users or only on screen reader software. The information provider encrypts the digital object by a 'key' and the information user may decrypt it for use with a copy of the same key.
- DRM refers to the application and enforcement of usage rules in a secure manner to control access to, track and limit the uses of digital works.
- It facilitates access avoiding downloading issues, displays portions of materials on the screen without allowing downloads or offline use.
- These controls are normally embedded in the work and accompany it when it is distributed to the consumer.

3. DRM Tools and Techniques

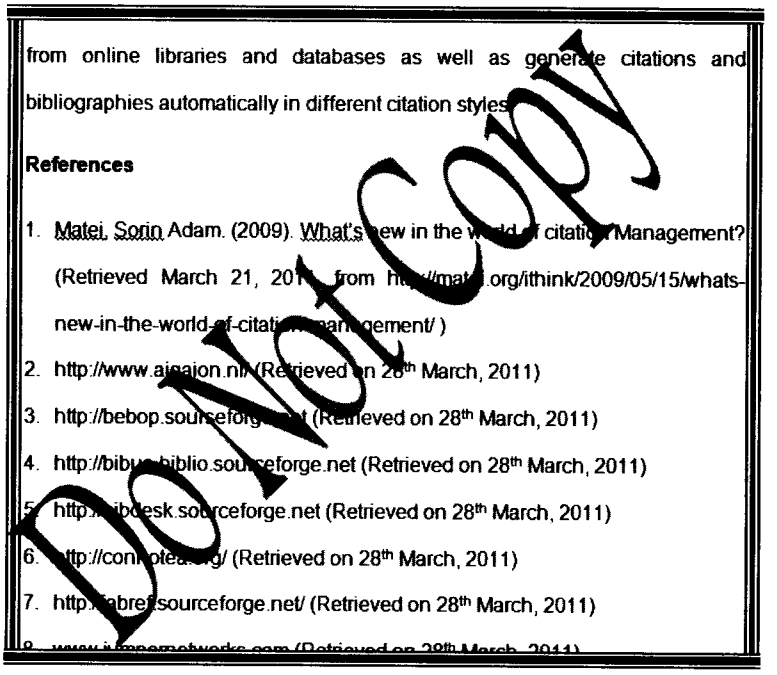
There are some tools and techniques by which one can protect digital data by controlling access and use of online or digital collections or by facilitating access avoiding downloading issues. DRM restrictions limit copying, printing, and sharing of digital contents, which are generally limited to a certain number of reading devices.

- **Watermarking:** A watermark is embedded information. Watermark is not complete DRM instrument, but used as part of a system for DRM. It allows content to be identified if it is copied. Watermarking may be used for copyright protection of digital data. By watermarking techniques we can protect our files, images, audio, video, etc. Watermarking may also be used in authentication and in certification process.

Typically, all files that are to be distributed are watermarked before they are given for access. Though useful, watermark-based protection systems are still not robust enough to resist decoding. All watermark systems known today are susceptible to being removed without substantially affecting the quality of the content itself, which may lead to the situation that, when a

watermarking system has been broken, the originally governed content may become uncontrollable (Harinarayana, 2009).

In the next screen shot the embedded watermark content can be seen.


from online libraries and databases as well as generate citations and bibliographies automatically in different citation styles.

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Do Not Copy

Figure 1: Embedded Watermark

- **Encryption:** Encryption is a technique to protect digital work. It is the process of encoding information so it cannot be accessed without first being decrypted through the use of an encryption key. In this technique we encrypt the file using a key and only the key holders are able to decrypt the file. In this way we protect data from unauthorized user but not fully because key holders have the authority to disclose the key to other users. If key linked with BIOS or hardware of the authorized user then the security level gets increased (Singh, 2011).

  There are different levels of DRM encryption applied to e-books. The restrictions like how many devices would get a copy of an e-book on, printing, modifying, lending, or even using a text-to-speech feature to read an e-book aloud. The specific levels of DRM are determined by publishers and distributors.

- **Restrictive Licensing Agreements:** The access to digital materials, copyright and public domain are controlled. Some restrictive licenses are imposed on consumers as a condition for accessing or downloading digital contents. A license is a legal vehicle for granting an individual or organization an explicit collection of rights and conditions through contracts for the use or distribution of a copyrighted work. The license can be obtained on payment. This payment is not for the ownership of all the rights of that product. In the case of e-journals it is the publisher who decides how much access will be provided, which issues will be available, archival access policies and how much access will cost. Publishers follow the variety of new pricing strategies, like 'pay per view', 'flat fees' and 'additional charges against per usage'. The different libraries may have to pay different prices for journal

subscription and the librarians have to see how best they can negotiate access rights through contracts and licenses.

The DRM companies such as Adobe, Amazon, Microsoft, Sony, etc. have developed licensing control systems for digital copyright protection that prevent printing documents, inhibit the use of print screen, and prevent anyone who is not authorized from seeing document content. Companies believe it as the only effective way of protecting the ownership of the information (Hombal, 2012).

- **Adobe Acrobat / Acrobat Reader:** Adobe Acrobat has the facility to protect digital work from copying and pasting. For an unprotected PDF, printing, copying to the clipboard and other basic functions are available to the user. However for highly protected e-book, the user is unable to print the book, copy or paste selections. The levels of restrictions are specified under the security option of document properties. In the screen shot below the rights statement for a protected PDF file opening with Acrobat version 10.0 is shown.

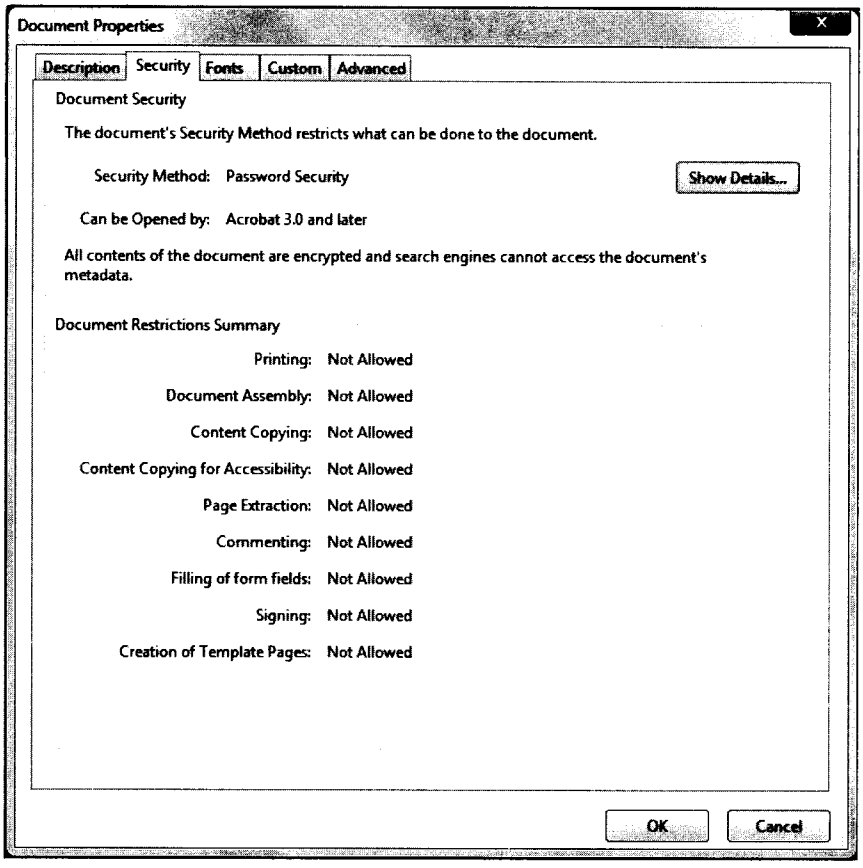


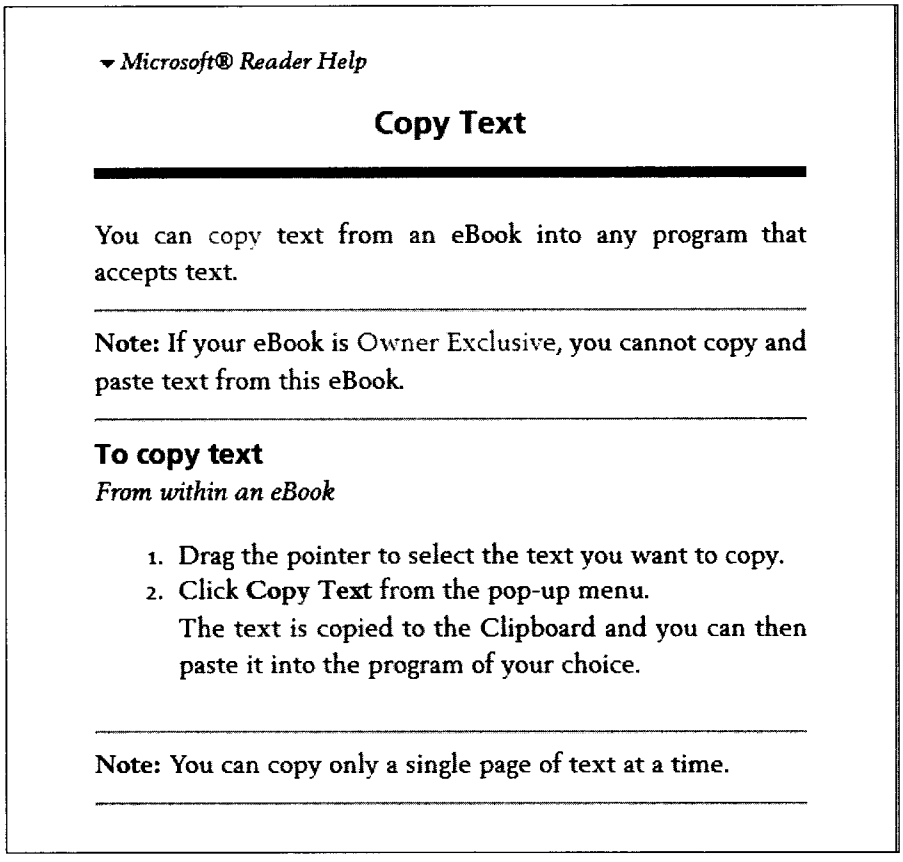
Figure 2: Right Statement for Protected PDF File

This is the most common form of DRM used on PDF files, including library ebooks. Most dedicated e-book readers support this DRM, with the exception of the Kindle. There are numerous software applications that can read this DRM format and dozens of websites that sell e-books in this format.

- **Microsoft Reader:** Microsoft Reader is also called as e-reader used to read e-books. Microsoft Reader e-books are not printable at all, as it has no printing function built into the

software. This rarely used e-book format carries Microsoft's .lit format. E-books with DRM that are in .lit format will only work on a computer, tablet, or mobile device with the Microsoft Reader software installed. The dedicated e-book readers do not support this DRM format. In Microsoft Reader there are three different levels of access controls available. In sealed E-book the documents are protected from being modified. Inscribed e-book discourages distribution of the e-book because it is inscribed with the owner's name, which makes it possible to trace back the original copy that is distributed. Owner Exclusive e-book uses traditional DRM technologies. To buy the e-book the consumer must first open Microsoft Reader, which ensures that when the book is downloaded it becomes linked to the computer's Microsoft Passport account. Thus the e-book can only be opened with the computer with which it was downloaded, preventing copying and distribution of the text.

In the screen shot below the rights statement about copying text from Microsoft Reader e-book is shown.



▾ *Microsoft® Reader Help*

Copy Text

You can copy text from an eBook into any program that accepts text.

Note: If your eBook is Owner Exclusive, you cannot copy and paste text from this eBook.

To copy text

From within an eBook

1. Drag the pointer to select the text you want to copy.
2. Click **Copy Text** from the pop-up menu.
   The text is copied to the Clipboard and you can then paste it into the program of your choice.

Note: You can copy only a single page of text at a time.

Figure 3: Rights Statement about Copying Text from Microsoft Reader E-book

- **IP Authenticated Access:** Institutions are asked to register static IP address ranges for having access to the digital content. This allows flawless access and has no log-on screen. The usage statistics for an institution can be obtained from this process. It has greater security as have no possibility of misusing of username and password. The access to the resources has been allowed for all computers in the campus which come under the specified static IP range. This method is also used as part of a system for DRM.

4. Information Dissemination by Digital Libraries with DRM Measures

In the digital scenario publishers offer digital contents directly to the Library and the role of the library as a mediator between publisher and customer becomes crucial. In the intermediate role library obtain content for the entire community with the responsibility of protecting the transactions between content owners and users. These not only include the protection of the content, but also include payment, negotiation of copy and usage rights, data security and protection of privacy. Simultaneously, it would be quite disadvantageous to libraries for content to be disseminated in proprietary packages that requires particular software and hardware, or that are accessed through proprietary services. It is not only costly but also time consuming endeavor. DRM systems may allow libraries to provide additional services beyond lending, such as integrating digital library materials into courseware at educational institutions. In such situation the content and the control of the content will remain in vendors system and libraries will outsource the access to the digital materials.

In digital library system the user population is vast and dynamic. It is almost next to impossible to know all the users beforehand. Thus traditional access control mechanisms that rely on knowing the user and associating permissions with them fail significantly in digital libraries. A digital library environment poses some additional challenges for access control. The users of a digital library often need access from remote locations or by following links from remote documents. Thus it does not suffice to merely control access to documents local to the digital library (Ray, 2006).

Digital libraries today are already disseminating materials to users and are not generally usage controlled. Once a user obtains a resource such as a journal article, the resource is not protected by software or hardware controls. This would not be an acceptable solution for some types of content. Even within a digital library, different materials may need different types of controls, such as greater control over 'popular' materials than over research materials is required. There may not be a single rights management solution that is appropriate to all materials.

Considering the reasons for implementing policies for access, it has observed that digital library managers often need to restrict access to parts of their collections for various reasons, including restrictions imposed by donors, restrictions put out of privacy and security of content, and restrictions imposed by licensing arrangements, and other agreements with copyright owners. With regard to electronic resources, the publishers and other copyright owners wish to manage access is because they require payment for use of materials, but there are other reasons, such as preventing the spread of unapproved derivatives. Policies framed by the managers of digital library therefore play a central concept of any Digital Rights Management System.

5. Role of Digital Library in DRM

While applying DRM technologies for the collection in the digital library, it is important for library to consider the type and objective of repository, type of digital content, security of the system, security of communication channel, diversity of users' platform, number of users, even the perceptions and responses of end users also (Shoeb, 2010). At least following major steps are required to be adopted in a digital library for proper and secure information delivery.

- **Login system with user id and password:** Reader intended to use digital library is registered first. Registration system provide a user id and password to the reader that they use when login into the system. The system check the authentication of user and only valid user can access DRM protected data.

- **Security Firewall:** Many organizations currently control access to materials on their Intranet through the use of a 'Security Firewall' with access to limited entry points in order to secure the inside. Firewall technology currently provides a vital component in the ecology of mechanisms (Roscheisen, 1997).
- **Access Privileges / Permissions:** Many objects will be protected by generic rules. Every object in a library will have read privileges for common users and update privileges only for librarians. Generally copy and printing privileges are executed only on request limiting to the certain portion of content.
- Access control in the digital library system is implemented using a multi-level access model. For a digital library, access privileges to particular category content are restricted to the users with a certain trust level, means different category of users are given with the different access privileges according to the intensity of their needs. All these access privileges are managed and defined with the help of some DRM technology.
- **Digital Watermarking Techniques:** To prevent the abuse of digital content, most digital libraries adopt digital watermarking techniques to guard their own digitized contents. Most of the time the organizational logo is been used in the form of watermark, which expresses the ownership and copyright authority of that particular content.
- **Educational Fair Use Argument:** Library and education institutions rely heavily on copyright law, which permits liberal use of copyrighted materials under educational fair use argument so low resolution images can be used for teaching, educational, or research purposes.
- **Negotiate for Access Rights through Proprietary Contracts and Licenses:** Material bought by the library sometimes becomes in-accessible due to obsolescence of technical protection measures or due to expiry of licenses. The result is that the material is effectively removed from the library collection. This can prevent or place restrictions on copying or sharing or lending material, current awareness services, book reviews, exhibitions, and sending information to students who cannot come to the library. In short, libraries have fewer rights in the digital environment than in the print world. Therefore, libraries have to negotiate on special agreements with individual rights holder to obtain DRM-free material or with limited restrictions or permissions to avoid restricted circumstances.

In spite of above things, the important issues like time to time renewal of licenses, and digital data migration in new and compatible technology also required to be handled promptly by the digital libraries for smooth delivery of information.

The DRM technologies attempt to control use of digital media by preventing access, copying or conversion to other formats beyond users. The DRM technologies have enabled publishers to enforce access policies that not only disallow copyright infringements, but also prevent lawful fare use of copyrighted works, or even implement use constraints on non-copyrighted works that they distribute. Therefore digital libraries are needed to find out solution over that.

6. Solution over DRM is Adopting Free and Open Access Philosophy

Libraries continue to have the explicit responsibility of protecting access to information, with a special obligation to ensure the free flow of information to the widest possible audience, and for future generations. With the development of Information and communication technology many organizations have realized the benefits of sharing information within the organization as well as within the community and globally. Many organizations therefore have started allowing

information and knowledge to flow freely adopting free and open access philosophy. The only thing required is that again libraries only have to take responsibility of spreading the information literacy among their users about how information can be used ethically and effectively and how copyright violation as well as plagiarism can be avoided by duly acknowledging or citing the author or owner of the content.

7. Conclusion

DRM technology creates intentional and artificial information usage barriers. In doing so, it compromises libraries mission of providing free access to information, free in the sense that users can make their own determination about how to use that information appropriately and ethically. By providing and supporting information that incorporates DRM, we choose to privilege a system that allows the publisher or vendor to intrude in the reader's freedom of information use. It has become more and more obvious that libraries must adopt opposition on the issue of DRM and begin advocating for DRM-free information systems. Though, DRM stands for Digital Rights Management, but most believe that the appropriate definition would be Digital Restrictions Management, because DRM restricts what you can do with your purchased digital contents.

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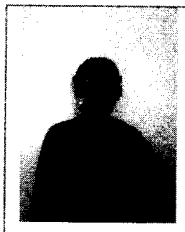
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Digital Libraries are the Cartelist Change of the 21st Century: *Issues and Challenges*

Hemavathi, B N

Abstract

Libraries and Information Centers (LICs) undergone tremendous changes through the years more particularly after new millennium, due to impact of information and communication technologies and exponential growth and development of Internet and World Wide Web (WWW) and its associate technologies and platform for information storage, retrieval and access. The present day libraries are hybrid in nature maintaining blended with both traditional libraries as well as digital libraries to satisfy both traditional and modern users of 21st century. The highlights the impact of ICT on libraries and information centers to expedite the library housekeeping and provide new and innovative library services. With the emergence of digital and web technologies are marching towards providing web based services through digital libraries. The authors raised some of the vital issues to be considered while developing digital libraries. These issues are raised for discussion and deliberation looking at the digital library initiatives in India.

Keywords : ICT, Digital Libraries, Digital library issues and challenges, Digital Librarian

1. Introduction

Digital libraries basically store materials in an electronic format and manipulate large collections of those materials effectively. For many years, librarians have drawn attention to the rapid explosion of published information and to the difficulties it posts for libraries and information services attempting to provide ordered access to the world's information for their users. The advent of digital information, together with the development of worldwide information and communication networks, has brought a new order of magnitude to this problem. Digital libraries are the complex and advanced forms of information systems that can be endowed with a multiplicity of functions and features. Sometimes, these are called as electronic infrastructures and information highways, etc., but a library is not the same thing as one called it an infrastructure (Nunberg, 1993). A library adds value to information resources by organizing them and making them available. Additionally, a library serves distinct sets of stakeholders: communities of frequent, casual, and potential users.

2. Information Communication Technology (ICT): An Influencing factor of 21st century

ICT allows users to participate in a rapidly changing world in which work and other activities are increasingly transformed by access to varied and developing technologies. By this definition, one could almost say ICT is technology's version of economic growth, to satisfy the needs and wants of the community over time. ICT tools can be used to find, explore, analyze, exchange and present information responsibly and without discrimination. ICT can be employed to give users quick access to ideas and experiences from a wide range of people, communities and cultures. Therefore, users should well versed with the ICT employed in the digital libraries, which is a big challenge in front of us.

The ICT as changed the way we store, organize, access, dissemination and preservation of information. The concrete buildings as the store houses of information are giving way to virtual spaces, holding multiple digital repositories. This transition has also affected the infrastructure required of digital libraries. With time, as the content of digital information is rapidly increasing so

is the need for greater storage and retrieval power. This has had significant impact in terms of software and hardware infrastructure requirements.

2.1. Human Computer Interaction (HCI)

HCI has to do with the space that is created to work with technology. It is the study of interaction between people (users) and computers. It is often regarded as the intersection of computer science, behavioral sciences, design and several other fields of study. Interaction between users and computers occurs at the user interface (or simply interface), which includes both software and hardware; for example, characters or objects displayed by software on a personal computer's monitor, input received from users via hardware peripherals such as keyboards and mice, and other user interactions with large-scale computerized systems such as aircraft and power plants. Therefore, the digital library librarians must study the interaction between users and computers.

2.2. Technological Implications on Traditional Libraries

The implications of digital technology are that physical acquisition; storage and circulation become less important, while training, searching, software, networking and licensing become more important. When information is delivered beyond the library building, the number of people physically present in the library will no longer be a measure of the library's performance. Thus, the improved bibliographic search capabilities of computer catalogs have often increased the time users spend in libraries, since they find more things to read. However we now see people reading more and more material on their desktop. As this spreads, the need for libraries to provide places to read would decline. Human resources are likely to be more important as the range of skills needed in libraries increase. Photocopiers and borrower cards are likely to become less important, along with circulation, because more and more people will use the library 'remotely'. Preservation will have a whole new set of problems, but will it will still be there. Computing infrastructure will similarly face new problems but larger and complex ones. If many libraries join together and form 'consortia', they could develop shared software packages, and perhaps maintain shared computer centers, which might help in keeping the costs down. We can imagine a future in which virtually everything is digital. Library staff spending more time in helping patrons rather than lending and taking care of books, would be a common sight. Librarians can concentrate more on user training (teaching) than managing people and materials stored in the buildings.

3. Characteristics of Digital Libraries

A basic characteristic of the digital library is that the information objects are found in collections with associated management and support functions (Leiner, 1998). With the development of the modern information technology, such as computer and Internet, the traditional library hasn't been fit on the requirement of the information time and knowledge economic development, so it faces the basic changes and innovation, also faces changing and developing to the modern library. "To be materialization, it is using new technology and realizing automation, internet, information and figuration which are impenetrable, having the unit function, storing the major printing literature, only borrowing books from the digital library, which owns new facility, opening, having many functions and supplying diversified service" (Baohua et al., 2002). Differing from the traditional library, digital library has its own characteristics and functions that are the direction of the traditional library.

The characteristics of digital libraries are:

- The digitization of the information resources

- The internet of the information transfer
- The share of the information
- The knowledge of information supply
- The fictitious information object

4. Challenges in Development of Digital Libraries

There are so many challenges in digital library like quality control, intellectual property rights, mutual trust, retrieval of information etc. A digital library in itself is a new concept. The pace at which it is growing can only be noticed in the main library otherwise the concept remains new" (Schibel & Rydberg-Cox, 2006 March). There are many challenges in digitization the documents and to make information accessible. It is seen that with the advancement in the ICT, the digital libraries are growing up. At one hand, they are providing us information just in a fraction of minutes; on the other hand, they are posing many challenges in front of us. The following are some of the major challenges which have to be sorted out for further strengthening of the digital libraries in colleges.

4.1. Quality Problem

A digital library is not only known to the extend and nature of collections its own but also to establish a defined set of information to be made available including value added services that they layer on top of overlapping electronic collections. Aspects of their distinctive identities, services to user communities, emphasize their owned collections and promote institutional objectives, provide access to and kind of support or online help the virtual collections.

4.2. Interoperability

Interoperability is the ability to store and retrieve material across diverse content collections administered independently. It brings an inter-relationship between information service related disciplines like - library management, archives management, museum management, document management, knowledge management, and e-commerce management. Interoperability allows organizations and communities to retail their specialist practices, while putting high-level standards and protocols in place for sharing the information. It is difficult to achieve as it requires resources' creators, users, funding agencies, systems and resource managers to agree on the development of standards and formats for information interchange that may not map exactly onto their established practices. The interoperability problems that librarians solve routinely for conventional collections are more difficult in the world of software-enabled digital libraries.

4.3. Intellectual Property Rights (IPR)

Managing intellectual property rights is another challenging problem that the digital libraries have to face. Libraries need flexible licenses that enable them to legally create archival collections and to transfer content to newer storage technologies for preservation. Licensing arrangements become complex as libraries purchase and share access to both print and electronic versions of materials. The legal liability of providing access to licensed materials can be far greater with digital information products than with their print counterparts, given the ease with which unscrupulous users can gain unauthorized access. In addition, libraries may need to charge users for access to materials. For all these functions, libraries need cost-effective, flexible, and easy-to-use software to manage access rights and copyright expenses, as well as to handle billing and payment.

Technical solutions may be inadequate to address all of the intellectual property issues that exist in the context of digital libraries. Other solutions, even including Congressional legislation, may ultimately be needed to balance the interests in individuals, institutions, and copyright holders. Continued research is required to give digital libraries the ability to manage intellectual property rights and to protect those rights while not inhibiting users' legitimate access to materials consistent with those rights.

4.4. Privacy and Security

A related set of challenges for digital libraries is the ability, or in some cases, the requirement to protect digital contents from unauthorized access or from unauthorized or uncontrolled use of that content such as replicating and transmitting it to others. In some cases (for example, digital music) privacy and security technologies are required to protect the rights both of the content owner and the consumer and to enable vibrant electronic commerce. These challenges, which are at the core of many of today's digital intellectual property issues, have yet to be solved in broadly applicable ways.

4.5. Users Attitude

Usability has always been a difficult problem in networked software systems. It is a key issue in the design and operations of global-scale networked digital libraries. A number of difficult problems are yet to be solved. How can content, both spoken and written, be made accessible to speakers of diverse languages? How do we make digital libraries equally usable to persons of diverse skill levels (for example, teachers and students)? How can we facilitate efficient searching for images, for example, in collections of millions or even billions of such digital objects? How do we mitigate the problems, which occur especially with large multimedia files, associated with varying access bandwidths? These challenges are related to human use or the personal information management. This is connected to human-computer interface studies and also to studies of how individuals and groups seek, discovers, use and share information, but goes beyond the typical concerns of both to take a very long time horizon perspective.

4.6. Preservation Problem

As more and more of the activities in our lives are captured, represented and stored in digital form, the questions of how we organize, manage, share, and preserve these digital representations will become increasingly crucial (Lynch, 2005). Long-term storage technologies and efficient procedures for transferring ephemeral content into long-lived storage have not yet been developed. In addition, cost and space constraints are driving librarians to share collections and services. It is seen that the cost of maintaining a research collection continues to grow as much as 15 percent a year. The Internet has facilitated this practice since networked collections can be made available instantly to anyone anywhere. Research on cost-effective long-term digital storage technologies and efficient archiving and preservation processes are pressing needs. We have to adopt some kind of digital information policy for digital preservation to overcome the problem (Dhiman and Gupta, 2007).

4.7. Skilled Manpower

Human resource is the most essential part of any institutional effort. To have a trained staff that can handle a variety of tasks and take informed decision under different situation is vital to any organization. The DL Projects has acquired and developed much of its required skilled man power

to sustain the digital project. The staff includes a dedicated group of programmers that has developed its online digital library and maintains it as well.

4.8. Digital Librarianship

Does a digital library have librarians? If so, what do they do? This is the most burning questions. Most of the digital libraries, particularly those are residing over Internet only have this type of problems. This is more serious problem and no professional is looking the control of so called 'virtual libraries' over net. Besides, the ways of management are also changing in digital environment (Dhiman and Rani, 2004), so we need to adjust accordingly.

4.9. Digital Library and Open Access Initiative (OAI)

The present day Digital Libraries are not only storing, organizing and dissemination electronic information sources but also facliate to interlink and integrate the open access resources. In a sentence, the OAI is a protocol built on top of HTTP designed to distribute, gather, and federate metadata. The protocol is expressed in XML. This article describes the problems the OAI is trying to address and outlines how the OAI system is intended to work. The Open Archives Initiative develops and promotes interoperability standards that aim to facilitate the efficient dissemination of content. OAI has its roots in the open access and institutional repository movements. Continued support of this work remains a cornerstone of the Open Archives program. Over time, however, the work of OAI has expanded to promote broad access to digital resources for eScholarship, eLearning, and eScience. The Open Archives Initiative, commonly abbreviated as OAI, is a body that promotes standards in archiving which allow systems to operate successfully together and exchange information. The OAI's main vehicle for increasing scholarly communication is OAI-PMH, or the Open Archives Initiative Protocol for Metadata Harvesting. (Metadata is, at its most basic, information about information.) Metadata harvesters locate and aggregate metadata from different data sets.

4.10. Institutional Repositories

Institutional repositories are simply the posting of an institutional work or output on the net for further use by the scholars. These are one of the best way to access information of an institution but we have to decide, will the access to some institutional repositories be limited to some classes of users? In additions, the legality is also associated with the institutional repositories and how can copyright laws for IRs be observed?

5. Changing role of Librarians and library Management

Librarians and information specialists are approaching a decision point. They must decide whether they will create changes in libraries that parallel the changing needs for information in society, and thus thrive in the electronic age, or whether they will continue to serve their traditional role as the custodians of books and other information media.

Librarians have always served as guides to information resources. If the philosophy of service is to find the vehicle carrying the information, it needs to be expanded. If the librarian's concern is for supplying the information, regardless of the container, one has already made major progress towards the Digital library. Therefore, a librarian or information specialist who is ICT literate is a valued professional also viewed as an agent of information transfer and an advocate for information accessibility. Planning a digital library requires thoughtful analysis of the organization and its users, and an acknowledgement of the cost and the need for infrastructure and ongoing

maintenance (Adams, Jansen, and Smith 1999). Digital Libraries present opportunities and challenges for the library and information communities and all stakeholders.

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6. Conclusion

The libraries of today are moving from traditional system to 'Digital Library' and further to 'Virtual Library'. Accordingly libraries have to adapt to drastic changes to create their own identity to satisfy their users. Various change agents like Technology Management, Total Quality Management (TQM), Re-engineering of Library Services, Knowledge Management, SWOT (Strength, Weakness, Opportunity, and Threat) Analysis are useful for managing the change in Libraries and Information Centres in ICT environment and to face the challenges of the digital library.

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Dominant Issues/Expectations among E-Journal Users: *A Study of User Experiences at University College of Engineering, JNTU, Kakinada*

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Abstract

The present paper makes a definitive critical attempt at analysing various pertinent issues emanating from the electronic journals usage perspective as experienced by final year students of B.Tech as well as M.Tech students of University College of Engineering, JNTU, Kakinada. A structured questionnaire throws up all the desired data out of a sample size of 100 students. A majority of the students rank high on the awareness level in relation to the availability of electronic journals in the library. Interestingly, valuable inputs provided by library staff, peers and faculty in general, is found as the biggest contributing factor to this higher level of awareness. Further, analysis puts the tag of 'most favoured place' to the central library as per as access to e-journals is concerned. Besides, half of the students register satisfaction with the availability of e-journals in the library. However, a sizeable majority exudes optimism about the usefulness of users' awareness programmes and look forward earnestly to such programmes that may have the potential to enhance their skills.

Keywords : E-Journals, User issues, User studies, Engineering College, JNTUK

1. Introduction

Electronic journals are widely regarded as the most productive source of information in the firmament of research and development. In fact, electronic journals are virtual engines that propel research activities to achieve critical mass. Researchers find this source most attractive as well as conducive to their area of activities. Moreover, a wide spectrum of users considers electronic journals critical to their pursuit of quality education and knowledge acquisition and sharing. In recent times, explosion in information technology has resulted in an exponential increase in the availability of electronic journals for all sorts of users in various libraries across the world. The publishers and subscription agents have shown better business acumen and maturity enabling greater availability of titles. However, the libraries are suffering from a shared paranoia, based on the premise that electronic journals flourish at the expense of traditional print resources. In fact, revolutionary strides made in information technology, particularly Internet, are the real catalysts in this migration – print to electronic. Journals made available through Internet are referred to as online editions as opposed to print editions published and distributed as hard copies. A study like the present one is primarily focused on enlisting user survey and their observations/results to better existing library services, introduce novel services, promote cost-effective models, set effective evaluation parameters for libraries and above all, optimize user satisfaction.

JNTU (Jawaharlal Nehru Technological University) was originally 'The College of Engineering, Vizagpatnam' at the time of its establishment in 1946. It is now a sprawling campus of 110 acres, green with mango trees in the fast developing Port city of Kakinada, East coast of peninsula India. Kakinada has a rich political literacy and cultural heritage passed on through generations. The College is governed by the rules and guidelines provided by the university from time to time. The college has made rapid strides since its formation and is playing a pivotal role in the technological advances of the region.

The Research and Development activity in the College got a boost with the procurement of modern and sophisticated equipment under Ministry of Human Resource Development (MHRD)

and All India Council for Technical Education (AICTE) schemes. Now, the college has five U.G. Programmes and Nine P.G. Programmes to its credit. In addition the college helps unemployed under-employed diploma and degree holders in Engineering to improve their qualifications through its continuing education programmes. The college has plans to provide an e-class room on each of Engineering Department. The college follows a continuous method of evaluation for internal assessment and external mode for end-examinations under semester system.

2. Baba Saheb Dr.B.R.Ambedkar Library, JNTUKakinada

The Central Library began its existence in 1946. Since then, it has grown in size and content along with JNTU College of Engineering, Kakinada to take the present shape. All these years, it has been the life line for the academic activity of the institute. At present, it stands as a model library. Central Library services the academic needs of about 3000 UG and PG students, research scholars and nearly 177 faculty members, technical and administrative staff of the institute. The Library resources stand at about 70000 volumes including text books and reference books.

The central library has been catering to the needs of the under graduates, post graduates students, research scholars, faculty and staff members of all the departments. The book collection has been supporting the teaching, research, development and other professional activities of these departments. The demands of the ever-growing research areas in multiple disciplines are being catered with the help of latest volumes, in almost all fields of engineering, Science, Technology and general areas. The library presently occupies a spacious two storied building. The college library provides special services like current awareness services, selective dissemination of information along with the normal services like reference, referral, literature searching and bibliographic data services

3. Statement of the Problem

The problem selected for the present study is entitled "Dominant Issues/Expectations among E-Journals Users: A Study of User Experiences at University College of Engineering, Jawaharlal Nehru Technological University, Kakinada".

4. Aims and Objectives of the Study

- To examine the awareness of e-journals among the engineering students.
- To know the place from where engineering students access e-journals.
- To find out the purpose of using e-journals.
- To examine the problems while using e-journals.
- To know the level of satisfaction with the available e-journals.
- To examine the need for conducting user awareness programmes in using e-journals.

5. Methodology

To conduct this study, survey method through questionnaire tool was used. The present study was conducted on a sample of a total number 100 final year B.Tech & M.Tech students of University College of Engineering, JNTU Kakinada. Copies of questionnaire were distributed to 100 engineering students in the month August, 2012. However, 95 of them responded and the same is used for analysis.

6. Data Analysis

6.1. Awareness of e-journals

Table 1 shows the distribution of engineering students according to their responses with regard to awareness of available e-journals.

Table 1: Awareness of e-journals

Awareness	No. of students	Percentage (%)
Yes	88	92.63
No	7	7.37
Total	**95**	**100.00**

It is evident from Table 1 that 92.63 percent of the engineering students are aware of availability of electronic journals in the library and only 7.37 percent of them replied negatively in this regard. It concludes that most of the students are aware of the electronic journals available in the library.

6.2. Source of information about e-journals

The classification of engineering students according to the sources from which they know the availability of electronic journals is shown in Table 2.

Table 2: Source of information about electronic journals

Sources	No. of students	Percentage (%)
Library staff	72	75.79
Friends/Faculty	20	21.05
Others	4	4.21

(Multiple answers were permitted)

It is evident from Table 2 that 75.79 percent of the engineering students know the availability of electronic journals from the library staff, 21.05 percent of them from friends and faculty, and 4.21 percent of them from other sources.

6.3. Place for accessibility of e-journals

The distribution of engineering students according to the places from which they access of electronic journals is shown in Table 3.

Table 3: Place for accessibility of electronic journals

Sources	No. of students	Percentage (%)
Central Library	86	90.53
Main Compute Centre	69	72.63
Departmental computer centre	39	41.05

(Multiple answers were permitted)

It is evident from Table 3 that 90.53 percent of the students are accessing the electronic journals from their central library, 41.05 percent of them from departmental computer centers, and 72.63 per cent of them from main computer center. It concludes that the majority of the students are accessing the e-journals from central library and main computer centre.

6.4. Purpose of using e-journals:

A question has been put to the engineering students to indicate the purpose for which they are using the electronic journals. The replies given by them are shown in Table 4.

Table 4: Purpose of using electronic journals

Purpose	No. of students	Percentage (%)
To update the knowledge (general)	65	68.42
For research (project work)	90	94.74
For study (exams)	45	47.37
To write papers (articles)	78	82.11

(Multiple answers were permitted)

It can be seen from Table 4 that 94.74 percent of the engineering students are using electronic journals for their research work. It is evident that another 68.42 percent of them are using e-journals for updating their knowledge, 47.37 percent of them are using for regular studies, and 82.11 percent of them are using for writing papers.

6.5. Problems in using e-journals

A question has been put to the engineering students to indicate the level of problems they faced in using the electronic journals. The replies given by them are shown in Table 5.

Table 5: Problems in using electronic journals

Level of problems	No. of students	Percentage (%)
Major problem	43	45.26
Minor problem	32	33.68
No problem at all	20	21.05
Total	**95**	100.00

It is evident from Table 5 that majority of the students (45.26%) indicated that they are facing major problems in using electronic journals, where as 33.68 percent of them are facing minor problems and only 21.05 percent of them are facing no problems. This clearly indicates that library needs to organize training programmes in regular intervals in order to reduce the problems of the engineering students. The library staff also needs to help the students till they get familiarity in using the electronic journals that the will motivate students more and more. The specific problems faced by the students in accessing electronic journals are shown in Table 6.

Table 6: Types of problems in using electronic journals

Type of problems	No. of students	Percentage (%)
Internet connectivity	32	42.67
There is no access from my desktop	73	97.33
Downloading is very slow	62	82.67
Lack of training	59	78.67
Other problems (Power cuts. UPS Down etc)	43	57.33

(Multiple answers were permitted)

It is evident from Table 6 that the specific problems faced by the majority of the engineering students are: 'There is no access from my desktop (97.33%)', 'Downloading is very slow (82.67%)',

'other problems (power cuts, UPS down etc) (57.33%)', 'Lack of training (78.67%)', and 'Internet connectivity (42.67%).

6.6. Value of information access through e-journals

The distribution of engineering students according to their value of information access through electronic journals is shown in Table 7.

Table 7: Value of information access through electronic journals

Information access	No. of students	Percentage (%)
Most helpful	52	54.74
Helpful	32	33.68
Least helpful	11	11.58
Total	**95**	**100.00**

It is evident from Table 7 that 54.74 percent of the engineering students indicate that electronic journals are 'Most helpful' in their research and 33.68 percent of them indicate that electronics journals are 'Helpful' whereas, remaining 11.58 percent of them indicate "Least helpful".

6.7. Skills Regarding the use of e-journals

The classification of engineering students according their skills for accessing the electronic journals is shown in Table 8.

Table 8: Skills regarding the access of electronic journals

Skills	No. of students	Percentage (%)
Expert	27	28.42
Moderate	58	61.05
Beginners	10	10.53
Total	**95**	**100.00**

It is evident from Table 8 that 61.05 percent of engineering students consider themselves as 'Moderate' for accessing the electronic journals. About 28.42 percent of them are 'Expert', whereas 10.53 percent of them are considering themselves as 'Beginners' in this regard.

6.8. Level of satisfaction with e-Journals

A question has been put to the engineering students to indicate the level of satisfaction with the availability of e-journals subscribed by the library. The replies given by them are shown in Table 9.

Table 9: Level of satisfaction with electronic journals

Level of satisfaction	No. of students	Percentage (%)
Satisfied	61	64.21
Neither satisfied nor dissatisfied	22	23.16
Dissatisfied	12	12.63
Total	**95**	**100.00**

It is evident from Table 9 that more than half of the engineering students (64.21%) are satisfied with the availability of electronic journals in University College of Engineering, 23.16

percent of them are neither satisfied nor dissatisfied, and 12.63 percent of them dissatisfied. So, there is a need to improve the satisfaction levels of engineering students requiring electronic journals.

6.9. Need of user training

A question has been put to the engineering students to indicate whether they need any awareness programme in using the electronic journals. The replies given by them are shown in Table 10.

Table 10: Need of user training

Need of user training	No. of students	Percentage (%)
Yes	83	87.37
No	12	12.63
Total	**95**	**100.00**

It is evident from Table 10 that majority of engineering students (87.37%) felt that the awareness programme is essential for using electronic journals and 12.63 percent of them responded negatively in this regard.

7. Major Findings

- Most of the engineering students (92.63%) are aware of the availability of electronic journals in library.
- Majority of the engineering students are able to know the availability of electronic journals in library from library staff (75.79%) and friends/faculty (21.05%).
- Most of the engineering students (90.53%) are accessing electronic journals from central library.
- Most of them (94.74%) are accessing the electronic journals relating to their research work.
- Majority of them (45.26%) replied that they are facing major problems in accessing electronic journals. The main specific problems faced by them are 'There is no access from my desktop' and 'Downloading is very slow'.
- Most of the engineering students (54.74%) indicate that electronic journals are most helpful and 33.68 percent are helpful in their research work.
- Majority of the engineering students (61.05%), consider themselves as moderate regarding the skills of use for electronic journals.
- More than half of the engineering students (64.21%) are satisfied with the availability of electronic journals in library.
- Most of them are getting assistance from the library staff members in using the electronic journals but they have indicated that user training programme is essential in using electronic journals.

8. Suggestions

- A considerable percentage of the students (12.63%) are dissatisfied with the electronic journals available in Engineering College Library for their needs. Hence a survey needs to be

conducted to know the specific e-journals required by them so that steps can be taken for their subscription.

- To enhance speed, bandwidth need to be increased as most of the students felt that information downloading is slow.
- To provide electronic journals facility efficiently and effectively the number of computers must be increased in the central library as well as departmental labs in the campus.
- The authorities should organize regular workshops to enhance usage of electronic journals.
- Users' studies should be conducted to know about electronic information needs of users as well as problems they are facing while searching information through consortia.
- Most of the engineering students (87.37%) replied that the training programmes in using electronic journals are essential. Hence, regular training programmes are required to be arranged in the use of electronic journals for users for new students and faculty members.

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Effective use of E-Resources by the Faculty Members and Students: *A Study of Kuppam Engineering College Library, Kuppam*

Anjaiah, M **Saravana, C.G**

Abstract

This paper presents the findings of the survey made on the use of E – Resources by the faculty members and student community of Kuppam Engineering College Library, Kuppam. The Survey shows that the majority 72% users are using e-journals, 46% of them are using e-books and 76% of users are using e-resources to obtain subject knowledge.

Keywords : INDEST Consortium, ICT, E-Resources, E-Journals, E-Books, E-Services

1. Introduction

Information Technology has brought revolutionary changes in the functions of libraries and for a variety of applications in libraries. It helps libraries in creating database of their collections and making them available for easy access to users inside and outside the libraries through networks. Because of this feature, Information Communication technology (ICT) is enabling the libraries to provide the most efficient and specialized information services on information pertaining to literature. Information Communication Technology establishes an efficient information support and an effective communication system in the organization of libraries. Most of the operations within library are interrelated and inter dependent; and mutually supportive for the overall mission of libraries. (Williams, Brian K; and Sawyer, Stacey C, 2003).

Emergence of ICT and its offshoot technologies includes Internet, World Wide Web [WWW], Web-portals and GroupWare have made a significant impact on the work culture and potentially of libraries and information centers worldwide. The relatively stable information is being vigorously shaken today by two significant changes related to information provision and access. Firstly, a major portion of current information is produced in electronic form and secondly, the information production, publication, distribution and access are made over global computer networks which are exemplified today by the Internet. Moreover, proliferation of network enabled electronic information products exerts ever increasing pressure on traditional libraries. Traditional libraries, in turn are committing larger portions of their budgetary to either procuring or accessing web-based full-text search services like CD-ROM products, online databases, multimedia products, and so forth. (Rajyalakshmi, D. and Waghmare, S B: 2004). Information skills and information technology are interconnected and hence they are referred together as ICT skills. If IT is the machine, ICT is the product. While IT implies one-way communication, ICT implies interaction between the use and the data. Emerging of ICT tools have added a new dimension to education. (Nagalingam, U, 2008)

2. Electronic Resources

Electronic Information may be broadly defined as "The information stored in a medium, which requires an electronic device to read/access its contents". Information stored in different electronic media such as Floppies, Magnetic tapes, CD-ROMs/DVDs, flash/Pen Drives, Hard Disk, OPAC, Online documents including online Journals, etc. constitute Electronic Information. In the present electronic age, various new technologies are emerging to facilitate information storage, process and transfer much faster than the traditional print media. Information stored in electronic

form (Such as in CD-ROMs, Computer databases) can break all the physical and geographical barriers and reach the remotest corner of the world. (Rajashekar and Kumbar; 2004). Electronic information had resources promised and continues to promise still a revolution in its availability and easy access. Although, it seems to most of the practitioners that we are in the mid-revolution and electronic resources have already become part of the naturally established order of things for researchers in developed countries.

3. E-Services

The revolution in Information Technology offers unparalleled opportunities for an instantaneous information communication through a number of services which include E-mail, online database search, CD-search, OPAC, resource sharing through networking, videotext, tele-fascimile, tele-conferencing, electronic document information market and facilities to buy and sell information. These advancements have contributed to the development of a new electronic information society. ICT helps us to meet these functions with (a) improved efficiency in terms of time, human resource, usage and costs and (b) improved quality of information, greater responsiveness, increased access to all kinds of information sources with decreased costs; and most rapid dissemination of information through sharing of databases and enhanced degree of user interaction.

4. Kuppam Engineering College (KEC), Kuppam: A Profile

Kuppam Engineering College was started in the year 2001 with a focus on quality education and training in technological courses. The college is approved by All India Council for Technical Education (A.I.C.T.E) and is affiliated to JNTU Anantapur. The institution was ISO 9001-2000 certified and Accredited by National Board of Accreditation (NBA). College offers various under graduate courses in B.Tech (ECE, EEE, CSE, IT, MECH, &CIVIL), and M.B.A, M.C.A & M.Tech courses at post graduate level.

4.1. KEC Library: An overview

The Central Library was established in the year 2001. It is well furnished with 3500 Volumes and 1200 Titles. In 2004, the library was automated with EasyLib software, and it provides facilities like OPAC and Book Transactions. Barcode technology is being used for the library in-house transactions, and it is connected to intranet. Library users can search for/and reserve the books through the OPAC (Online Public Access Catalogue). In 2008, the Central Library started modern Digital Library with rich collection of Electronic resources, Internet, Audio visual collections etc. The library caters to the need of more than 2000 students, teaching, non-teaching staff and research scholars. At present the library has 28,400 volumes with 5400 titles, 85 periodicals both National and International and subscribing more than 280 e-journals, e-books and e-databases through INDEST-AICTE Consortium and 2200 CD collection, more than 700 project reports.

4.2. Digital Library

The Digital Library has 20 computers, providing internet facility and it has more than 560 e-books, e-databases, previous question papers and Project Reports are in e-form. Computers are connected to LAN and allow browsing the internet for academic and research purpose. The Digital Library has ASME, IEL, McGraw Hill Digital library Collection, Springer, J-Gate and ASCE online subscription and membership in Development Library Network (DELNET) through which one can have access to specialized bibliographic data-bases of books.

5. Objectives of the Study

- To know the frequency of the users.
- To study the use of different types of electronic resources.
- To know the purpose of using of electronic resources.
- To identify the problems faced by the users to use the ICT/Internet accessing.
- To study the availability of the existing Library Resources & Services
- To ascertain the level of satisfaction among the users with the available library resources and services.
- To suggest recommendations to improve the electronic resources and services for the users.

6. Review of Literature

Barbara J. Bergman (2005) has discussed the position of electronic resources as a specialty to deal with the management of digital resources, but little has been written about the librarians now working in this specialty. Electronic resources management appears substantially to blur the line between public and technical services. Mulla (2006) has highlighted in his paper "Electronic Resources and Services in Academic Libraries: A Case Study" about the ways of accessing electronic resources and types and type of electronic resources and services infrastructure n the academic libraries. Kaur and Verma (2006) have made a survey about the use of electronic resources at TIET library, Patiala. This paper also examines the interest of the users about internet, CD-ROM databases and other services provided by the library. Lohar and Roopashree (2006) have analyzed the collected data to cover the use of electronic resources and how the electronic resources have improved the academic career of the faculty and also the problems that are faced in using the electronic resources. They conclude that the main intention of the use of the electronic resources has been the academic interest of the users. Mandal and Panda (2009) have jointly conducted a study on e-resources supplied though INDEST consortium and its impact on 21st century environment. The study successfully unfolds some reasons for low usage and suggests some remedial steps to improve the use of e-resources and services.

7. Methodology

For the present study, the survey method is adopted. To collect the needed data, a well-structured questionnaire was developed and a total of 115 questionnaires were distributed to faculty member and students of all the disciplines and 104 were received. The response rate is 90.43%.

8. Data Analysis and Interpretation

Statistical Techniques: For analyzing the collected data from the respondents, the simple percentages and tables are used.

Table-1: Distribution of Questionnaires

Sl.No	Respondents	Questionnaires Distributed	Questionnaires Received	Percentage
1.	Faculty Members	40	36	31.3
2.	Students	75	68	59.1
Total		115	104	90.4

The above Table 1 shows that 115 Questionnaires were distributed to faculty members and students of all the disciplines and 104 were received. The response rate is 90.43%.

Table-2: Gender-wise Respondents

Sl.No	Respondents	Faculty	Students	Percentage
1.	Male	25	47	72 (69.2%)
2.	Female	11	21	32 (30.8%)
Total		36	68	104 (100%)

The table 2 presents the gender wise respondents. It is found that a majority 72 (69.2%) of the respondents belongs to male community and 32 (30.8%) respondents belong to female community.

Table-3: Frequency of Visiting the Library

Sl.No	Frequency	Faculty	Students	Percentage
1.	Every Day	12	20	32 (30.8%)
2.	Once in 2 Days	9	13	22 (21.1%)
3.	Once in 3 Days	4	18	22 (21.1%)
4.	Twice in a Week	5	8	13 (12.5%)
5.	Once in a Week	4	7	11 (10.6%)
6.	Once in Fortnight	2	2	4 (3.8%)
Total		36	68	104 (100%)

From the Table 3, it is observed that 32 (30.8%) of the respondents are visiting the library every day following by 22 (21.1%) of the respondents are visiting the library once in a two days and once in three days equally and 13 (12.5%) of the respondents are twice in a week, 11 (10.6%) of the respondents are visiting the library once in a week and 4 (3.8%) of the respondents are visiting the library once in fortnight respectively.

Table-4: Frequency of Using Electronic Resources

Sl.No	Frequency	Faculty	Students	Percentage
1.	Daily	9	15	24 (23%)
2.	Weekly	23	40	63 (60.6%)
3.	Monthly	3	5	8 (7.7%)
4.	Rarely	1	8	9 (8.7%)
Total		36	68	104 (100%)

The table 4 presents the frequency of using electronic resources available in the library. It shows that the majority of the users 63 (60.6%) are using electronic resources weekly, followed by 24 (23%) respondents are using daily and remaining 8 (7.7%), 9 (8.7%) are using electronic resources monthly and rarely.

Table-5: Using of Electronic Resources by the Respondents

Sl.No	Frequency	Faculty	Students	Percentage
1.	E – Journals	32	43	75 (72.1%)
2.	E – Books	23	25	48 (46.1%)
3.	CD-ROM/DVDs	7	14	21 (20.1%)
4.	E – Databases	5	12	17 (16.3%)
5.	INDEST	21	27	48 (46.1%)
6.	Internet	30	60	90 (86.5%)
7.	Digital Library	26	18	44 (42.3%),

The table 5 shows that the using of electronic resources available in the library. It is observed that 90 (86.5%) of the users are using internet, followed by 75 (72.1%) of the users using

e-journals, 48 (46.1%) of the users using e-books and INDEST equally, and remaining electronic resources like digital library 44 (42.3%), CD-ROM/DVDs 21 (20.1%) and e-databases 17 (16.3%) were using respectively.

Table-6: Rating Knowledge of Using Electronic Resources

Sl.No	Frequency	Faculty	Students	Percentage
1.	Excellent	13	22	35 (33.7%)
2.	Good	21	36	57(54.8%)
3.	Average	2	8	10 (9.6%)
4.	Poor	-	2	2 (1.9%)
Total		36	68	104 (100%)

From the Table 6 it is observed that 57(54.8%) of the users having excellent knowledge in using electronic resources, followed by 35 (33.7%) of the users having good knowledge, 10 (9.6%) having average knowledge and 2 (1.9%) of the users having poor knowledge of using electronic resources.

Table-7: Purpose of Using Electronic Resources

Sl.No	Frequency	Faculty	Students	Percentage
1.	Subject Purpose	21	58	79 (76%)
2.	For Research	14	6	20 (19.2%)
3.	For Entertainment	1	4	5 (4.8%)
Total		36	68	104 (100%)

The table 7 shows that a majority of the users 79 (76%) using of electronic resources for their subject purpose, 20 (19.2%) of the users using for research purpose and remaining 5 (4.8%) of the users using for entertainment purpose.

Table-8: Problems faced by the users while Accessing the Electronic Resources

Sl.No	Frequency	Faculty	Students	Percentage
1.	Internet Connectivity	5	11	16 (15.3%)
2.	Lack of Infrastructure Facility	2	6	8 (7.7%)
3.	Skills and Training	-	5	5 (4.8%)

The table 8 shows that 16 respondents (15.3%) facing the Internet connectivity problem of using electronic resources, followed by 8 respondents (7.7%) felt that the lack of infrastructure facility and 5 respondents (4.8%) feels that they had less skills and Training as an barrier of accessing the electronic resources.

Table-9: Users' Satisfaction on Library Resources

Sl.No	Library Resources	Satisfied	Not Satisfied	Rank
1.	Books	85 (81.7%)	19 (18.2%)	1
2.	Internet Facility	82 (78.8%)	22 (21.1%)	2
3.	Digital Library	78 (75%)	26 (25%)	3
4.	Electronic Resources (CD/DVDs, e-journals, e-books, e-databases etc)	76 (73.1%)	28 (26.9%)	4
5.	Project Reports	72 (69.2%)	32 (30.7%)	5
6.	Journals	71 (68.2%)	33 (31.7%)	6

The table 9 shows the satisfactory level of the users on the library resources. Books, Internet Facility and Digital Library are ranked first, second and third respectively; Electronic Resources and Project Reports are ranked subsequently.

In any organization customers/users' satisfaction is very important. In this regard Library is not an exception. To know the users' satisfaction, a question was put to the users and their opinions are presented in the below table 10.

Table-10: Users' Satisfaction on Library Services

Sl.No	Library Services	Satisfied	Not Satisfied	Rank
1.	Lending Services	80 (76.9%)	24 (23.1%)	2
2.	Reference Service	79 (76%)	25 (24%)	3
3.	OPAC Service	78 (75%)	26 (25%)	4
4.	Reprographic Service	75 (72.1%)	29 (27.9%)	6
5.	Digital Library	76 (73.1%)	28 (26.9%)	5
6.	Internet Facility	82 (78.9%)	22 (21.1%)	1
7.	SDI	61 (58.6%)	43 (41.4%)	8
8.	CAS	70 (67.3%)	34 (32.7%)	7

From the Table 10, it is observed that internet facility, Lending service and reference services are ranked first, second and third respectively. The OPAC, Digital Library, Reprography Service, CAS (Current Awareness Service) and SDI (Selective Dissemination of Information) are ranked fourth, fifth, sixth, seventh and eighth in the order.

9. Major Findings of the Study

From the above analysis the following findings were made:

- A Large Majority of the respondents 90 (86.5%) are using internet, followed by 72.1% of the users are using e-journals, 46.1% of the users are using e-books and INDEST equally, and remaining electronic resources like digital library 44 (42.3%), CD-ROM/DVDs 21 (20.1%) and e-databases 17 (16.3%) were using respectively.
- A majority of the users 79 (76%) using of electronic resources for their subject purpose, 20 (19.2%) of the users using for research purpose
- It is observed that the majority of the users 63 (60.6%) are using electronic resources by weekly, followed by 24 (23%) are using daily in the library.
- A majority of respondents are visiting the library regularly for lending books, accessing Internet and using of e-resources.
- A majority 57(54.8%) of the users having excellent knowledge in using electronic resources, followed by 35 (33.7%) of the users having good knowledge.

9.1. Suggestions

Based on the detailed study and its outcome, the following suggestions are made to improve the e-resources and its e-services, specifically digital collection.

- There is need to create awareness among the users. So, user education programmes should be conducted regularly.
- There is also urgent need to conduct the workshops for obtaining the ICT knowledge to the students' community.
- Librarians can conduct periodical user surveys and change the collection policy according to the user perceptions, more number of e-resources can be added to cater the user needs.

10. Conclusion

The study, carried out at Kuppam Engineering College library reveals that e-resources have become a vital part in information dissemination in the technical education. Most of the users prefer to use the internet, digital library and e-resources along with the print resources to their academic as well as research purpose. The study proves that the academic community in the technical institutions prefers to use most of the e-resources available in present digital environment.

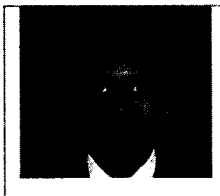
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Electronic Information Resources through e-Learning

Komalla Indrasena Reddy **Md. Ali Khan**

Abstract

In today's age of information explosion, there is abundance of knowledge all over the world and due to advancement in computer technology worldwide, communication has become possible throughout the world at a fast pace. E-Learning is one such technology that has reduced the gap between learner and instructor through various technologies like internet, intranet, e-books, e-journals, e-zines, CD-ROMs, video tapes, audio tapes, e-mail, chat, video conferencing, teleconferencing, mobile phones, multimedia etc. Besides, as we are heading deeper into the 21st century, the concept of traditional methods of learning has also changed. Distance education has been changed to an interactive learning programme through e-learning. Also, geographical barriers and time barriers has been eliminated worldwide. In this paper, an attempt has been made to discuss various definitions of e-learning; types; need; stages and advantages

Keywords : E-learning, Electronic resources, Digital libraries

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Electronic Resource Sharing In Libraries: *A Study*

Deepa R Kulkarni **Danamma I Kurle**

Abstract

This paper attempts to explore the application of Electronic resource sharing in libraries. In the age of digital evolution and escalating price of electronic information, resource sharing is critical for effective functioning of libraries. Increased availability of information in digital format and high costs of journal subscription compels the libraries to work together. Technical advancements provide a platform for digital resource sharing and offer many opportunities for librarians to become more technical and professional. This paper attempts to identify the needs and factors influencing the electronic resource sharing. Also presents the requirements and strategies for effective resource sharing in libraries.

Keywords : Resource Sharing, Technical Advancement, Digital Format.

1. Introduction

The networked environment has enabled the use of libraries that is increasingly free of time and location constraints. The rise of remote access to information increases an academic library's obligation to realign its resources and services to meet the needs of its customers wherever they are located. The library and information services environment has witnessed great changes in 1990's as computing and telecommunications rapidly advanced and matured. Library catalogues and reference tools were the first to move online and full-text documents and multimedia resources followed them soon on institutional intranets or the Internet. [1]

Electronic resource sharing is not interlibrary loan (ILL). Interlibrary loan itself is not collection development, but only a supplement to library collection development. Though still a very important library function, interlibrary loan by itself can no longer meet the information needs of today's library users.

Traditional interlibrary loan is increasingly becoming a labor intensive activity which involves constant checking, verification and shifting of library collections. With users' growing demands for materials not locally available, libraries across the country are forced to either charge high fees for ILL, or further allocate limited budget and personnel resources to support such services. However, users simply can no longer live with the delays inherent in traditional ILL, especially for timely academic information. It is time to develop new means of information access and resource sharing, and the fast growing computer and telecommunication technologies have provided such a platform. [2]

2. Needs for Electronic Resource Sharing

The need for resource sharing stems from three underlying trends of a modern society: the growth of all forms of literature; increasing reliance on information to enable society to function effectively; inflation in the cost of materials coupled with increasing availability of technology. These trends have made it economically imperative to consider sharing resources. Nevertheless the key to successful library information services has changed from ownership to shared access, especially the sharing of electronic resources. No single library can be self-sufficiency any longer; and, no longer can libraries afford to build up huge collections in anticipation of users' demands. New technology has provided the profession the new playing-field of resource sharing.

As computer applications continue to increase in importance in library information services, capabilities for information access will continue to improve, issues of ownership and specific document location will eventually fade into irrelevancy. Shared access to electronic information resources will allow large libraries to focus their acquisitions budgets on specialized resources, while smaller institutions will gain enhanced information access that could not otherwise be afforded. Since the start of computer revolution the impact of electronic networking on education in general and library services in particular has been profound. High-speed transmission of information through electronic networks is reducing the physical boundaries to information and is changing the role of the publisher and the library intermediaries in the chain of scholarly communication.

The development of Z39.50 standard, World Wide Web (WWW) browsers and client/server technology has revolutionized the way information is being transferred. With the rise of the Internet and the National Information Infrastructure (NII), geographic barriers are finally broken and equal access to electronic information is increasingly affordable. For library users the information super highway is becoming a primary way of accessing information. [3]

3. Factors Influencing Resource Sharing

The effectiveness of library services depends on the ability of librarians to provide quick delivery of documents requested by customers either from physical stock or through networks. The electronic resource sharing is often mentioned, as an effective way for meeting customer needs. On one hand the availability of voluminous data in electronic format and its cost presents challenges for libraries to meet the growing demands of users; on the other hand, the information and communication technologies provide library professionals an opportunity to bring virtual library into reality. The other factors influencing resource sharing could be:

- Financial stringencies or lack of institutional funding makes libraries to look at alternative ways of improving and extending library resources.
- How to make the existing library resources readily accessible to the members and other interested parties.
- Skyrocketing journal subscription rates.
- Publishers' restrictions on electronic dissemination.[4]

4. Requirements for Resource Sharing

The process of an exchange or sharing involves two major elements. One is resource and the other is player. First there has to be resources to share and then there should be needy player's collaborators for exchange. The Library Consortia, Professional Associations and University Libraries play a major role in creating and sharing electronic resources. The following are the some of the basic requirements for effective resource sharing.

- There is need for electronic catalogues and indexes for print resources available in the library.
- The technology or equipment to link libraries and to make users aware of collection of own library and other libraries.
- Standardized software, hardware and databases.
- Operating policies on the type of information and archives, which users can access (books, journals, reports, catalogues, indexes, publications etc.)

- Operating manuals or documentation for consistency in operations.
- Training of own staff members and end users for effective use of electronic media.
- Above all, a commitment from the management to provide such facilities and appropriate budget allocation for installation and operating expenses.[5]

5. Planning for Resource Sharing in Libraries

The execution of any action requires careful planning. Successful sharing requires willingness to cooperate by all institutions involved. The collaborative spirit should take full advantage of electronic networking. The planning has to start at the library level. It is recommended that the Following issues should be addressed or considered for effective resource sharing. The issues are presented with an assumption that management is interested and ready to provide the required finances for the venture.

- The electronic online catalogues and indexes of print resources should be made accessible over intranet to the internal users to check the speed, performance integrity, and data security.
- Identification of players who are willing to participate in the venture.
- Discussion with collaborative institutes for the type of resources to be shared. Seminars of participating libraries to formalize the process.
- To effect a substantial degree of cost containment through collaboration.
- Identify the overlap of periodical holdings to decide index coverage.
- Determine the availability of core collection of full text periodicals to identify hardware and software requirements for electronic library.
- Archiving of holdings on standard platform would allow libraries to share information through network.
- Identification of specific needs of internet access of member libraries and network configuration for bibliographic files to online catalogues.[6]
- Benefits of Sharing Of Resources
- Martey (2002) identified some benefits for sharing resources to include:
- Individual Library User and Staff
- Enhancement service through access to more information services available in consortia member libraries.
- Cheaper and more effective services.
- Document delivery services.
- Selective Dissemination of Information and Current Awareness Services.
- Electronic Conferences.
- Increased Human Cooperation.
- Skills Development for opportunities available through cooperative arrangements.
- Institution Library
- Increased cooperation and sharing.

- Improved purchase of electronic information and library collection management.
- Reduced library subscription.
- Provision of education and library services.
- Increased support for the library especially partners in development (donors) that prefer groups rather than individual institutions.
- Institutional library exposure at national and international levels.
- Parent Institution
- Reduced costs for sustaining the library services.
- Increased value (quality and quantity) of information resources available to both staff and students, thus supporting the mission of the institution.
- National
- Increased growth of a national information society.
- Improvement on Technology development.
- Standardization of library services across the country.
- Standardization of library training facilities. [7]
- Categories of Resource Sharing
- Ikpahindi (2006) quoted Oladapo (2005) categorizing resource sharing into three main categories thus:
- Self-standing
- Functional collaboration
- Partnership

If the three categories are compared, the differences, according to Ikpahindi (2006), will essentially be related to factors such as:

- Ownership
- Branding and
- Financing

In the first category, all of the three factors above belong to one organization or library. In the second, the costs may be shared and the branding may indicate this. Ownership is equally with the lead organization/library. In the third case, the cooperating organizations/libraries share the ownership; contribute resources and 'co-brand' the resulting product or service. It is important that no library serves as a coordinating centre. As much as possible, it should be decentralized, but there is a need for a monitoring committee. The committee will consist of at least one member from each of the participating libraries. The task of this committee is to ensure that the project is effective; hence there will be a need for the committee to meet regularly. The committee will determine the broad guidelines for operating resource sharing among users in the consortium. [8]

6. ICT As a driving force for Resource Sharing

There is no doubt that recent developments in information access and retrieval has posed a major challenge on the viability of our libraries. The nature of information science and the evolution of scholarly communication, with all the technologies it brought, are changing rapidly.

And this continues to force libraries to face the challenge of remaining integral participants in research and educational process.

One observable trend in the information environment is that more and more resources are moving to the electronic formats, in some cases being made available only in electronic form and would never be published in any other form. Earlier on, paper union catalogues were developed so that the location of library resources would be known. This method was viewed to be extensive and cumbersome. Advances were later made in the use of web and storage technologies by libraries to automate their resources and services. The use of a standard information retrieval system like Z39.50 allows:

- Library collection from different libraries.
- Connection of member libraries via the Internet.
- No single location to host distributed library collection.

The use of a common search form; the search module goes to the different databases and does a local search and pools all the harvested search results, which are then returned to the user's screen. When a query is typed into the distributed search screen (from the Z39.50 server) using a web browser, the browser passes the query to Z39.50 server to be distributed to the member library servers, with Z39.50 client installed. The clients' responds with results are now passed back to the initiating Z39.50 server to be delivered to the initiating browser client. [9]

7. Conclusion

Resource sharing is the mainstay of customer satisfaction. Libraries survive through the support of satisfied customers. Always a too often talked about cooperation does not lead to action. The fiscal concerns outline the rethinking priorities towards planning, cooperative collection development, and evaluating the efficiency. The issues and strategies discussed in this paper call attention from fellow librarians to convince management and get their fullest cooperation for collaborative venture. The traditional concept of ownership in collection development is gradually being replaced by access to information and knowledge without regard to location and format. Resource sharing among libraries has become the common desire and practice. Increase in the volume of library materials and information, the increasing costs of acquiring and processing them, the need for trained personnel, storage space, and the increasing demands by users are motivating factors for libraries to share books, journals, preprints, catalogues, list of publications, recent additions, newsletters, policy decisions, current events, news flash, etc.

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Endorsing the Use of Electronic Journals among the Students: *A Case Study of Indira College of Engineering and Management*

Vishal V. Gaikwad **Sadanand Y. Bansode**

Abstract

Machines played a significant role in the process of acquisition, organization and dissemination of information. Information dissemination has been taken over by knowledge dissemination. The electronic method of storage and retrieval of knowledge has become a boon to the libraries. Electronic journals are becoming increasingly important within all kinds of electronic documents. Libraries are spending huge on electronic journals and it's the prime role of the library and information science professionals to develop learning attitude amongst the end users for their maximum utilization. The paper emphasizes on the use of electronic journals by the students Indira College of Engineering and Management, and tries to ensure appropriate means to promote their use.

Keywords : electronic journals, Engineering, Management

1. Introduction

The computer technology has pierced all the areas of higher education resulting communication technology at a central place. For satisfying diverse needs of its multidimensional clienteles, libraries today are implementing Information & Communication Technologies (ICT) in the 21st century. Libraries are not mere remained libraries today, but have transformed into knowledge repositories. They are transformed from physical to digital & now even virtual. Today's era can be called as a digital era with the introduction of e-books, e-journals & other electronic content. This electronic content has globalized the dissemination of information by overcoming the barriers of distance. Also today majority of publishers are interested in publishing their documents in electronic format. Electronic publishing is the process of publishing and distribution of documents in electronic format by using computer, communication and electronic technologies. Two major fields of electronic publishing are electronic journals (e-journals) and electronic books (e-books).

Online resources have been a major innovation in the dissemination of scholarly content. Many researchers have written upon electronic journals in the last twenty years, but little empirical research has been published which inspects the levels of use and acceptance of this new format within scholarly community. One such study was conducted by Kling, Robert & Covi, Lisa (1995).

There are many challenges in the online journals since its inception about a decade ago. Those challenges include acquisition, administration, and providing access to that content. In addition to the problems mentioned herein, one another very important setback noticed today is the maximum utilization of e-journals. This paper tries to illustrate that, merely creating and establishing access to library's e-journals collection is only a part of the process; the librarian must maintain the collection and promote the same to his or her clientele.

2. Indira College of Engineering & Management: A Brief Profile

Indira College of Engineering & Management is established in 2007 as a new venture of Shree Chanakya Education Society (SCES). The college is approved by AICTE & Govt. of Maharashtra and affiliated to University of Pune. The college is providing the following programs:

Under-Graduate Courses:

- BE in Computer Engineering (120 seats)
- BE in Electronics and Telecommunication Engineering (60 seats)
- BE in Information Technology (60 seats)
- BE in Mechanical Engineering (120)

Post-Graduate Courses:

- Masters of Business Administration (MBA with 60seats) &
- Masters of Computer Administration (MCA with 60seats)

There are 1553 students in the college within all the courses. The library is an invaluable resource for the students of the college. The library has over the years built up a collection of over 20,000 books & over 500 journals. It has also subscribed to 'American Society of Mechanical Engineers' (ASME) & 'Institute of Electrical & Electronics Engineers' (IEEE). ASME consists of 31 electronic journals & IEEE provides access to 151 e-versions of journals. The library also provides access to PROQUEST for Management sciences.

3. Statement of problems

Many academic libraries are stressing today on procurement of E-journals. E-journals are proving a boon and fulfilling the distant satisfaction of the clientele. But in-spite of their advantages, their optimum utilization has always remained a lacuna and it becomes cumbersome for a library to continue with on line subscription of journals.

4. Importance of the study

In the present era of information explosion, more and more publications are becoming web-concerned. Most of academic libraries have changed the contemporary outlook towards functions and services. The environment is rapidly changing to an electronic one. The shift from paper to on-line resources has been a boom today. Libraries are giving preferences to the on-line resources which are extremely expensive so and there is a need to give a considerable thought on the usage of such resources.

5. Methodology

The research conducted is purely a survey method, in which 60 questionnaires were distributed on 16th August, 2012. All the questionnaires were completely answered. Also the respondents were personally interviewed to locate the actual use of the electronic journals. A separate spreadsheet was also maintained to verify the number of users visiting the library for surfing journals. Usage report of electronic journals was also requested from the aggregator to assess the usage statistics for a period of one year, i.e. from July 2011 to June 2012.

5.1. Sampling

Considering the large number of students, it was burdensome to determine the usage of electronic database. Hence, 10 students from each branch were selected for carrying out the study. As such the usage of electronic journals among 60 students was resolved.

5.2. Primary outcome (Results):

- It was observed that only 2 students from the selected population of Computer department were accessing electronic journals.
- None of the student from the department of Electronics and Telecommunication were accessing electronic database.
- 3 students from the department of Information Technology were surfing the electronic database.
- 7 students from the department of Mechanical engineering were accessing ASME.
- 4 students from the Management department were using electronic journals.
- Only one student of the MCA department was referring electronic journals.

The following figure shows the statistical data of the above usage.

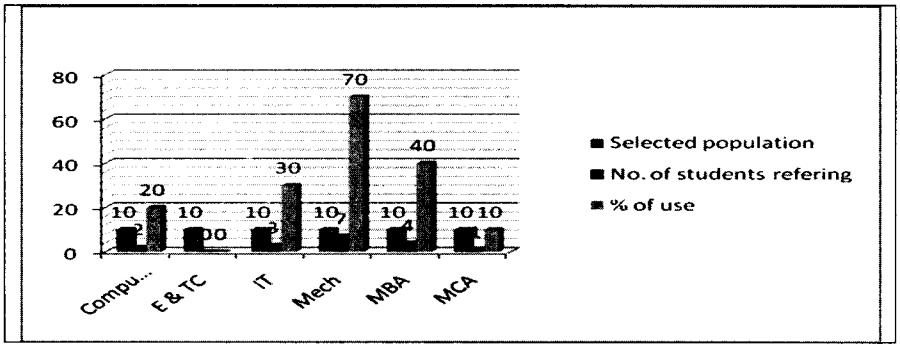


Fig-1: Course wise usage of electronic journals of the selected Population

5.3. Overall usage of Electronic Journal database:

The above analysis clearly shows that out of 60 students only 17 of them had accessed E-database. Hence the overall percentage of usage goes to 28%.

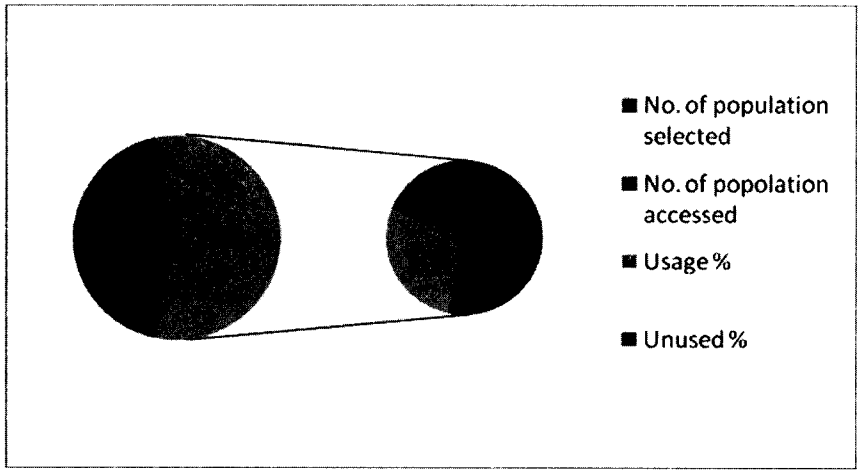


Fig-2: Overall usage of Electronic journals of the selected population

The above data clearly reflects that the e-journals are not utilized to its maximum extent.

6. Initiatives to maximize e-journals usage:

ICEM library had invested huge amount for the subscriptions of online journals. Keeping in

view the reduced amount of usage of those subscriptions & taking it as a challenge, several initiatives were taken up to exploit its usage.

6.1. Library initiatives:

- **Orientation:** Proper orientation was provided to the students in concerning with the usage. The basic ideas of how to access actual content were provided.
- **Training:** Appropriate training was provided to the students who were finding it cumbersome to use the electronic journals.
- **Competitions and consolation prizes:** The library organized a competition & the students accessing maximum e-journals were felicitated by the Director.
- **Facilities in library services:** Any student accessing the electronic journals was provided with an added advantage in library services like, issuing extra books for extra period of time etc.

6.2. College initiatives:

- **Required review (Seminars and presentations):** On discussion with the library staff, the college management made it mandatory for the students to review at-least six articles in their term from the electronic journals and present them before their class. It was very strictly implemented & any student failed to do so have to bear the consequences.
- **Participation in various research activities:** The college came out with a decision that every student should actively participate in various research activities like Robotic competitions, engineering expos tec. This decision played a key role in achieving maximum e-journals usage.
- **Other ideas:** Intercollegiate research competitions among the students of other sister colleges were organized from the initiative of library.
- **Conferences:** National, state and regional level conferences for the students are organized from the college initiatives and also the Student's Welfare Department, University of Pune.

7. Major Findings of the Study

From the above analysis, major attention was drawn towards the promotion of use of electronic journals among the students. After the critical analysis of the problem & the implementations of the above techniques, the usage of the subscribed electronic journal databases was again examined. The findings prevailed that:

7.1. Usage analysis of IEEE by Department of Information technology

All the 10 students browsed the database for various purposes. There was a drastic rise of 70% in their usage.

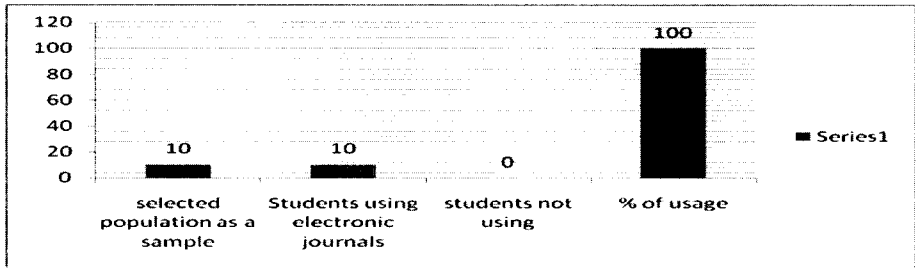


Fig-3: Overall usage of the selected sample of I.T department after promotion

7.2. Usage analysis of IEEE by the students of Computer Engineering

9 students from the department of Computer engineering were found to be accessing electronic journals.

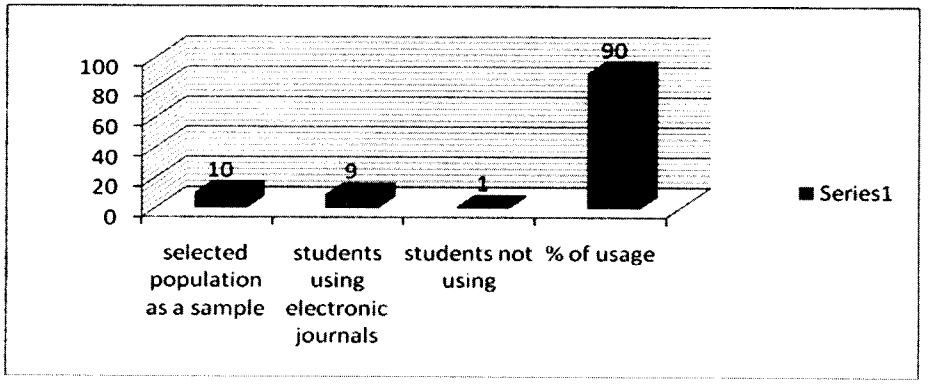


Fig-4: Overall usage of the selected sample of Computer engineering department after promotion

7.3. Usage analysis of IEEE by the students of E & TC

8 students of the selected population started accessing the electronic database.

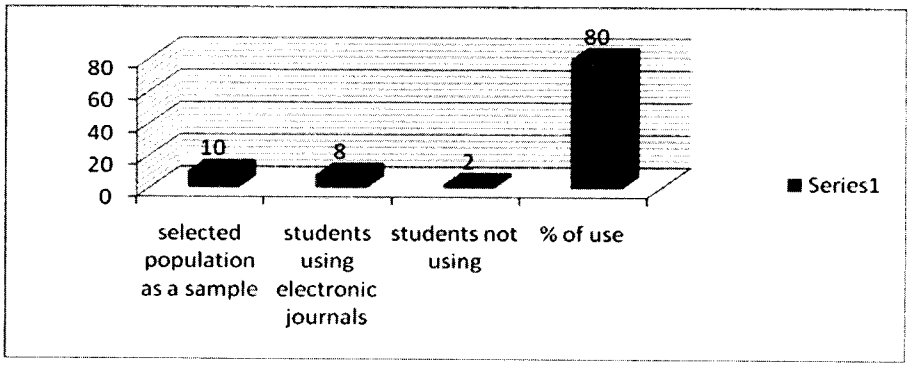


Fig-5: Overall usage of the selected sample of E & TC department after promotion

7.4. Usage analysis of IEEE by the students of MCA:

All the students of MCA department started to browse the IEEE database.

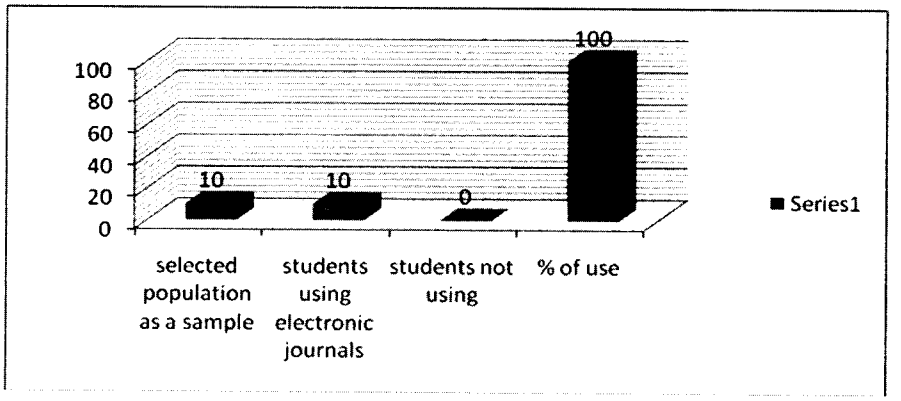


Fig-6: Overall usage of electronic journals by the selected population from MCA

7.5. Usage of ASME by the students of Mechanical engineering:

There was a considerable rise in the usage of ASME database by the selected population. Their number went up from 7 to 10 resulting in 100% usage.

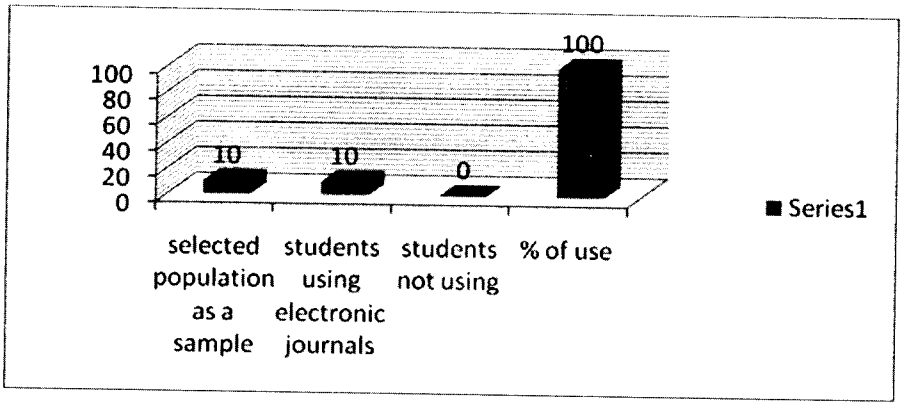


Fig-7: Overall usage of electronic journals by the selected population from Mechanical engineering department

7.6. Usage of PROQUEST by the students of Management

7 from 10 students from the MBA department initiated to use electronic journals.

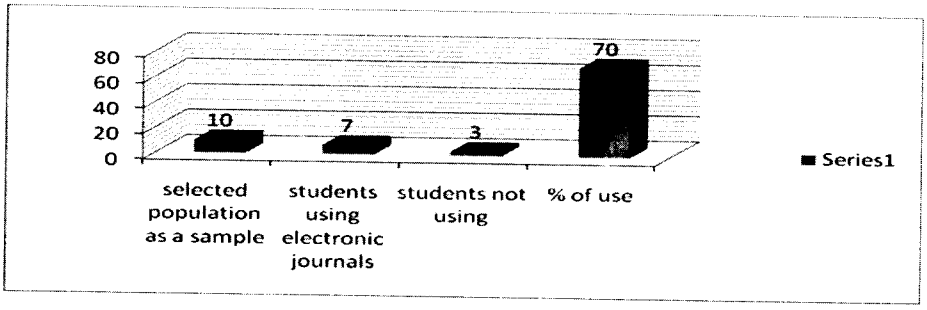


Fig-8: Overall usage of electronic journals by the selected population from MBA department

7.7. Comparison of usage of electronic journals before and after the study

It was reported before the study that about 28 % of the students from the selected population were using electronic journals which rose to 90%.

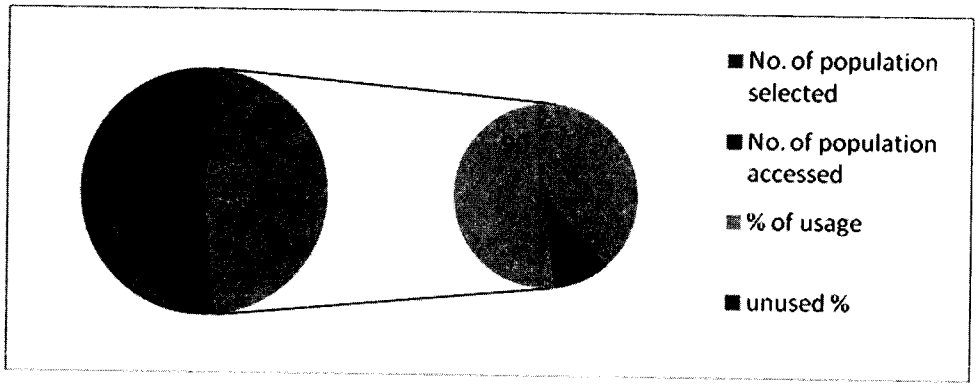


Fig-9: Comparison with earlier results

8. Conclusion

Indira college of Engineering & Management started the process to add online journals to the collection with very stringent budget. Simply activating online access to electronic journals and creating a list from A to Z of those journals on your home page doesn't give maximum usage results. The initial results of this research enhance us with the efforts that can be taken to increase the usage of electronic journals. It is clear that the use of electronic journals depend on their adoption. The rate of acceptance is not clear, as their integration into the culture of scholarly community is not yet completed. Once electronic journals are integrated into the scholarly community the transmission is likely to motivate the rate of acceptance & we will be able to see the complete acceptance of the innovation. Library science professionals and others who are involved in this process must be prepared for this complete adoption and take initiatives to promote their usage & continue to track its progress.

The above was the pilot project done on selected population and now being implemented successfully in the whole Indira group.

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E-Resource Management and Digital Libraries

Mahantesh K. Biradardar

Abstract

The exponential growth and development of libraries and information centers with emergence of information and communication technology (ICT) the libraries shifting from traditional stand alone libraries to digital, electronic and virtual libraries around the world. In this paper the author highlights the conceptual overview of electronic resource management in digital library environment.

Keywords : E-resources management, Digital libraries

1. Introduction

"A digital library service is an assemblage of digital computing, storage, and communications machinery together with the software needed to reproduce, emulate, and extend the services provided by conventional libraries based on paper and other material means of collecting, storing, cataloguing, finding, and disseminating information." **(Gladney H.M, et. al. 1994).** "Digital Libraries are a set of electronic resources and associated technical capabilities for creating, searching,and using information...they are an extension and enhancements of information storage and retrieval systems that manipulate digital data in any medium (text, images, sounds,static or dynamic images) and exist in distributed networks" **(Borgman, 1996)**

2. What is important?

- Site Neutrality
- Access-Anytime (24*7)
- Anywhere (Office, Residence, Travel)
- By Anyone
- Open Access and Sharing of information
- Greater variety and granularity of information
- Up-to-date ness
- New forms of rendering (New Genre)
- Integration of digital media into traditional collections
- Digital libraries are different in that they are designed to support the creation, maintenance, management, access to, and preservation of digital content

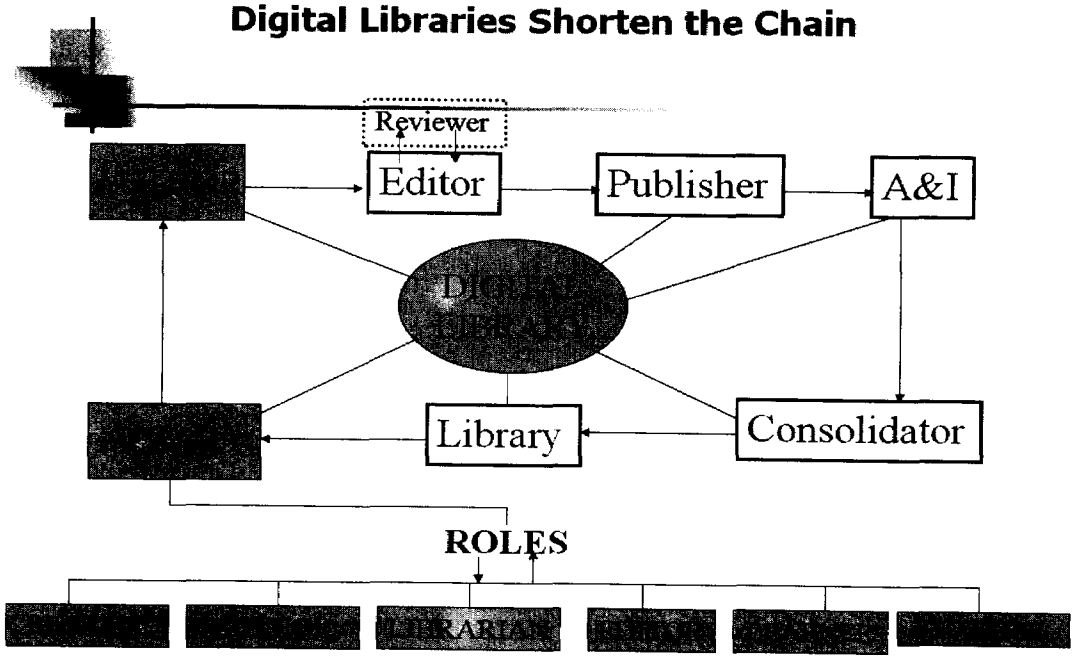
3. Five Elements in Various Definitions of DL

- The digital library is not a single entity;
- The digital library requires technology to link the resources of many;
- The linkages between the many digital libraries and information services are transparent to the end users;
- Universal access to digital libraries and information services is a goal;

- Digital library collections are not limited to document surrogates: they extend to digital artefacts that cannot be represented or distributed in printed formats.

4. Goals of DL

- Focused on digitization technology, metadata schemes, data management techniques, and digital preservation.
- Second-generation digital library
- Exploring new opportunities and developing new competencies.
- Third-generation digital library
- Focusing instead on fully integrating digital material into the library's collections through modular systems architecture.



5. Types of Digital Collections

- **Digitization:** Converting paper and other media in existing collections to digital form
- **Acquisition of original digital works:** Created by publishers and scholars like electronic books, journals, and datasets
- **Access to external materials:** Like Web sites, other library collections, or publishers' servers
- **Resources:** Bibliographic databases that point to both paper and digital materials, Indexes and finding tools, Collections of pointers to Internet resources, Directories, Teaching and pedagogic materials, Photographs, Numerical data sets, E-books and e-journals

6. Digitization and Digitization Process

"Conversion of any fixed or analogue media--such as books, journal articles, photos, paintings, microforms--into electronic form through scanning, sampling, or in fact even re-keying."

- Determine copyright or restrictions
- Digital conversion
- Outsource or in house?
- Text conversion, formats, headers, compression, and delivery media
- Digital capture with camera or scanner?
- File handling
- File naming
- Preparing the objects
- Scanning
- Moving files to temporary storage
- Value addition- metadata preparation etc
- Long term storage
- Derivative image/thumb nail for access copy
- Merging files

7. Metadata for Digital Library and Digital Objects

- The data that describes the content and attributes of any particular item
- Key to resource discovery and use of any document
- Facilitate searching and discoveries, as well as administrative and structural metadata to assist in object viewing, management, and preservation.

7.1. Elements of Dublin Core

- Title
- Creator
- Subject and Keywords
- Description
- Publisher
- Contributor
- Date
- Format
- Resource Identifier
- Resource Type
- Source
- Language
- Relation
- Coverage
- Rights Management

8. Digital Libraries Benefits: Individual

- Gain access to the holdings of libraries worldwide through automated catalogs. Locate both physical and digitized versions of scholarly articles and books.
- Optimize searches, simultaneously search the Internet, commercial databases, and library collections.
- Save search results and conduct additional processing to narrow or qualify results.
- From search results, click through to access the digitized content or locate additional items of interest.

8.1. Digital Libraries Benefits: Classroom Projects

- Capability to enhance the classroom experience or conduct learning apart from a physical campus
- Digital library is a core component of this VLE
- Changing the relationships between the library and other parts of the academic enterprise
- Integrate authoring, analysis, and distribution tools that facilitate the reuse and repurposing of digital content
- Collections and services can be integrated into the institutional, national, and worldwide fabric of research and teaching

8.2. Digital Library Standards

- Common User Interface: Data Handling and Interchange: Graphic Formats – JPEG, TIFF, GIF, PNG, Group 4 Fax, CGM Structured Documents – SGML, HTML, XML Moving Pictures/3-D – MPEG, AVI, GIF89A, QuickTime, Real Video, ViviActive, VRML
- Metadata: Resource Description – Dublin Core, WHOIS++ Templates, US-MARC, TEI Headers, Other Open Source and Domain Specific Standards. Resource Identification – URN, PURL, DOI, SICI
- Security, Authentication and payment services: Emerging e-Commerce Standards.

9. Digital Library Issues India

- Objects Identifications: Non-availability, Coordinated efforts
- Technology and Infrastructure
- Standards: Meta data
- Funds
- Networking of minds
- Multiple languages
- Inhibition and Reservations (libraries and heritage materials)
- IPR

10. DLI in India: Some Suggestions

- Distributed National Network with Global Access
    - Institutional digital repositories
    - Open access science journals
    - Content based catalogue (metadata)
    - Portal giving links to various activities
- Intensive Training of Librarians, Archeologists, Curators, etc.
- Improve Technology and Infrastructure
- Adopt Suitable Standards
- Language Tools
- Modify IPR to suit Open Archive
- Enhancement Capability of Integrated Lib Auto System to handle DL Features
- Compilation of Directory of DL Technologies and Vendors

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E-resource Management: *Definition to Implementation*

Sharad Kumar Sonker

Abstract

With the publication of first electronic journal 'Electronic Resources' came into existence. It comprises of e-book, E-journals, e-databases, digital knowledge archives and internet resources. These are mines of information explored through modern ICT devices, stored in cyber space and accessible without boundaries of time space. Steps of managing electronic resources e.g. requirement access, introducing with vendors, acquisition and negotiation of site licensing, updating library website, providing user support training, monitoring usage pattern, cancellation criteria, licensing agreement etc. E-resource management tools and techniques are library website/ portal, library software, OPAC, A-Z services from EBESCO, JCCC, web feat, 360 Resource managers etc. The aforesaid features of E-resources and its prompt and efficient management techniques are significant aspects of the paper.

Keywords : E-resources, E-resources tools & techniques, E-resource management

1. Introduction

Management is basically concerned with organisational process consisting of diverse activities like deliberate planning, organising, staffing, directing, coordination, reporting, budgeting, and managing financial, human resources etc. to achieve aims and objectives of any organization, in terms of measurable results. It helps to efficiently and effectively accomplish a work through others. Management of electronic resources includes various activities like selection, evaluation, trial, acquisitions, licensing, access, promotional activities etc. All activities are interrelated. A library requires trained staff, excellent guidance and legal consultancy to perform aforesaid activities. Since long, most of the library and information professionals are playing vital role in collection and services management. Due to innovation of internet, electronic publishing, shrinking budgetary allocation, inflammation cost, diverse user information needs etc. paradigm to redefine the role of library process and library professionals have changed. At present, a library professional serves as custodian, facilitator, navigator, computer specialist, educator for information access and retrieval.

2. Electronic Resources: A Conceptual Framework

The documents that are in electronic form are said to be electronic resources. The term electronic resources came into usage in late 1980's when first electronic journal came into being. The electronic resources are not single entities. It includes various types of resources such as e-books, e-journals, e-databases, digital/knowledge archives and internet resources. Electronic resources are regarded as the mines of information that are explored through modern ICT devices, refined, redesigned and more often stored in the cyber space in most concrete and compact form and can be accessed simultaneously from infinite points by large number of audience. The phrase 'electronic resources', has broadly been defined as, information accessed by a computer, may be useful as bibliographic guides to potential sources but, as of yet, they infrequently appear as cited references in their own right (Graham, 2003). Moreover, e-resources refer to that kind of documents in digital formats which are made available to library users through a computer based information retrieval system. The electronic resources is defined by AACR-2 as "*Electronic Resources:* Material encoded for manipulation by computer, including texts, sounds, images,

numeric data, computer programs etc. alone or in combination, as well as materials that require the use of peripheral devices directly connected to a computer (e.g. CD-ROM drive or player) or that require a connection to a computer network (e.g. the Internet)."

3. Features of E-resources

- searching is one of the significant features of e-resources which offer efficient and tremendous searching facility and different types of search techniques through various options like simple, advance and interoperability along with various limiting options such as documents, subjects, years etc. which offer precise search results. One can search information under titles, keywords, author, subjects, abstract, article full text etc.
- Library users can have simultaneous access to e-resources, anywhere and anytime, e-resource also facilitate to view cited documents which saves users time through advance searching, browsing and accessibility.
- Marking or unmarking, search history of the records and saving it on the computer or any other device is possible and can be used by the users. The user can transmit the record through e-mail.
- It allows browsing and retrieving of record through browsing list, dynamic or static, to which user can jump to.
- E-resource contains most comprehensive information on a particular or diverse subject fields allowing access to significant information resources.
- It contains most comprehensive information on particular or diverse subject fields which are collected form the different data source or reading materials cover various types of documents like journals, periodicals, patents, books, standards etc.
- E-resource offers efficient mode of information organisation and saves time, space, money and effort resulting in ample opportunities and easy access to quality information.
- It consists of various types of file format such as pdf, image, audio, video etc. which gives added value to the information.
- It integrates various publisher resources enhancing content size, with the minimum requirements and at the least cost.
- It offers various options such as highlighting, bookmark, customize contents etc. it also includes reference linking, content linking, hyper linking etc. All the terms of any document has a contextual link to other information.
- Few E-resources provide statistical detail for the utilization of resources at various levels like full text document, abstract etc.
- E-resources offer opportunities to customize the interface for better look and feel of its site. It also offers the powerful and flexible interface on multiple fields and search assistance at the time of information retrieval
- E-resources can be accessed 24/7 form anywhere and any time. These are reliable, comprehensive, current as well as retrospective. It can be subscribed by individual or institutions for unlimited access.
- Publication of e-resources on the web most of the publishers make use of various file formats like PDF, HTML, XML, postscript, etc. which offer instant publication opportunities. E- resources get published on web prior to print form.

- It offers long-time archiving and preservation facilities which enables libraries and users for long-time or perpetual access.
- Libraries need not to worry about stock security of the e-journals because of vandalizing, misplacing, theft etc. As e-journals have no requirement for physical storage, eliminating need for space and shelves, it makes possible to store huge amount of resources in digital format.

4. Type of E-resources

- **E-books:** E-books comprise of contents in electronic format (text, graphics, audio, video) with additional features of searching, linking, highlighting, customisation, cross-referencing etc. having facility to be delivered through CD-ROM or DVD or internet.
- **E-journals:** e-journal is an serial publication available in electronic format with additional features of searching, browsing, liking etc, accessible through compact disc or online.
- **E-databases:** Database is a computer based data/information handling system having organized collection of data/information/records accessible to multiple user's through intranet or internet, and standalone system.
- **Digital /Institutional Repository:** It is a digital archive of intellectual products of the institution accessible to institution/outside members. Preprint or post print of the articles, conference papers, research reports, theses, dissertations, seminar presentations, working papers and other scholarly items etc. are stored in digital format.
- **Internet/web Resources:** Internet has various types of information resources which is accessible though internet. These resources include various documents like e-books, e-newspaper, e-articles, websites, e-databases, patent, etc.

5. Steps of managing Electronic resources

Various facets involved in the management of electronic resources are requirement assessment, interacting with vendors, acquisition and negotiation of site licensing, updating the institutional/library website, providing training and user support, monitoring usage, cancellation criteria etc. Detailed descriptions of aforesaid significant aspects are as following:

5.1. Selection of Electronic Resources

The electronic resources can be located from sources like indent form library members, recommendation form librarian, an advertisement, resource list from vendors/suppliers/ publishers etc. and further details can be had from the internet resources. the selection of e-resources depends on the various criteria like users needs, subscription cost, vendor support, accuracy, currency, comprehensiveness, relevance, coverage and user statistics etc. it is observed form the literature that majority of libraries are using users' need, subscription cost, comprehensiveness, coverage and usage as a selection criteria for the selection of electronic resource. The following steps are followed for the selection of e-resources:

5.2. Conduction of trail

The libraries opt trial of electronic resources before placing purchase order because trial gives the opportunities for the evaluation to support of the e-resources. The librarian has to request to the publisher for trail access of e-resources to the library before the final purchase of e-resources. E-resources have to be tested by few or all of the library users and staff, as any final

decision for subscription has to take care of their feedback. During the trial, library staff should evaluate the feasibility, compatibility, usability, interface and technical infrastructure support. After completion of the trial, the librarian should be able to justify the subscription decision.

5.3. Negotiation with publisher/ aggregator/vendor

Apart from the above satisfaction Librarian has to negotiate with publishers/ aggregators/vendors for electronic resources as there is ample scope for rebate/discount etc. The negotiation process commences which depends on the feedback and decision of library authorities, availability and compatibility with the existing infrastructure, user needs, availability of resources to multiple users, coverage of subjects, pricing models, packages etc and technical requirements of library as well as e-resources. It is suggested that if a single institution wants to subscribe e-resources, they should joint hand with the any e-resource consortia like INDEST, INFONET, ETC.

5.4. License Agreement

After ensuring technical feasibility of the product, and getting permission, negotiate with the trade parties, and to proceed for further action we should ask for negotiated license and making necessary amendments before its final acceptance. It will be pertinent to consult legal expert while going through license agreement etc. Language of the agreement should be clear, precise and well defined. After going through aforesaid formalities, final purchase order can be placed.

5.5. Access of E-resources

If final purchase order is served just before the end of trail period, trade parties have to be asked for maintaining persistent access of e-resources under trial otherwise, after the culmination of the trial, final purchase order along with a request to provide access should be made. Once final access is provided by the trade parties, users should be informed about the availability of e-resources, at the same time, they should also be informed about various aspects of licensing issues. E-resource access is possible through the authentication systems like username passwords, IP addresses, URIs and local proxy server. Access to e-resources involves assuring location and easy access of available e-resources through various mediums like library website, OPAC, A to Z list and other publisher/aggregator products.

5.6. User Support and promotional activities

Library should organise orientation programme dealing with product information, user education, usage training, license/lease agreement, providing contact details of the library staff on websites. Feedback from the patrons regarding the product during the training programme should also be taken seriously and incorporated in the library activities. Demo of the products supplied by the trade parties can also be incorporated in the orientation programmes. User guide, manual, brochure of the product etc. should also be circulated among users. It is also suggested that the library should involve regressed promotional activities like sending targeted e-mail, in-house notifications, campus circular, developing library brochures and leaflets etc. There should be products offering a single search interface to all the procured e-resources. Foe optimum utilisation of resources the user help desk should tender 24 hours troubleshooting facility for the library users.

5.7. Monitoring the usage of E-resources

Any alteration or change in the usage pattern made by the trade parties, at their

convenience, should be keenly monitored along with popularity of the product among professional colleagues. Usage report provided by the trade parties should also be minutely scrutinised.

5.8. Renewal / cancellation

As subscription to e-resources is time bound and with the expiry of the license period, the library has to renew or cancel any subscription as per accumulated information e.g. usage, reliability of interface, convenience, and providers' response. In case a subscription is cancelled, the library should have the perpetual access or archival right to the e-resources during subscription period. If usage of the products drop considerably because of access problems or inferior quality, and product is available in some other preferable format at marginal rates - we should rethink of some other options. If the product cost outgrows its benefits, its circulation is stopped by the vendor or collection policies and vendor support gets altered, we have to go for the cancellation of the product. In case services of the product are highly satisfactory, well received by the users and have reasonable cost, we can proceed for the renewal.

5.9. Internal Digital Resource management

Institutions and universities involved in academic and research activities generate information which is to be stored, organised, retrieved and disseminated among students, research scholars and faculty members of the institution. Librarian has to take up the management of archiving, preservation and perpetual access of the digital information with the help softwares like greenstone, D-Space, E-print and other vendor softwares providing powerful indexing, searching, and file management functionalities.

6. E-resource Management Tools and Techniques

6.1. Library website/Portal:

Majority of libraries delivering E-resources through their website/ portal. The library professional are creating list of the Journal Titles with URLs and organising e-resources according to alphabetical and/or subject wise for easy access. It is considered trouble-free tools for the library professionals and users. The aforesaid tool and technique has few limitations like searching of information, customisation, etc.

6.2. Library OPAC

This is a tool which offers a single platform /gateway for the access of all the library resources. The users can access information regarding all the print as well as electronic resources through the OPAC. Few libraries also develop a database related to article indexing, and it can also be accessed through OPAC.

6.3. Library management software

It is observed that the various software available in the market for the e-resource management like ERMSS, Libsys, etc. These software facilitate to management all kind of information related the e-resources.

6.4. JCCC (Journal Custom Content consortia)

It is a product which is developed on your requirement for the bibliographical access of your subscribed product with some special services. The product offer Bibliographical search

facility and full text link. The draw back of the product is that it is not offering full text searching of all the subscribe products.

6.5. A-Z service From EBESCO

A to Z service are offered by EBESCO. It is "complete Web-based tool for organizing and providing links to all of your library's e-resources, including e-journals, titles in full-text databases and e-journal packages, and e-books. It offers users a "one-stop" search of your library's e-collection, with easy navigation to full-text content".

6.6. WebFeat

WebFeat is a federated search product, however it is no longer available. The WebFeat was combined with 360 search to create the most powerful, feature-rich federated search.

6.7. 360 Resource Manager

It is "e-resource management service offered by serial solution to effectively track and control your resources to streamline library workflows and optimize collections. it offers complete solution for managing the e-resource lifecycle. It also consolidates all information at one place for ease of management which reduce workloads, streamline workflows, and reduce costs. It also help in Streamlining acquisition and licensing workflows" After realisation of the above, we can say that it is *"A complete management system enables you to gain control over the selection, acquisition, and usage of your electronic resources."*

7. Conclusion

E-resource management comprises of various activities e.g. selection, evaluation, licensing, negotiation, and conducting trail, maintains link, authentication, troubleshooting, storing licensing document in digital format and protecting the legal use of e-resources, etc. Various initiatives regarding management of e-resources have been undertaken in the country. Library operates with the utilisation of tools and techniques at managing electronic resources. Well managed infrastructure enhances the optimum utilisation of the resources. Studied literature illustrated global usage of e-resources and evaluated its importance in research and serving as essential media of information dissemination. It also pointes that majority of users are face problems in access and utilisation of e-resources.

Acknowledgement

This is an extended version of the paper "Electronic Resource management in Libraries" published in Strategic Issues in Library Management, edited by Chandrakanta Swain and others published by AVON Publicatons, New Delhi.

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E-Resources and Next Generation Libraries in Corporate Sectors

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Abstract

Need and importance of next generation libraries in corporate sectors are enumerated in this paper. The tremendous changes in the activities in corporate sectors always look for the right type of information in right time and in right pattern. Hence there is a need of changing the overall activities in the library services and it is inevitable. This has paved the way for next generation libraries to make best use of ICT is a must and are explained in depth. Adapting the three basic factors of the library while keeping their originality and the core values is the need of the hour and are highlighted in this ever changing world and to meet the changing information need of the next generation library users. Need of proactive role in the library services by the staff of the next generation libraries to better serve the emerging trends of the changing information needs by implementing the best possible tools and techniques in corporate sectors have been highlighted taking into consideration the Library users in Corporate sectors in general and Engineering Sectors in particular.

Keywords : Corporate sectors, Next generation library and users, E-resources.

1. Introduction

Information is a basic for all human beings and it is as important to us as food air, and rest. It is the basis for all decisions and needed for personal decisions as minor as when to go to bed as significant as buying a house. Information is the currency of business and is a power that can move the mountain. Main purpose of the study is to know how the information is collected by using the different electronic information resources and organized systematically and the same can be retrieved by the engineers working in an Engineering sectors is the main aim of this study.

Electronic information resources play a predominant role in almost all sectors be it an industry, public or private, academic, and government organization. Corporate sectors are not an exception to it. People need information in a very short period and in a most convenient format because of their busy schedule of manufacturing and related activities right from the project stage to marketing of final products. Hence it is pertinent to know the different types of Electronic Information Resources, their usage and the benefit of the same to the engineering sectors.

In corporate sectors people need information in a very short period and in a most convenient format because of their hectic schedule right from their project stage to the marketing of their products. Hence it is pertinent to know the need of change of information handling and retrieval.

2. Importance of E- Resources in Corporate Sectors

The role and importance of e-resources in next generation is incredible because they are accessible quickly and any time any where. Another reason why these are more convenient is because they are compact easily transferable from one place to another. The traditional form of books & periodicals although provide the information required for corporate sectors, it is highly impossible for them to get the right information at right time and at the right place. The best solution for this problem is by changing method of information storage and utilization of all the business related information. The electronic information sources come in the way to alleviate the

aforesaid lacunae. They can make use of the maximum utilization of electronic devices through modern information technology.

Modern libraries are in a transition stage from manual to electronic System. Libraries and information centers are no longer self-sufficient but are linked through electronic network of various types. The advantages of technology have brought so extensive changes and it is not easy to assess their total effect. It is clear that libraries are in a state of fundamental transition and are innovated rapidly in the electronic environment. Traditional libraries are the storehouse of materials and knowledge mainly in the form of books and other printed materials. As the volume of information is increasing, the traditional means of transmitting the same also is changing. Libraries are expanding their traditional role to flourish in an electronic age. The electronic libraries are the result of the same.

The e-resources are more convenient for users because of their ease of use, saving time and accessible any where and any time provided the users are accustomed to them with availability and awareness of ICT. In most of the recent studies there are lots of opinion that the e-resources have become more advantageous than the traditional physical form of books and periodicals, they also save lots of time and energy in it which can be utilized for their productivity and other managerial activities which ultimately is the main aim of each and every individuals in particular and organizations in general. There is also saving of space and cost as they can be shared by multiple users at different locations given their agreements have taken care at the time of entering into the contracts (Subscription to databases , e-BOOKS, e- journals etc). The over all benefits of e-resources compared to their counterparts outweighs the usual practice of traditional use of library books and other documents.

3. Importance and use of Electronic Bulletin boards in Corporate Sectors

Electronic Bulletin Boards provide an online repository of information accessible to all employees of the organization, where in he/she browse and share sustaining information pertaining to self and of common interests to fellow employees. These portals acts as a virtual library to the employees to meet their technical and business related information both within the complex and across the group. The main advantages and features of Electronic Bulletin are as under:

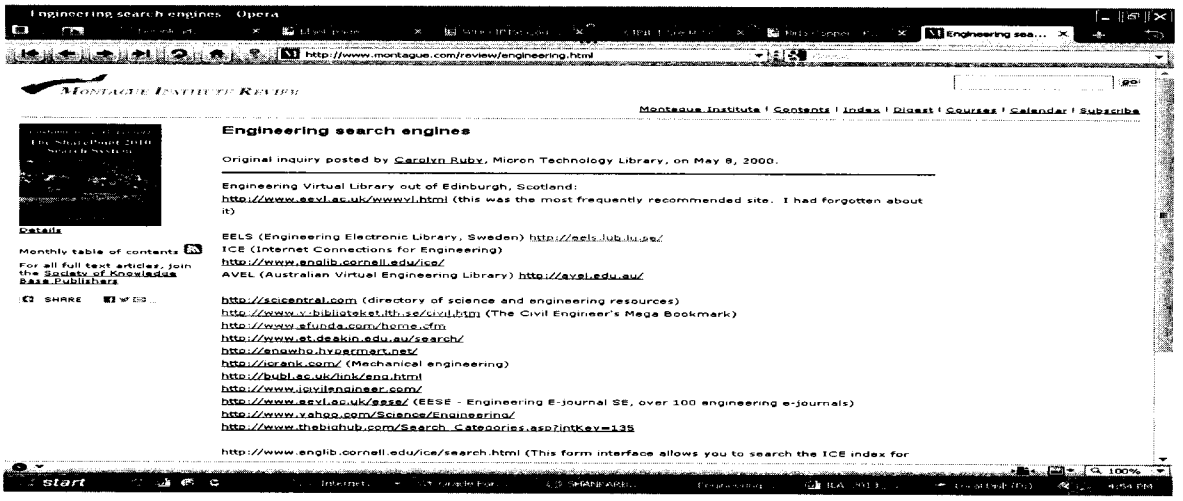
- Facilitates responsible usage of official email, as messages that are meant for the entire group are put up on this virtual bulletin board rather than sending group email.
- A central repository to store manuals, and requisition forms. Hence reducing inquiries for the same in respective departments
- Facilitates reduction in inquiry handling activities at time-office and Salary desks as employees can query their salary and attendance details themselves. Any discrepancy can be reported and corrected in time.
- Acts as online bulletin board that can be referred at any time of the day. Repository of information official/ light reading shared by the employees
- Acts as very effective communication medium between management and employees where employee can see online what happened to his suggestion.
- Facilitates a virtual tour of the organization for newcomers- the first step to induction.
- Provides limited access to all employees of net banking, Railway and Airlines enquiry and connectivity to group websites.

- Information availability on fingertips, saving time in searching and accessible to all those who need it.
- Personal details like salary of the employees can be accessed by him only.
- Attendance details can be seen by employees themselves as well as by their managers.
- Employees can get registered online for E- learning and G- learning courses at corporate HRD and get the certificate after successful completion of the course. They can also chat with the mentors, get their queries answered and send suggestion on their respective areas.

4. Importance of Digital and Virtual Libraries in Corporate Sectors

Digital and Virtual libraries play a vital role in Corporate Sectors as far as their information fulfillment is concerned. For example INDEST – Indian National Digital Library in Engineering Science and Technology is an important Digital Library which helps all the Engineering and Science and Technology institutions for their technical information. The screen shot showing the various e-resources can be accessed at URL http://paniit.iitd.ac.in/indest/.

This is just example of digital libraries. One can get maximum benefit from these. There also various subject search engines on Engineering and science and technology. Following is the screen shot showing various search engines;



"WWW virtual library is a hypertext document links us to Internet collections of resources on various topics in WWW Gopher and FTP. As the list is not comprehensive this is organized by key words as opposed to a classified scheme of type. It is a distributed subject catalogue. Unlike a real library, this virtual library contains no books.

In simple words the www virtual libraries are part of the Internet covering range of subjects where in the user can access over his / her interested topics. There are as many virtual libraries in the web as there are different disciplines or branches of knowledge which can be accessed get the required information by the users in their corporate sectors. . The complete list of subjects of WWW Virtual libraries is available at website http://vlib.org/AlphaVL.html. The corporate sectors or an information seeker can hook to the above site and get the information in their respective areas.

Following are some of the important WWW Virtual libraries from where corporate sectors in particular or any information seeker in general can get their related information.

- WWW Virtual Library: Economic Geology (Copper, Mining etc)
- WWW Virtual Library: Petroleum and GeosystemsWWW Virtual Library: Technical Report Center – Preprints, Eprints & Technical Reports on the Web
- WWW Virtual Library: Reference Library
- WWW Virtual Library: E-Journals
- WWW BCPL Virtual Library: Business Centers
- WWW Virtual Library: Economics & Business
- WWW Virtual Library: Finance
- WWW Virtual Library: Micro credit & Micro finance
- WWW Virtual Library: Managers...
- WWW Virtual Library: Logistics
- WWW Virtual Library: Horology (Time, Time Keeping)
- WWW Virtual Library: Engineering Section
- WWW Virtual Library: Industrial Engineering
- WWW Virtual Library: Fluid power
- WWW Virtual Library: Mechanical engineering
- WWW Virtual Library: CAD
- WWW Virtual Library: Welding Engineering
- WWW Virtual Library: Steel library
- WWW Virtual Library: Acoustics and Vibrations (http://www.ecgcorp.com/velav)
- WWW Virtual Library: Autos
- WWW Virtual Library: Chemical Engineering
- WWW Virtual Library: Chemical Engineering: Polymers
- WWW Virtual Library: Chemistry
- WWW Virtual Library: Pharmacy
- WWW Virtual Library: Electrical & Electronics Engineering
- WWW Virtual Library: Control Engineering
- WWW Virtual Library: Remote sensing
- WWW Virtual Library: Civil Engineering
- WW Virtual Library: Technical Ceramics
- WWW Virtual Library: Structural Engineering
- WWW Virtual Library: Landscape Architecture
- WWW Virtual Library: Architecture
- WWW Virtual Library: Oceanography
- WWW Virtual Library: Veterinary Medicine (Biosciences)
- WWW Virtual Library: Biotechnology
- WWW Virtual Library: Diary production
- WWW Virtual Library: Telecom

- WWW Virtual Library: Sustainable development
- WWW Virtual Library: Modern Organics
- WWW Virtual Library: Ecology and Biodiversity
- WWW Virtual Library: Beer and Brewing
- WWW Virtual Library: Software Engineering
- WWW Virtual Library: Concurrent Systems (Computing)
- WWW Virtual Library: Plasma Science and Technology
- WWW Virtual Library: Cogeneration
- WWW Virtual Library: Sustainable Agriculture

5. Conclusion

The present day library users and their tastes, habits and the behaviors are totally different because of their working culture and the type of organization they are serving. The Information requirements of the next generation users are quite different. Understanding their exact requirements by analyzing from time to time is a must to satisfy them as it is main job of the Library and Information professionals to delight their patrons, they always look for the most convenient and easy way of getting their required information and in a minimum possible time because the time is the most important factor in corporate sectors

The Functions of library are to be reverberated and revamped in totality because if we venture to make partial changes it would not give the maximum benefit. There is also a need of allocating major chunk of budget for updating the technologies because these are embedded in the LIS management and services. Timely implementing the required changes in the technologies in our services would help serve the users at appropriate time in a different way. Change is inevitable because there are changes in the other parts of our activities. Hence there is an urgent need of changing the overall functions of ***Next Generation Libraries so as to Serve Next Generation Users.***

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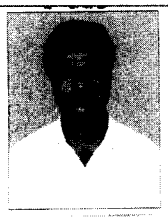
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E-Resources Management: *BDK Library, Shivaji University, Kolhapur*

Birje Sunil Rajaram

Abstract

Today's universities academic libraries are shifting towards the electronic environment era. In this paper the authors has taken review and monitor the efforts made for e-resource management by the Barr. Balasaheb Khardekar Library, Shivaji University, Kolhapur. From the usage statistics of the e-resources, it is seen that the many research students and PG students are accessing the information for their education and research purposes.

Keywords : Academic libraries, electronic resources, management, ICT.

1. Introduction

The libraries of academic universities libraries in Maharashtra are shifting towards to electronic environment era and providing their electronic resources and various publisher's electronic resources, consortium e-resources and making them available through the online system. The various factors are responsible behind this are as follows:

- Always UGC are also taking initiatives towards enriching the research in the Universities.
- UGC as well as central government providing the financial support to develop the required technological infrastructure.
- Today the many universities are also encourages to the younger researcher's to enter with project based or society problem based research.
- Teaching aid and learning aids are more depending on internet resources.
- ICT infrastructures in the libraries are motivated to provide electronic access to appropriate electronic information resources in right time to the right users.

There is need to review and monitor the efforts made the Barr. Balasaheb Khardekar Library, Shivaji University, Kolhapur in the direction of electronic resources management. The performance as well as problems faced by the library is need to be carefully examined by the researcher.

2. The Scope of the Study

The researcher has confined the Shivaji University Central Library and observe library web site, usage statistics registers and work-shop attendance registers, Inflibnet usage statistics and OPAC Databases, Free, IP-based, Consortiums etc.

3. Shivaji University Background

Shivaji University is primarily run the Post-Graduate and Graduates courses in Southern Part of the Maharashtra in 221 affiliated colleges and 36 PG departments of arts, commerce, science and engineering faculties It has approximately 5 Lakh graduate students, 1000 research students and 8000 PG Students and 150 faculty and 32 library staff. The Shivaji University Library collection consists of approximately 3,50000 books, 36500 printed volumes, 6500 manuscripts, 297 journals and access to about 3000+ electronic resources. And subscribed the 53 online Journals, 3 online databases.

3.1. Allocation of Resources to the Universities

The Shivaji University has selected under the **Phase I** by National Steering Committee of UGC-INFONET allocates resources to the University based on following criteria for UGC-INFONET Digital consortium:

- Availability of ICT infrastructure in universities
- Number of students enrolled at UG, PG and doctoral level
- Number and nature of academic programmes offered at PG and doctoral level
- Number of Departments, Centre, Schools, Faculty, Research Scholars and PG Students
- Type of university: Central. State, Deemed to be universities
- Research output / publication in peer reviewed journals

4. Criteria for Procurement

Allocation of funds for procurement of e-resources

Funding for purchasing of electronic information has evolved over time as well. Some Printed/ Electronic Journals, e-books are now financed from UGC and University funds budgets. Large purchase decisions, along with financing options, are made by BBK Library individual basis. Contract terms have evolved as well. License agreements have made with publishers by University authorities are more complex and restrictive.

Table 1: Year–wise allocation of the Budget for the Journal

Sl. No.	Year	UGC Budget	University Fund	Total Allocation
1	2009-10	6.00	6.02	12.02
2	2010-11	12.36	5.52 Lakh	17.86
3	2011-12	30	15 Lakh	45 Lakh
	Total	48 Lakh	26 Lakh	

Table 2: Year-wise expenditure of the Budget for the Journal & on-line journals

Serial No.	Year	UGC – Fund Expenditure Rs.(Lakh)	University-Fund Expenditure (Lakh)	Total Expenditure
1	2009-10	5.86	4.58	10.44
2	2010-11	9.36 –on-line	5.20	14.56
3	2011-12	29.38 – on-line	2.46	31.84
	Total	44.60	12.24	56.84

- **What Type of Materials have to be Procured/ Selected**

At BBK Library, Shivaji University, a number of people influence decisions regarding the selection of information resources, whether they are paper-based or electronic. Individual HOD's as well as researchers suggest the resources like e-books, e-journals in their collection areas. Faculty members are also recommending resources in which they have an interest through HOD.

- **Who Will Make Decisions For Purchase?**

The University authorities have works on items prepared by the library of general interest. Library Committee, Purchase committee, Management Council takes the final decision for the procurement of printed and electronic journals, books.

- **Who Handled Electronic Resources**

Shivaji University has preferred the option of campus-wide network delivery. This allows for the best performance and maximum simultaneous usage. In some cases, we issued CD-ROM's to users or from an individual machine within a library. BBK Library has developed a portal system and that system is always preferred for access control.

Table 3: List of Subject-wise CD's, Floppy, Audio Cassette etc.

Sr. No.	Subject	No.	Sr. No.	Subject	No.
1	Bio-chemistry	**20**	17	Music	**10**
2	Environmental Science	**04**	18	Electronics	**66**
3	Geology	**01**	19	Botany	**01**
4	Statistics	**12**	20	General Catalogue	**36**
5	Library Science	**04**	21	Physics	**23**
6	Economics	**43**	22	Law	**05**
7	Biology	**72**	23	Nano Technology	**05**
8	Census/Geography	**10**	24	Medical Science	**03**
9	Education	**09**	25	Women Studies	**01**
10	Computer Science	**355**	26	Research	**12**
11	Mathematics	**94**	27	Agriculture	**01**
12	Management	**107**	28	Pure Science	**24**
13	Language	**22**	29	Sociology	**01**
14	Chemistry	**16**	30	Engineering	**13**
15	Audio Cassette	**32**	31	Personality Development	**06**
16	Journals	**355**	17	Music	**10**
	Total			**1363**	

5. Are faculty and Students finding these resources on Library Portal?

The library portal which is an interactive part of the online interface, lists all locally mounted resources and includes pointers to some of the major remote sources. Web pages have been used to highlight and advertise the newest resources.

The major objective of the Library is to provide network access to resources when feasible. The following web-portal and web pages are provided the access to users benefiting from the resource.

Table 5 : Types of e-resources Access Table

Sr. No.	Type of Documents	Type of Access	No. of Journals accessed through portal
1	e-resources	Open Access	16
2	e-databases	User ID /PW	3
3	e-databases	IP Based	55
4	e-consortia - INFLIBNET	Open access	3000+
5	Publishers 23	Open access	6176+
6	Subscribed online	IP Based	51
	Total		

6. Infrastructure at Shivaji University

The University has a complex, distributed computing environment including mainframe and minicomputers, approximately 1000 owned Intel-based PC's, 5 to 4 LINUX as well as Windows NT workstations, and many specialized computers and servers. Nearly all of this equipment is connected to a campus network consisting of a fiber backbone 10 GB bandwidth and 15 buildings connections, with structured in-building wiring of CAT-5 that provides 1000+ connections in 36 departments and 175 connections in the internet hall situated in a University campus.

Human Resources

- Trained staff: University has one networked administrator, 2 hardware engineers for maintenance and 2-3 ICT literate library professional staff.
- Training in handling to library staff
- Server technology
- Uploading the e-resources
- Customizing the holdings
- Setting full text access across the databases i.e. handling the administrative modules from the vendor or using the open link resources
- Maintenance of connectivity links, customization, URL maintenance, addition and deletion of the sources, changes in requirements managed by one project assistant with library staff and for updating membership records, issue of passwords, renewal of subscriptions of the library users are maintained by the library professional staff.
- Users Member Registration in the University
- Every year nearly about 7000+ students are register for library membership as well as for the library IT hall for internet access for 40 Hrs. per year.

Table 6 : PG Student and Researchers Registration details

Sl. No.	Academic Year	No. of Members Register			
		PG Student I & II	Research	M.Phil.	Total
1	2009-10	4426	117	140	4683
2	2010-11	5010	147	49	5206
3	2011-12	3868	459	97	4424
Total		**13304**	**723**	**286**	**14313**

6.1. Training and Orientation to Users

The library and university authorities organizing the various workshops, training programmes and orientation for the better utilization of the resources.

Table: 7 Attendance of PG Students to various work-shop organized by Library

Sr No.	Name of the Programm/ workshop	Actual attended	Percent
1	Orientation/Library Tour	3500 Every Year	100%
2	Biological Abstract	251	7.1%
3	How to make effective search	154	4%
4	Scopus/Science Direct	74	2%
5	SciFinder	150	4%
6	Census 2001	105	3%
7	JCCC-Database	117	3.5%

Table-7 shows the 100% attended to Orientation/Workshop, library have organized various work-shop and awareness programmes attended by PG students 7.1%, 4%, 2%, 2%, 3% and 3.5% respectively.

6.2. Usage Statistics of the Users

Table 8 : Usage statistics of the e-resources for the year Jan 2010 to Dec 2010

Member Name: Shivaji University								**Period:** 1-2010 to 12-2010					
Platform	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Total
American Chemical Society	2156	738	614	1890	2027	1492	1439	3462	3686	1548	2572	2767	24391
Royal Society of Chemistry	312	225	152	310	356	320	345	555	560	397	589	618	4739
Institute of Physics	0	0	219	469	371	344	392	820	508	740	362	294	4519
American Institute of Physics	1032	45	211	316	153	181	133	301	315	844	226	315	4072
Oxford University Press	253	288	255	321	302	283	298	324	290	297	178	248	3337
APS	130	88	41	98	144	109	31	38	89	213	46	22	1049
Institute of Physics - Jan-Feb	488	414	18	0	0	0	0	0	0	0	0	0	920
Annual Reviews	96	30	42	122	59	107	57	48	40	57	97	73	828
Nature	122	66	54	81	61	36	43	53	47	33	81	82	759
Emerald	11	15	11	13	15	44	45	69	47	62	124	52	508
Project Muse	77	35	27	26	54	27	0	0	0	0	0	0	246
Project Euclid	4	5	8	5	4	18	10	7	1	1	4	4	71
SIAM	1	0	0	0	0	0	0	0	0	0	0	30	31
													45470

Table 9 : Usage statistics of the e-resources for the year Jan 2011 to Dec. 2011

Member Name: Shivaji University								**Period:** 1-2011 to 12-2011					
Platform	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Total
ScienceDirect	11771	6030	5504	6939	7528	7317	7321	10189	6784	5646	7286	10549	92864
American Chemical Society	1507	1678	1804	1915	2205	1835	1861	1767	1744	1684	2134	3078	23212
Springer Link	1234	1116	1431	1448	1421	966	1326	1564	1679	1539	2164	2670	18558
JSTOR	1313	727	620	850	816	948	868	1328	1065	1310	1311	1065	12221
Wiley-Blackwell	642	594	766	639	860	992	979	1327	757	932	980	1442	10910
Royal Society of Chemistry	286	337	283	549	666	945	1029	949	667	179	19	281	6190
Institute of Physics	270	147	541	394	366	196	155	309	402	320	441	520	4061
Oxford University Press	218	133	67	111	134	116	123	215	155	531	330	805	2938
American Institute of Physics	201	89	199	152	282	307	210	174	227	356	233	388	2818
T&F - Jan to Apr	675	141	239	298	0	0	0	0	0	0	0	0	1353
Nature	16	25	63	32	66	54	98	51	111	130	86	157	889
APS	63	46	44	45	173	107	75	44	72	80	47	58	854
Cambridge Univ Press	46	42	70	127	84	55	51	124	98	38	43	62	840
Portland Press	12	1	5	9	3	1	0	8	12	74	280	205	610
Project Muse	75	7	45	22	41	16	76	19	36	48	42	67	494
Emerald	65	10	38	40	32	23	22	53	48	47	36	40	454
Annual Reviews	6	26	28	14	61	10	4	14	11	49	41	34	298
Project Euclid	7	0	2	0	2	17	35	1	4	3	0	1	72
SIAM	1	0	3	3	6	3	11	0	5	2	3	1	38
Taylor and Francis	0	0	0	0	0	0	0	0	0	0	0	0	0
													179674

Table 10 : Usage statistics of the e-resources for the year Jan 2012 to Dec 2012

Member Name: Shivaji University					Period: 1-2012 to 12-2012								
Platform	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Total
American Chemical Society	1848	3109	3663	2478	6	1284	1788	1209	7	2376	1175	0	18943
Royal Society of Chemistry	1	1241	1374	1236	1601	1239	1274	2040	1650	2007	0	0	13663
Springer Link	1497	1384	1909	1727	1732	1209	1417	2292	0	0	0	0	13167
Wiley-Blackwell	959	1206	1548	1337	1093	784	899	1449	1286	1434	0	0	11995
JSTOR1	1198	810	1069	669	950	447	0	0	0	0	0	0	5143
American Institute of Physics	258	336	362	546	180	115	213	533	265	896	332	0	4036
Institute of Physics	281	340	404	461	288	226	228	530	367	606	0	0	3731
Taylor and Francis	529	334	511	83	76	71	345	501	372	0	0	0	2822
Portland Press	175	244	233	190	221	251	322	373	323	140	122	0	2594
Oxford University Press	320	132	185	111	129	130	279	253	256	234	0	0	2029
APS	33	75	84	503	51	56	66	133	98	145	55	0	1299
Nature	84	40	105	82	184	73	73	181	84	22	0	0	928
Emerald	128	30	50	17	103	8	21	18	32	84	86	0	577
Project Muse	208	0	12	72	24	21	26	28	33	58	67	0	549
Annual Reviews	34	64	25	11	23	12	24	52	97	33	37	0	412
Cambridge Univ Press	27	28	52	21	54	10	22	33	41	27	22	0	337
Project Euclid	2	3	1	7	0	0	2	0	3	0	0	0	18
SIAM New	0	0	0	0	0	0	0	0	0	1	0	0	1
SIAM	0	0	0	0	0	0	0	0	0	0	0	0	0
													82244

Table 11 : Usage statistics of the database for the year Jan 2011 to Dec 2011

Member Name: Shivaji University								Period: 1-2011 to 12-2011					
Platform	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Total
JCCC	145	188	1165	466	173	330	103	255	845	216	119	119	4124
SciFinder	161	27	83	140	167	79	133	87	121	82	123	263	1466
Web of Knowledge	29	33	365	40	41	13	60	43	196	39	30	39	928
MathSciNet	24	6	86	63	78	53	8	43	18	16	16	54	465
													6983

Table 12 : Usage statistics of the database for the year Jan 2012 – Dece.,2012

Member Name: Shivaji University								Period: 1-2012 to 12-2012					
Platform	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Total
SciFinder	76	144	161	92	91	96	154	254	0	0	0	0	1068
Web of Knowledge	263	96	120	58	18	18	52	35	49	26	11	0	746
MathSciNet	35	21	12	0	20	53	14	28	26	0	0	0	209
													2023

7. Current Issues

Prices for the materials are rising. New pricing models need to be created. Libraries are looking hard at consortial licensing arrangements in order to be able to afford electronic information and provide these services. Vendors are now attempting to sell directly to the University.

A number of years ago, the library world were excited about the benefits of the Z39.50 standard. A patron would be able to search a multitude of different databases, publishers search

interface would be the same. This vision has been pushed aside as every publisher has developed their own web interface. Users are having trouble understanding how the different systems work. This diversification has made it more difficult to use a variety of sources.

Access control through the web portal is a complex problem. The most common vendor solutions are user id and password or IP address restrictions. User id and password is complex to administer for both the publisher and the library. IP address control prevents reasonable use by patrons traveling or working from home and using independent internet service providers. Better solutions exist but require more cooperation between the vendor/ publisher and the library.

Suggestion for Management of e-resource

The library has to

- Make more provision by University Fund
- Organise these resources through e-content management systems
- Organise the more work-shop/ training work-shop for more utilization
- Make arrangement for creating awareness and provide access
- Manage the infrastructure, hardware, software
- Take care of unauthorised use
- Take care of security of content
- Maintain the statistics and evaluate using the same for renewal
- Try to make optimum utilisation of the resources
- Try to maintain usage statistics by using the Web Analytics tools

8. Conclusions

In this electronic era University and UGC has provided the budgets every year to electronic resources procurement. Mostly, University has utilize the funds for the procuring the on-line electronic resources and e-books, e-journals. University has recruited the trained staff for maintenance of the ICT and management of e-resources. From the Usage statistics of last three years from the UGC-INFONET it is seen that the many users are using the electronic resources for their education, research purpose. Lastly author is suggested that University may use the content management systems for the management of e-resources and usage statistics of each type e-resources and encourage to the younger research.

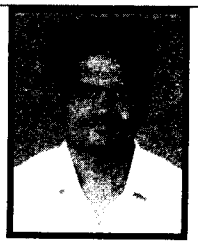
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Evaluating the Use of E - Journals at University of Mysore in the area of Chemistry, Mathematics and Physics: *A Study*

Khaiser Nikam **Vidya Rani** **Hasan Mahamed**

Abstract

This study prompted the researchers to take up this work and evaluate the use of e- journals among chemists, Physicists and Mathematicians of the users of Mysore university library, university of Mysore, Mysore. In this study an attempt is made to find out the value and impact of e- journals on the faculty and research scholars in the Chemistry, Mathematics and Physics.

Keywords : E – Journals, Chemistry, Mathematics and Physic journals, evaluation, usage of e journals

1. Introduction

A lot studies have been conducting in conventional user studies in the field of library and information Science. J D Bernal reported the first users study in the field of communication behavior in 1948 itself(3) The objectives of his study was to find out directly from working scientists what they had read, why they read it and what use they made of the information. But now the scenario is different. The studies are about the use of e-resources and digital resources. One such exhaustive study of the recent times is the PhD work carried out by Guruprasad which is also published in the form of a book (2)His study covered sixteen aerospace research institutes in Bangalore city with a population of nearly 600 scientists. This study prompted the researchers to take up this work and evaluate the use of e-journals among chemists, Physicists and Mathematicians of the users of Mysore university library, university of Mysore, Mysore. In this study an attempt is made to find out the value and impact of e-journals on the faculty and research scholars in the three subjects mentioned above. The sample is 53 out of 83 questionnaires administered, amounting to nearly 66 percent.

2. Objectives of the study

- To know the purpose of seeking information
- To study the frequency of using e–journals
- To make comparative analysis of usage of print journals
- To find out the preferred place for accessing e-journals
- To determine the problems faced in accessing e-journals
- To know the extent of use of library for accessing e–journals

3. Scope and Limitation of the Study

This study is confined to the users of e-journals in the field of chemists, Physicists and Mathematicians. Other science disciplines are excluded from the study. The study is limited to the use of e-journals only. Other e-resources like books etc are not considered for the study.

4. Method and Material

Survey method of research is followed using structured questionnaire. The options against different questions were rated on a five point scale. The data collected was analysed using SPSS

package. Wherever necessary important secondary sources like LISA, LISTA and Google, Emerald was used to study previous literature and to use the methodology. The respondents are faculty members and research scholars from science departments of University of Mysore such as Physics, Chemistry, and Mathematics.

5. Results and Discussions

The analysis and results obtained from the data collected for the survey are presented in here.

5.1. Designation of the Respondents

Table -1: Designation of the Respondents

Sl.No.	Designation	No of Responses
1	Faculty member	16(30.2)
2	Research Scholars	37(69.8)
	Total	53 (100)

Note: Numbers in brackets indicate percentages.

5.2. Department wise distribution of respondent

Table - 2: Department wise distributions of respondents

Sl.No.	Departments	No of Responses
1	Physics	19(35.5)
2	Chemistry	23(43.4)
3	Mathematics	11(20.8)
4	Total	53 (100)

5.3. Gender wise breakup of the respondents

Table-3: Gender wise breakup of the respondents

Sl.No.	Gender	No of Responses
1	Male	38(71.7)
2	Female	15(28.3)
	Total	53 (100)

5.4. Present Activity of Respondents

Table 4 shows that most of the respondents both faculty member and research scholars are engaged in 'basic research' with mean value of 1.73 and 'research, development design and management' with the mean value of 1.33 and 'teaching / guiding' with mean value of 1.05 and 0.88, 'administration' 0.75.

Table-4: Recent Activity of Respondents

Sl.No.	Present activity	Mean	S.D
1	Basic Research	1.73	1.63
2	Research, Development and Design	1.33	0.75
3	Teaching	1.05	0.88
4	Guiding for Research	0.88	0.89
5	Management/Administration	0.75	0.82

5.5. Nature of organization served earlier

Most of the respondents state that before joining the present job they have worked in academic / educational organization (s) representing 53 and 29 of them have worked in research and development institutes 21 each of them have worked for industry.

Table -5: Nature of organization served earlier

S/N	Indicate the nature of organization (s) where you worked prior to joining the present one	Yes
1	Academic / Educational	53
2	Research and Development	29
3	Industry	21
4	Government	3
5	No	0

5.6. Purpose of seek information

The purpose of for which respondents seek information is presented in table 5.6. The respondents main purpose of seeking information is to do research work and to write articles (mean=3.58); 'to keep up to date' (mean = 2.92); 'to participate in meetings, seminars' (mean = 2.67); 'to Prepare for teaching' (mean=2.64); and 'to submit funded project' (mean=1.71).

Table-6: Purpose of seeking information

Sl. No.	Purpose of Information Seeking	Mean	S.D
1	To do research work and to write article	3.58	0.90
2	To keep up to date	2.92	1.15
3	To participate in meetings, seminars, conference, etc.	2.67	1.17
4	Prepare for teaching	2.64	1.22
5	To Submit funded project	1.71	1.64

5.7. Importance of information sources to the respondents

Users use both print and electronic sources of information. This is shown in table 5.7. It is seen from the table that among the print sources 'journals' are heavily used (mean = 3.64) followed by 'books' (mean = 3.20); 'theses and dissertation' (mean = 2.94); 'hand books' (2.66) 'dictionaries' (mean =2.41); 'trade literature/Reports' (mean = 2.24); 'directories' (mean = 2.20). Among electronic sources 'e-journals' are heavily used (mean 3.66); followed by 'e-books' (mean 3.36); 'e-theses' and 'dissertation' (mean = 2.94).

Table-7: Importance of information source

Print resources				E-resources			
S.No.	Types of resources	Mean	S.D	S.No.	Types of resources	Mean	S.D
1	Journals	3.64	0.90	**1**	E-journals	3.66	0.95
2	Books	3.20	1.13	**2**	E-books	3.36	1.05
3	theses and dissertation	2.94	1.21	**3**	E-theses and dissertation	2.94	1.21
4	Handbooks	2.66	1.44	**4**	E- encyclopedias	2.66	1.19
5	Dictionaries	2.41	1.32	**5**	E-handbook	2.49	1.53
6	Trade literature /Reports	2.24	1.46	**6**	E-Directories	2.18	1.38
7	Directories	2.20	1.29	**7**	E-trade literature /e-Reports	2.05	1.48

5.8. Time taken to search for Information

Majority of the respondents state that they search information within a day representing 38 (%) and 4 (%) of them search information within a week and 2 (%) respondents search the information in within a month.

Table-8: Length of time spent in searching information

S/N	Length of time	Yes
1	Within a day	38
2	Within a week	8
3	Within a month	2
4	More than a month	3

5.9. Methods used to learn to use the e-journal effectively

The data in the table 5.9 indicates the methods adopted to learn to use the e-journals effectively by respondents. Majority of the respondents have learnt to use e-journals by 'trial error" (mean = 2.92.), followed by those who learnt to use e-journals from'learnt from friends' (mean =2.86); 'got guidance from teachers' (mean= 2.24.); 'through library orientation and training program' (mean=1.49).

Table-9: Effective uses of e-journals

S/N	Source of Use	Mean	S.D
1	By trial error	2.92	1.28
2	Learnt from friends / colleagues	2.86	1.24
3	Got guidance from teachers	2.24	1.47
4	Through library orientation and training program	1.49	1.46

5.10. Problems faced in the use of e- journals

Problems faced by respondents while using the e-journals on the campus is shown in table 5.12. It is seen from the table that the reasons stated are as follows: 'poor internet connectivity' (mean =2.64); 'consume too much time' (mean=2.30); 'problem in network' (mean=2.09); 'inadequate computer systems' (mean=1.92); 'frequent power cuts' (mean=1.90); 'insufficiency of work stations'(mean=1.50); 'lacks guidance and training' (mean=1.11).

Table-10: Problems faced in the use of e- journals

S/ N	Type of Problems	Mean	S.D
1	Poor internet connectivity	2.64	1.89
2	Consumes too much time	2.30	1.40
3	Problem in network	2.09	1.40
4	Inadequate computer systems	1.92	1.51
5	Frequent power cuts	1.90	1.39
6	Insufficiency of work stations	1.50	1.40
7	Lack guidance and training	1.41	1.40

5.11. Help sought from the library staff for getting required information

Seeking help from the library staff by the respondents is presented in the table 5.13. The purpose for which they seek help is 'to access e-journal' (mean value 1.56); 'to locate books' (mean=1.45); 'to use e- resources (mean=1.39); 'to access e- journal (mean= 1.32).

Table-11: Help sought from Library staff

S/N	Options	Mean	S.D
1	To find journal articles	1.56	1.46
2	To locate books	1.45	1.32
3	To use e-resource	1.39	1.37
4	To access e-journal	1.32	1.42

5.12. Awareness and training programme of the INFLIBNET?

It may be seen from table 12 that very few users have attended the awareness and training programme for accessing e-journals by the INFLIBNET representing 12(16.9) and majority of respondents have not attended the awareness program representing 46(64.8) and 13(18.3) of the say don't know.

Table -12: Awareness about Inflibnet training programme

S/N	Types of response	No of Responses
1	Yes	7(13.2)
2	No	44(83)
3	Don't know	2(3.8)
4	Total	53 (100)

5.13. How frequently do you visit the library to access e-journal?

The frequency of visit to the library to access e-journal by respondents is presented in table 13. Most of the respondents 'do not visit the library at all' representing (25; 35.2%); followed by several times in a week (20; 28.2%); 'almost daily' (14; 19.7%); 'once a month' (7; 9.9%); and 'twice a month' (5; 7.0%).

Table-13: Frequently of Library visit

S/N	Frequently	Responses
1	Not at all	21(39.6)
2	Twice a month	11(20.8)
3	Several times	5(9.4)
4	Once in a month	4(26.4)
5	Almost daily	2(38)
6	Total	53 (100)

5.14. Important features of electronic journals

Some of the features of electronic journals are important in accessing information. It is seen from table14, that 'accessing to the same content (mean = 2.98) is the most important feature liked by the respondents followed by 'articles are printed clearly, in an easy to-read format'(mean=2.76);

'articles are displayed clearly in an easy to read format' (mean=2.63); a user friendly interface' (mean=2.35); 'electronic search capabilities (mean=2.18); 'hyperlinks to content outside the journal article' (mean=2.02); and 'remote computer access (from your home, office, etc.) to journals' (mean=2.02).

Table -14: Feature of electronic journals

S/N	Features	Mean	S.D
1	Articles are displayed clearly in an easy to read format	3.26	1.12
2	Articles are printed clearly, in an easy to-read format	3.16	1.12
3	Electronic search capabilities	3.11	1.13
4	Access to the same content (including images) as the print format.	3.03	1.28
5	Hyperlinks to content outside the journal article	2.94	1.15
6	Remote computer access (from your home, office, etc.) to journals	2.84	1.36
7	A user friendly interface	2.79	1.32

5.15. Publisher's e-journals used most

The data in table 15 represents the use of electronic journals through publishers by the respondents. Most of the respondents use the journals published by 'Springer link' (mean= 4.30); followed by 'Elsevier science' (mean=3.43); 'American Chemical Society' (mean=2.38); 'Taylor and Francis' (mean=2.24); 'royal society of chemistry' (mean=2.11); 'Oxford University Press' (mean=1.77); 'Cambridge University Press'(mean=1.71); 'Academic press' (mean=1.45); 'J-STOR' (mean=1.33); 'Emerald'(mean=1.16); and 'Black well' (mean=1.15).

Table -15: Electronic journals of different publishers used

S/N	Publisher	Mean	S.D
1	Springer Link	4.30	5.48
2	Elsevier Science	3.43	1.27
3	American Chemical Society	2.38	1.84
4	Taylor and Francis	2.24	1.59
5	Royal Society of Chemistry	2.11	1.66
6	OxfordUniversity Press	1.77	1.52
7	Cambridge University Press	1.71	1.70
8	Academic Press	1.45	1.51
9	J-STOR	1.33	1.67
10	Emerald	1.16	1.51
11	Blackwell	1.15	2.20

5.16. Basic search strategy used for accessing e-journals articles

To access e-journals several strategies are used by the library users such as author, subject, title, keyword search, date of publication etc. The search strategies used by the respondents are shown in table 16. It may be seen from the table that 'title of articles' approach in the most preferred approach (mean= 3.26); followed by 'key words' (mean=2.92); 'subject' (mean=2.90);

'author' (mean=2.88); 'abstracts' (mean=2.88); 'date of publication' (mean=2.45); 'table of content' (mean=2.05); 'publisher name' (mean=1.84); 'ISBN' (mean=0.71); and 'ISSN' (mean=0.32).

Table -16: Search strategy used for accessing e-journals articles

S/N	Search Strategy	Mean	S.D
1	Title of articles	3.50	0.95
2	Journal titles	3.26	1.31
3	Key words	2.92	1.23
4	Subject	2.90	1.48
5	Author	2.88	1.36
6	Abstracts	2.60	1.40
7	Date of publication	2.45	1.39
8	Table of content	2.05	1.48
9	Publisher name	1.84	1.63
10	ISBN	0.71	1.03
11	ISSN	0.32	1.28

5.17 Format preferred for e-journals use

The articles appearing in e-journals are available in PDF and HTML format. An attempt was made to find out which of these two formats respondents prefer for downloading the e-papers. It may be seen from table 17, that PDF format is the most opted one with a mean of 3.88 and the next being HTML with a mean of 1.98.

Table -17: Format preferred for e-journals use

S/N	Type of format	Mean	S.D
1	PDF	3.88	5.77
2	HTML	1.98	1.24

5.18 Use of search engines

The users of information use many search engines to access electronic information. The most popular search engines used are Google, Yahoo, and AltaVista etc. It may be seen from the table that the search engines 'Google' is preferred most with a mean score of 3.86 followed by 'Yahoo' (mean=2.01); 'MSN' (mean=1.07); 'Alta Vista' (mean=0.73) and 'Hotbot' (mean=0.45).

Table -18: Use of search engines

Sl.No.	Search engine	Mean	SD
1	Google	3.86	0.58
2	Yahoo	2.01	1.56
3	MSN	1.07	1.29
4	Alta Vista	0.73	1.14
5	Hotbox	0.45	0.91

5.19. Awareness of open access journals

It may be observed from the analysis large numbers of respondents are aware of '4-7' open access journals in their own filed representing (25; 35.2%); followed by those who are aware of 'more than 10 open access journals' (20; 28.2%); '1-3' open access journal (14; 19.7%); 'single open access journal' (7; 9.9%); '8-10' open access journal (5; 7%).

5.20. Funds for publishing papers in Open access journals

It is seen from the table 19 that the respondents opine that it comes from 'library/Institution funds' (mean=2.16); 'department funds' (mean=1.98) 'my research grant' (mean=1.98); 'my personal funds' (mean=1.15); and 'commercial sponsors' (mean=1.13).

Table -19: Funds for publishing papers in Open access journals

S/N	Source	Mean	SD
1	Library/Institution funds	2.16	1..59
2	Department funds	1.98	1.57
3	My research grant	1.86	1.65
4	My personal funds	1.15	1.40
5	Commercial sponsors	1.13	1.38

5.21. Length of publishing of open access journals

The investigator, here has made an attempt to find out since when the respondents are publishing in open access journals. It is seen from table 20, that they have been publishing in open access journals since 'one year' (mean=1.28); followed by 'one two to year' (mean=0.86); 'three to four year' (mean=0.67) and 'more than four year' (mean=0.67S).

Table - 20: Length of publishing of open access journals

S/N	Duration	Mean	SD
1	Up to one year	1.28	1.63
2	One to two year	0.86	1.38
3	Three to four year	0.67	1.35
4	More than four year	0.67	0.42

5.22. Use of open access directories

Open access directories are a free source of accessing information on the Net. It is seen from table 21 that the respondent prefer to use open access directories 'recommendation from colleagues' (mean=1.69) ; followed by Cite seer' (mean=1.28); 'DOAJ -- Directory of Open Access Journals'(mean=1.26); 'Recommendation from librarian' (mean=1.11); 'Sirus' (mean=1.03); 'Cite link' (mean=1.02); and 'Lund directory of open access journals' (mean= 0.54).

Table - 21: Use of open access directories

S/N	Extent of using open access directories	Mean	S.D
1	Recommendation from colleagues	1.69	1.65
2	Cite seer	1.28	4.58
3	DOAJ --	1.26	1.52
4	Recommendation from librarian	1.11	1.39
5	Sirus	1.03	1.37
6	Cite link	1.02	1.41
7	Lund directory of open access journals	0.54	1.06

5.23. Identification of open access journals

The data in this table 22 represents the identification of open access journal which is published on respondents work. Most of the respondents choose the option 'Look for quality controlled scientific and scholarly journals' (mean=2.50); 'Go through scholarly communication web sites' (mean=2.04); 'Opt for our own university science journal' (mean =1.39); 'Choose to publish in open access journals' (mean =1.30); and 'Commercial Society Journals' (mean = 1.29)

Table-22: Identification of open access journals

S/N	Types of open access journals	Mean	S.D
1	Look for quality controlled scientific and scholarly journals	2.50	1.68
2	Go through scholarly communication web sites	2.04	1.55
3	Opportunities for our own university science journal	1.39	1.46
4	Choose publish in open access journals	1.30	1.39
5	Commercial Society Journals	1.29	1.50

6. Conclusion

This study is the outcome of Major research project carried out by the first author with the assistance of the other two collaborators. The results are interesting and would be of use in improving the library service quality in the Mysore University Library, Mysore. the study has reported interesting findings indicating positive and negative effects of the use patterns of e journals by the research scholars of the faculty of Chemistry, Physics, and Mathematics. Similar research can be carried out in related e resources like e books usage in universities and colleges across India.

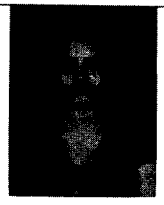
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HELINET Consortium: *Use and Influence of E-Journals on Dental Faculty: An Overview*

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Abstract

The Information Communication Technology (ICT) brought drastic changes in the collections and services of library and information centers. Due to the invention of Internet and World Wide Web (www) the traditional print resources of the library are shifting towards digital collections and paved the way to digital or virtual library. Due to the inadequate budget and rise in the subscription cost no libraries can procure all the journals required by the end users. So the libraries adopted alternative way of collection development to satisfy the patrons. Though library co-operation and resource sharing prevailed from long ago to fulfill the information needs of the end users the Library Consortium is the new concept in this electronic age. This article reviews the use, awareness and impact of HELINET consortium and E-journals on the teaching, learning and research of the dental faculty.

Keywords : Consortium, Dental, Digital, E-journals, Internet, Library and information

1. Introduction

Multidimensional research in all disciplines resulted in a great demand for scholarly journals. Even the health science professionals are also primarily depending on scholarly journals to fulfill their thrust for knowledge. The information explosion and inadequate library budget urged the libraries to adopt new philosophies and technologies for collection development to reduce the costs of information resources. The internet has rapidly become the global publishing platform and e-publication also brought revolutionary changes in journals publication, subscription, retrieval and usage. The advantages of E-resources over print resources, the advancement in ICT etc., urged the libraries to adopt new philosophies and technologies for collection development and to reduce the information cost. It is felt that the concept of E-Journals Consortia can work well in libraries to provide good number of scholarly journals with reduced cost.

Library Consortium is not a new concept to the library community. It is the new terminology used for library co-operation, resource sharing or library network etc., which were prevailed long ago to fulfill the information needs of the end users. Library Consortium is an association of a group of libraries to achieve mutually for the common objective. In this contemporary web age, consortium emerged as the best possible solution to meet the threat arising out of information explosion, over flow of publication, and spiraling cost of subscription and to fulfill the information needs of the library patrons.

This paper reveals the study made to know the awareness and usage of the E-Journals under HELINET Consortium by the faculty of A.B. Shetty Memorial Institute of Dental Sciences and what are influences of these resources on their teaching and research and also suggestions to enhance the usage. This is envisaged under the title "HELINET Consortium: Use and Influence of E-Journals on Dental Faculty – An Overview"

2. E- Consortium Initiatives in India

Resource sharing in libraries is not a new concept in India and it has long been used to improve access and service through borrowing and lending from other libraries. But in this digital

era the scenario is little different to some extent from the library networks of few years ago. The resources are mainly in e-format which includes e-journals, e-books and databases due to the support of ICT development. It is essential that all participating libraries of a consortium are equipped with necessary and sufficient ICT infrastructure to support sharing the resources across. Consortia are formed at the local, regional, or international level, and may be grouped around function or subject. There are many consortia initiatives have come up in recent years in India by various organizations and institutions.

3. Need for E-Journals Consortium in Health Science Institutions

The India is a centuries old civilization and professional education in health sciences is one of the major academic activities in higher education. To promote and achieve the World Health Organization (WHO)'s goal of "Health-for-All" significant attention has been given by the policy makers and the planners. The quality of medical facility and medical education has been improved significantly over the recent years. Due to the liberalization and globalization India is emerging as major exporter of health care professionals and they represent a significant numbers in western countries. The health science education in India is regulated by the statutory bodies like Medical Council of India (MCI), Dental Council of India (DCI) etc. These apex bodies monitors and regulates the quality standards and guidelines for the functioning of the academic institutions.

The developments of health care service mainly depend upon the timely, accurate and relevant access of information. In order to bridge the information gap between developed and developing countries WHO started HINARI (Health Inter Network Access to Research Initiative) which was launched in January, 2002 that provides free or highly discounted subscription access to major health science journals to developing nations having GNP (Gross National Product) less than US $ 1000 per capita for year (as calculated in the World Bank report in 2001). Unfortunately India is not covered under this network and cannot avail the benefit of HINARI even though India is progressing in valuable research on global health care. The health science professionals of India remained isolated and very much in need of health science literature at an affordable cost.

4. HELINET Consortium: A Brief Profile

'HELINET' is an acronym used for Health Science Library Network. This concept was first of its kind for health science libraries in India. The Digital Library (DL) Rajiv Gandhi University of Health Sciences (RGUHS) took up the initiative to form a consortium of all affiliated colleges under one umbrella in 2003. In the initial stage only the medical colleges affiliated to RGUHS were included in the consortium and in 2005 it was extended for all other health science institutions that are affiliated to RGUHS. The Digital Library of RGUHS as nodal centre and responsible for providing infrastructure and other required support to manage the HELINET consortium and all the affiliated colleges are the members. The fund required for the consortium has been collected from all the students and member institutions on annual basis as membership fee and ordinance was passed regarding this. Awareness and training programs are regularly conducted for librarians, students and faculties of member institutions.

5. A.B. Shetty Memorial Institute of dental Sciences (ABSMIDS), Mangalore

The institution was established by late Justice K. S. Hegde as apart of Nitte Education Trust in the year 1985 and presently located at Deralaktte, around 12 K.M. away from Mangalore city. Over the span of years ABSMIDS made a rapid progress in the field of dental education, dental and oral health care system and research. The Institution along with its group of satellite Centers spread

over 4 districts of Karnataka and North Kerala region has been highly successful in producing quality Professionals with a motto "**Service to Humanity**".

The Institution was affiliated to RGUHS and on June 4th 2008 the Institution was awarded the status of deemed to be University as per UGC act of 1956 under section 3. ABSMIDS is one such Institution where every effort is made to prepare the students not only for the next class but also for life. Holistic education is the main objective. The Library & Information Centre forms a very important and integral part of the Institution in imparting quality education and developing skills required to deliver state of art in Oral & Dental health care systems. Library has a good collection of information resources like books, journals, back volumes, CDs etc. The HELINET consortium is an additional digital library service through RGUHS.

6. Objective of the study

The present study has formulated the following objectives:

- To examine the awareness of e-journals and HELINET e-journals consortium among the Faculty.
- To identify the purpose, usefulness, preferences, frequency, level of satisfaction with regard to print and electronic journals among the Faculty.
- To understand various factors, influencing the e-journals services, to know the awareness among them.
- To find out the effectiveness of e-journals and to suggest some remedies this could enhance the effective use of e- journals under consortia.

7. Methodology

The study was carried out to investigate the effective use of HELINET Consortium in A.B. Shetty Memorial Institute of Dental Sciences. Different study materials and the RGUHS digital library site are used to collect relevant information. To investigate the usage of e- journals by the faculty of the college and its influence on them structured questionnaires were distributed and the information obtained by them was analyzed with simple statistical method.

8. Scope and Limitation of the Study

The study was confined to cover only the faculty of the college, though the academic communities of the library include under graduate students, Post Graduate students, faculty, research scholars, Para dental staff and non teaching staff because the researcher is keen to know the faculty's awareness about e-journals and its use in the academic purpose.

9. Analysis of the Data and Findings

To know the E-journals usage under HELINET consortium a detailed study of the status of the journal base and access provisions in the colleges was conducted. For the purpose of this a simple comparative study of the subscription of print journals and subscription of HELINET consortium was made. A questionnaire was also distributed to the faculty with Post Graduate qualification of the institution so as to know the awareness about E-journals and consortium and also the usage and constraints while accessing e- journals etc.

There are total 113 faculty members exclusively for dental specialty departments out of which 87 are having Post Graduate qualification and rest 26 are having only Under Graduate

qualification (lectures/tutors). Some of the lecturers are posted in rural satellite centers of the Institution. Hence, only the faculty with Post Graduate qualification is considered as sample for the survey.

Out of 87 faculty members 68 (78.2%) have responded. Among the 68 faculty 25 (36.8%) were Professors, 12 (17.6%) were Readers and the rest 31 (45.6%) were Assistant Professors.

9.1. E-Journals Awareness

Table 1: Awareness of E-journals

User Category	Yes	To some extent	No	Total
Professors	14 (56%)	8 (32%)	3 (12%)	25 (100%)
Readers	9 (75%)	3(25%)	-	12 (100%)
Asst. Professors	27 (87%)	4 (13%)	-	31 (100%)

9.2. Awareness of HELINET Consortium

Among the professors who responded only 36% are aware about the journals available through HELINET where as 75% of the readers and 80.6% of Asst. Professors are aware of it. So the junior faculties are more aware of HELINET consortium.

Table 2: Awareness of HELINET

User Category	Yes	No	Not exactly
Professors	9 (36%)	5 (20%)	11 (44%)
Readers	9 (75%)	-	3 (75%)
Asst. Professors	25 (80.6%)	-	6 (19.4)

9.3. Purpose of using e-journals

The purpose of accessing e-journals are many such as research, teaching and to enhance the personal knowledge etc. Some faculties use the journals for various purposes. Hence here the option is given to them to select more than one choice.

Table 3: Purpose of access

User Category	Research	Teaching	Personal Knowledge
Professors	22 (70.9%)	27 (87.1%)	18 (58.1 %)
Readers	11(91.6%)	8 (66.7%)	10 (83.3%)
Asst. Professors	27 (87.1%)	21 (67.7)	24 77.4%)

9.4. Satisfaction level

With regard to satisfaction also majority of the faculty are fairly satisfied with the journals available through HELINET.

Table 4: Level of Satisfaction

User Category	Highly satisfied	Fairly satisfied	Not satisfied
Professors	3 (12%)	16 (64%)	6 (24%)
Readers	2 (16.7%)	6 (50%)	4 (33.3%)
Asst. Professors	7 (22.6%)	13 41.9)	11 (35.5%)

9.5. Frequency of access to HELINET

Table 5: Frequency of access

User Category	Everyday	Once in a week	Fortnightly/once in a month
Professors	2 (8%)	13 (52%)	10 (40%)
Readers	4 (33.3%)	5 (41.6%)	3 (25%)
Asst. Professors	8 (25.8%)	12 (38.7%)	11 (35.5%)

9.6. Satisfaction level of the Infrastructure provided in the library

With the observation no faculty are fully satisfied with the infrastructure provided at library and are fairly satisfied.

Table 6: Level of satisfaction about infrastructure

User Category	Highly satisfied	Fairly satisfied	Not satisfied
Professors	4 (16%)	16 (64%)	5 (20%)
Readers	1 (8.3%)	8(66.7%)	3 (25%)
Asst. Professors	10 (32.3%)	16 (51.6%)	5 (16.1%)

9.7. Need for User training

It is found that more than 50% of the faculties are needed the user training to access the e-resources under HELINET consortia and preferred for the regular training. Some faculties need training to advanced search of their requirement.

Table 7: Need for user training

User Category	Yes	No	Required for advanced search
Professors	13 (52%)	7 (28%)	5 (20%)
Readers	7 (58.3%)	2 (16.6%)	3 (25%)
Asst. Professors	21 (67.7%)	8(25.8%)	2 (6.5%)

10. Suggestions

There were some problems and inconveniences faced by the users were discussed personally and their suggestions to improve the system in the library were ascertained. The major problems faced by the users are most of the required journals are not available and delay in opening the sites, internet connectivity, some departmental journals are not included in the consortium, complicated to access and it is not user friendly, hence accessing is time consuming . User Id and passwords are available only in library which obstruct the access of e-journals. So their suggestions are as below:

- Speed of internet should be increased. To reduce the slow downloading problem while accessing e-Journal, the library should acquire high-speed Internet connection.
- Numbers of journals available through consortia should be increased to access more Journals in each subject, i.e. more journals including back issues should be added.

- User training should be given for the proper utilization of E- resources through HELINET for the Faculty and for library staff by organizing regular workshops to enhance the usage of e-Journals.
- Awareness program should be made know what all the journals available on their specialty subjects.
- Password and user ID should be given to all so that they can access anywhere and should be more users friendly.
- To provide e-journals facility efficiently and effectively number of nodes, terminals and Printers must be increased in the library.

11. Conclusion

The survey indicates that the use of e-journals is marginal and the faculties need constant training and guidance to maximize the use of E-journals. The library staffs also need regular training to guide the users about the e-resources available in the web and also through HELINET consortium. Even the authorities should understand the benefits of consortia and proper support and encouragement may be given to the libraries to form consortium for the benefit of the end users. It is clear from the study that, enhancing the effective use of HELINET e-journals requires active partnership among the participating Institutions and university administration, university library and the computer centre. The library plays a major role as a bridge between the e-journals and the end users.

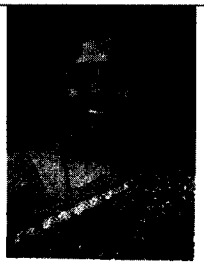
It is felt that usage promotion requires aggressive and sustained internal training and promotion activities within the college campuses. Every year the Digital Llibrary of RGUHS conducting user education and training programs on HELINET consortium and it's updates for the use of faculty, students and librarians of the affiliated colleges. The librarian, few faculty and PG students were deputed for the training every year. In the year 2007 one day workshop on HELINET resources was organized by the library of A. B. Shetty Memorial Institute of Dental Sciences for the benefit of all the users and librarians of all the Health Science institutions which comes under Nitte Education Trust.

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Library Consortia Initiatives in India: *An Overview*

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Abstract

This paper explores the consortia initiatives in India from its origin to present day trend in LIS domain. Article also highlights the reasons which stressed the need for consortia approach along with pre-requisites for successful library consortia. In this paper an attempt has been made to discuss some of major library consortia initiatives in India which are discussed by many authors in previous studies. Also, mention the tips for LIS professionals to overcome the difficulties in consortium mode of acquisition along with its merits and demerits.

Keywords : Consortia-prerequisites, Library consortia- India.

1. Introduction

The so called "Information Explosion" has made libraries around the world to adopt new philosophies and technologies for service delivery and also reduce the cost of information. Maintaining the breath and depths of information resources is one of the greatest challenges confronting libraries, be it, academic, special, national or public. The rise in information demand, coupled with scarce resources has made it increasingly difficult for any one library to be able to meet varied information needs in recent times. Equally challenging for the information professionals is the fact that more information is now available both in prints the electronic format than ever before, to the extent that it becomes impossible for anyone library to have it all[1]. Therefore the formation of consortia has become the most convenient and viable tool in optimum information acquisition.

2. Library Consortia

Library Consortium means 'coming together of libraries having common interests and needs, to achieve a common goal that is beyond what an individual library could achieve on its own'. In other words it refers to "a group of two or more libraries that have agreed to cooperate with each other in order to fulfill certain similar needs, usually resource sharing". Cooperation among libraries is not a new concept. It has existed in many forms, in many countries, for many years.

Arnold Hirshon, editor of the Library consortia management journal defines library consortia 'a generic term to indicate any group of libraries that are working together towards a common goal, whether to expand cooperation on traditional library services (such as collection development) or electronic information services. It is now used perhaps too broadly, and encompasses everything from formal legal entitles to information groups that come together solely to achieve better pricing for purchasing electronic information'[3].

3. Reasons for formulation of Library Consortia

The important reasons which stressed the need for the formulation of library consortia in today's digital environment are given below:

- **Information Explosion:** Information explosion made is practically impossible for any library to fulfill the requirement of its clientele alone.

- **Limited Budget:** Budget cut became a universal trend and the unjustified increase in the cost of publication especially scientific periodicals made the situation worse.
- **Emergence and Development of IT:** Development of information technology made the transfer of information digitally possible and thus removed the physical barrier of actual transfer the document.
- **Easy accessibility of Information Resources:** More and more information products became available digitally specially through Internet.
- **Changes in Customer Needs and Demand:** Increasing demand for service from customers together with the need to improve – inter-library lending services and library collection forced the libraries to form such consortia
  - To make better sharing of existing resources.
  - Increase in the availability of information in electronic form with more and more literature published in e-form.
  - To improve library Services.
  - To share expertise.
  - To facilitate staff development.
  - To achieve together what cannot be achieved alone.

4. Prerequisites for Successful Library Consortia

A consortium can take many forms depending upon their membership, purposes, funding, governing structures, and the commitment of the participants. Some important issues which have to be taken into consideration for an effective functioning of a successful library consortium are given below:

Culture of Shared Vision & Mission: It is very that essential consortia members should have "consortium culture- one that emphasizes common interests, values, visions, and needs". They should also have a high degree of respect for the value of increased collaboration/ shared subscription and thereby to achieve the greater common goal.

More Interest to Obtain Real Benefit: Consortia members must develop more interest and feel that they can obtain real benefit from their membership in consortia, those benefits that can't be realized as easily through their own efforts[4]".

Constant Support & Commitment: Constant support and commitment, particularly from the parent institutions is very essential for the effective functioning of any library consortia. Participating members must also ensure that there is constant support throughout all levels of the organization. Staff must receive support to make the partnership successful, and be encouraged to generate a result greater than what any individual institution could do on its own.

Authority to Take Action - Take Risk: A consortium, with institutional head (President/ Director/ Chief-librarian) directly in its governance, is able to make decisions and take actions at the highest level. Hence it is essential to have some authority to speak for the library and with the ability to act relatively quickly. Both consortia and library managers are needed to possess high degree of 'leadership quality', so that they must not be afraid to lead, to take risks, to commit resources, and to encourage actions[5].

Availability of Dedicated Staff: There is a general rule that "more centralized the consortia, more likely to have dedicated staff". However, the availability of dedicated staff to initiate, organizes, coordinate, and maintain consortial programs is very important to achieve success.

Centralized Funding: Centralized consortia may have a sponsoring agency to advocate for external funds. These funds can provide assured purchasing power for the consortium. Some peoples suggest that the availability of pooled or centralized funding is a good idea, to support the subscriptions having limited interests coming from the individual members who desire it. This is essentially important, when publishers/ aggregators do not offer a discount to consortia, in such a situation centralized consortia may serve as the integrator of the publisher[6].

Linkage: It is important to build linkages at all staff levels, especially involving the first line staff. Whether member institutions are near to each other or separated by significant distance, opportunities for participants to meet is obvious. Effective staff communication often depends on personal encounters - is an essential ingredient for the mutual efforts. So careful attention must be given to establishing right combination of face-to-face versus virtual encounters.

Healthy Licensing & Technology Infrastructure: While formulating any consortia, a number of licensing issues are involved with publisher/ aggregator, in order to get maximum flexibility in sharing (access) electronic resources as well as to enjoy best pricing practices. Healthy negotiation in relation to the number of simultaneous users, number of participants in the consortium, selection of resources, wider & consistent access, user friendly interface, pricing formulas, etc. can make the success of the consortia. Ultimately, adequate technology infrastructure in support of wide area information access and management in a consortium is the key to success.

5. Library Consortia Initiatives in India

Several library consortia have been set up in India over the last few years, to obtain site licenses and enable desktop Internet access to scholarly e-resources like e-journals and databases.

Table 1: Some of the prominent ongoing library consortia successfully operational in India

Sl. No.	Name	Participating Libraries	URL	Resources
1	UGC INFONET Digital Library Consortium **(INFLIBNET)**	**324** university libraries	http://web.inflibnet.ac.in/info/ugcinfonet/ugcinfonet.jsp	**1.** More than 5000 E-Journals **2.** 10 Several Databases **3.**JCCC
2	INDEST Consortium **(MHRD)**	**1354** (58 MHRD Institutes+1296 Engineering colleges and Institutions)	http://paniit.iitd.ac.in/indest/	**1.**10000 E-Journals **2.** 16 Databases **3.** JCCC
3	FORSA **(Astronomy/ Astrophysics Libraries)**	**11**	http://www.iiap.res.in/library/forsa.html	**104** E-Journals, Nature Journals
4	UGC-DAE Consortium for Scientific Research) **(Dept.of Atomic Energy + UGC)**	**50**	http://www.tifr.res.in/~libws/	**1600** E-Journals
5	CSIR library Consortia	**40**	http://www.niscair.res.in/ActivitiesandServices/MajorProjects/majproj.htm#ejournalconsortia	**3100** E-Journals

6	ISRO	**12**	Not provided	**1.** 900 EJournals **2.** JCCC
7	IIM's Library Consortia	**6**	http://www.iimahd.ernet.in/ http://www.iimb.ernet.in/ http://www.iimcal.ac.in/ http://www.iimidr.ac.in/ http://www.iimk.ac.in/ http://www.iiml.ac.in/	**1.** 1050 EJournals **2.** 6000 Aggregated Titles **3.** 12databases **4.** JCCC (4271 Journals)
8	HELINET (RGUHS, Karnataka)	**26**	http://www.rguhs.ac.in/hn/newhell.htm	**1.** 600 E-Journals **2.** JCCC
9	ICICI Knowledge Park	**7**	http://www.iciciknowledgepark.com/	**1.** 500 EJournals **2.** JCCC
10	ICMR	**24**	http://www.jcccicmr.informindia.co.in/about/about.asp	**1.** 693 EJournals **2.** JCCC (11800 Journals)

These consortia efforts have enabled reducing the information gap between the resource rich and resource deficient among the participating libraries by providing equal access to information[7].

6. Consortia Models in India

A variety of organizational models of consortia have been emerged in India based on their objectives, structures, member participants, funding sources, etc. Different library consortia models practiced in India are given below:

Open Ended Model: It is open-ended i.e., any library can join within a defined framework or terms of references and numbers of members are not fixed, eventually flexible. Here the participating libraries have the freedom to join or leave from the consortium. This model suffers from sustainability problem, as the members can quit at any time. Example: FORSA Consortium

Closed Group Model: It is normally formed within a defined group based on certain criteria and the constituent members are homogeneous among themselves where the members have a common need to share the resources in a specific area. Here the guidelines and administration is fairly simple and easy. For example: CSIR Consortium and IIMs Consortium

Shared-Budget Model: This type of consortia emerges with the proportional sharing of funds of the participating members, which is operated through the Memorandum of Understanding for better and strong understanding. For example – FORSA Consortium, HELINET Consortium, IIMs Consortium, etc.

Centrally Funded Model: In this type, the existence of the consortium solely depends on the central funding agency, eventually imposed regulations by the funding authority. Here source of funding often dictates the structure of the consortium. For example, UGC-InfoNet.

Publisher Initiated Model: Here, the publisher formally quotes a consortia price with attractive discounts for the participating libraries, obviously with the precondition that there should not be any discard in their print subscriptions. Such pricing practices by the eminent publishers/ societies are coming up for the developing countries - like India. Say for instance Consortia price for Science Direct (from Elsevier Sc. & Associates), for MathSciNet (from AMS) and so many.

National Venture Model: Basically this is a national level initiative, which can greatly reduce duplication of efforts/ resources and also provide greater purchasing power. In India it is partly initiated through UGC-InfoNet (national license for Encyclopaedia Britannica) and INDEST (national prices for various e-resources).

Headquarter Executed Model: In this type, consortia is operated and controlled by the Headquarter of a particular organization. Here the head-office of the branches/ institutes solely shoulders the financial responsibility of the consortium and the consortium is fully guided and executed by the head quarter. For example: Consortia subscriptions among the centres of ISI[8].

7. Difficulties in Consortia Mode of Acquisition

The acquisition of electronic resources through consortium mode seems to be attractive but it involves several difficulties on other side. David Ball in his paper "What's the big deal and why it is a bad deal for universities" analyzed the pros and cons of acquiring information resources through consortium. Some of the points are given below:

Archival rights and licensing

Many of the licenses obtained through consortium do not necessary offer archival access. In such cases our users do not have continuing access to the material beyond the term of license. Here the publisher decides whom to allow access. Our freedom to decide who may have access to our resources have been forfeited, which was not in the case of print resources.

Usage Considerations

In consortium mode of acquisition all the publications of a publisher or aggregator are available for a definite period. But the big question is, are all these titles are of use. For our users only some titles may be core titles and some not. But we have to pay for all the titles.

Citation Ranking

Big deal of consortium will also affect the citation ranking of bigger publishers. As more and more journals of bigger publishers will be available to the researchers, they will tend to cite from the big publishers thus citation ranking of these journals will increase, and, as the print only journals from third world countries will be less and less used, there citation ranking will decrease which ultimately will lead to their death.

Decision Making

Acquisition of information resources through consortium also poses a challenge for libraries, as we no longer are involved in making decisions about our collection development as we have acquire the total package. Now the decision will focus on content level and not title level.

Monopoly

Consortium also has given rise to the monopoly. It is forcing us to take or leave the complete package which is not a welcome step[9].

8. Steps for Librarians to overcome difficulties in Consortium Mode of Acquisition

From the above mentioned difficulties it does not mean that we should not form consortia. We should make consortia so strong that publisher in not able to dictate terms and make decisions. Some of the steps need to taken by librarians to make consortia stronger is given below:

- The Consortia should take detailed study of the usage and terms and conditions before finalizing the acquisition policy.

- Standard procurement policy should be followed by identifying the need, preparing the specifications, finding the right supplier, awarding the contract and finally by measuring and monitoring the contractor's performance.
- Focus on developing alternative means of scholarly communication such as Open Archive Initiative. Current decision, rather forced one, of most of the commercial publishers to allow the authors to retain the copy right of their articles will give a major boost of this initiative. The Government should develop a solid policy for this purpose.
- Develop alternative strategy such as paying subscription to only highly based journals and buy only articles from less used journals in case of subscription[10].

9. Benefits/Advantages of Library Consortia

Some important benefits of library consortia are given below:

- Library Consortia makes it possible for each member library to develop comprehensive scholarly collections in electronic form.
- Library Consortia provides each institution with the ability to share resources without sacrificing the individuality of each member library.
- Consortia-based subscription to electronic resources provides access to wider number of electronic resources at substantially lower cost;
- The collections of the Consortium libraries enable each member library to support scholarly research for its users.
- Cooperative research and development in application of information technology enhances service and realizes cost efficiencies.
- Staff development and interaction enhance the quality of service provided by the library.
- It acts as an agent for all member libraries and negotiates a purchase price that is lower than that available to individual institution. As a result, end users can reap the benefits of more resources than would be available through one library.
- Enhanced library services are provided with an emphasis on access to new electronic resources including databases and services offered through the Internet and World Wide Web and available 24/7.
- Expediting inter library borrowings at lower cost is possible.
- Uncertainties in legal issues are handled with more confidence.

10. Disadvantages of Library Consortia

Some of the important disadvantages of the library consortium are as following below.

- Absence of a printed copy of Journals.
- Require training of staffs in handling electronic documents etc.
- Consortia require high initial investments in licensees and information and communication technology.
- Copyright problems.
- Unreliable telecommunication links and insufficient bandwidth.

- Lack of archiving and back files availability.
- Internet Access id necessary.
- Users are not accepting e-journals as per with the printed Journals[11].

11. Conclusion

The advent of e-publishing has brought a revolution in journals publication, subscriptions well as access to the scholarly literature. The age of library consortia is at the doorsteps to prove the library cooperation locally, regionally, nationally and internationally. It is the one of the emerging tool kit for the maximum libraries to survive if the libraries have to provide information to their users.

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Management of Digital Resources: *A Study of Letters of N. C. Kelkar*

Prathibha Sakhare

Abstract

Manuscripts in any form are important element of socio-economic, cultural and heritage history of any country. Being an original document it is an authentic resource to know history of various events, business, educational developments, political movements, social movements etc. The present paper is related to preservation and management of N.C.kelkar letters in university of Pune. Assigning of subject heading is found to be problematic but important area of this project. Subject approach is the most useful and helpful access point in retrieving information from print-on-paper and digital reading resources. Therefore, along with other fields, recommended in Dublin Core, the present researcher has added additional fields of subject headings in the metadata of letters of N.C. Kelkar. Greenstone is open source software developed by the New Zealand Digital Library Project at the University of Waikato. It has the ability to serve digital library resources and can build or develop new digital collections.

Keywords : Digital library, Content management, Heritage history, Preservation, N.C. Kelkar.

1. Introduction

The revolution, in recording content started with the invention of printing technology in 15th Century. Gutenberg started new era in the field of publication. The revolution which started in the 15th century is still continued 21st century in different forms. The various academic and research activities create enormous volume of information. The enormously generated information is being published and stored in print-on-paper format. Before print-on-paper format knowledge was recorded and communicated in the form of manuscript. There were different forms of manuscripts like-carving of letters on stones, metals, clay tablets, writing of palm leaf, papyrus. After the invention of paper some personal communication among scientists, social workers, political leaders and others war recorded on paper with handwriting. The correspondence of eminent individuals is also considered to be an authentic and reliable information resource in the field of libraries and information centers.

2. Importance of Manuscript in Local History Librarianship

Manuscripts in any form are important element of socio-economic, cultural and heritage history of any country. Being an original document it is an authentic resource to know history of various events, business, educational developments, political movements, social movements etc.

2.1. Definitions of Manuscripts: Prytherch, in Harrods's Glossary of Library and Information Science: "A document of any kind which is written by hand or the text of a music or literary composition I hand written or typed script form and which in that form has not been reproduced in multiple copies".

3. The Need for Preserving Manuscripts

The manuscripts available in conventional form i.e. paper form is prone to destroy. It has limitations in conservation. The important heritage documents in the form of correspondence has tremendous important because the precious thought of eminent people on different topics are reflected in their writings. These precious thoughts or comments on various events and problems

are based on the basis of proofs and witnesses. Therefore, they need to be preserved as heritage documents for further generation.

4. Prime Sources of Manuscript Collection

The old libraries, museums, archives, temples and personal libraries of individuals are prime sources of manuscript collections. As they are related to local problems, local civilization and some traditional and ancestral subjects like-Vedic Mathematics, Ayurveda, local social problems, social customs, political problems etc, there are study comes under local history collection in libraries. Local history collection has become independent ingredient of library and information studies. So, it needs to be nourished by library professionals. Library professionals are also required to learn new practices of preserving and disseminating information about them. Lancour and Daily, in Encyclopedia of Library and Information Science, has defined local history collection as: "A collection of books, maps, prints, illustrations and other material related to a specific locality usually that I which the library housing collection is located".

5. Criteria for the Selection of Documents for Digitization

Tennant in Chaudhury and Chaudhury[7] comments that most guidelines for selection of materials for digital preservation agree on some issues, for example:

- Do we have the legal right to preserve an item?
- Does the material have intrinsic value that will make it popular with the target clientele?
- Is there potential to add value to material by increasing access to it. Associating it with related material, etc.?
- Is it unique?
- Is preservation possible (in terms of adequate resources institutional supports, technical feasibility, etc.)?

Deegan and Tanner have suggested following criteria for selection of resources to digitize: The judgements we must make in defining digital projects involve the following factors;the intellectual physical nature of source material; potential users; the current and potential nature and used; the format and nature of the proposed digital products and how it will be described, deliver, as archived; how the proposed product relates to other digitalization efforts; and projection of costs in relation to benefits.

6. The Need for Creating Digital Contents

There are various benefits of digitization which make it mandatory and needs to be adopted as complimentary to traditional libraries.

- Rare and decaying reading resources can be preserved as an alternative to original documents.
- Immediate access to high demand and frequently used reading resources.
- Remote access to all reading resources is possible which are available in digital form.
- Integrated access to dispersed collection is possible.
- The digital image can be enhanced in relation to size, colors, shades, sharpness and noise etc.
- It can be helpful in E-learning process.
- It provides search facility with various approaches and methods.

- Electronic document delivery is possible with reduced cost an can help in resource sharing.
- Publishers can create new knowledge with less cost and provide access through consortia.

7. The Selection of The Research Problem

While selecting problem for the research project the present researcher has followed the criteria of selection for digitization as stated by Tennant, mentioned here before. These criteria used for selection of the present problem found to be suitable. The reason is that, N.C. Kelkar was well known freedom fighter, a staunch supporter of Lokmanya Bal Ganandhar Tilak and Rashtrapita Mahatma Gandhi. He had good rapport with may freedom fighters, thinkers and social reformers and eminent personalities from public domain. He also worked an editor of Kesari, the leading daily newspaper in Marathi language. It has contributed a lot in the Freedom Movement of India. Considering and studying the life of N.C. Kelkar and his contribution for the cause of Indian Freedom Movement, journalism, literature writing and social work, it was felt that the letters received to him from stalwarts from the allover India and sent by him to different people are important documents and criteria for digitization were applied as give by Tannen. These letters can throw light on the political and social life of Maharashtra during his life time. There are about 3000 letters available in the Jayakar library. But, due to time constraint and limitation of pages the researchers has selected 500 letters on the basis of criteria described by Tannen. These letters contain important information on the topics mention above.

8. Content Management: Standards and Tools

What is content management? Boiko has defined, as given in Haynes, content management as: Information put to use; and he further adds that; Information includes all the common forms for recorded communication such as text, sound, images, motion [and] computer files. Various, standards and open source software are available for digital content management system. Dublin Core Standard is widely used for resource description and Green Stone,D-space, Plone etc software are also available for digital content creation and management. But, as Haynes has stated: Web pages encoded in HTML or XML lend themselves to embedded metadata. These has the advantage be handled by different software applications of transportability and allows them to

What is Content Analysis?

Definitions: Busha and Harter have defined 'content analysis' as: A procedure defined to facilitate the objective analysis of the appearance of words, phrases, concepts, themes, characters, or even sentences and paragraphs contained in

8.1. Categories and Assigning of Subject Headings:

Assigning of subject heading is found to be problematic but important area of this project. Subject approach is the most useful and helpful access point in retrieving information from print-on-paper and digital reading resources. Therefore, along with other fields, recommended in Dublin Core, the present researcher has added additional fields of subject headings in the metadata of letters of N.C. Kelkar. A set of Categories is an important tool in preparing subject heading. Categories have been stated and explained since ancient period by philosophers and information professionals. Most of the classification schemes have adopted the categories and classification of knowledge universe_ described by philosophers.

While adding different concepts in the schedule of subjects categories have been used as the basis for forming/preparing analytico-synthetic classification schemes. This categories and the process of selecting and categorizing concepts is also useful to prepare subject headings. As far as

selection of categories is concerned there doesn't seem to be uniformity in various classification schemes and list of subject headings like-Library of Congress Subject Headings and Sear's list of Subject Headings. Library of Congress Cataloguing Division experts have adopted principles of C.A. Cutter. The principal of C.A. Cutter are completely based on practical aspects of using subject access and approach of users. But, categories described by Aristotle, Plato, Kant, Peirce, Spencer, Harris, Becken etc. have influenced the categories selection practice of information professionals-B.C. Vickery, J. Kaiser, Classification Research Group of International Society for Knowledge Organization (ISKO) Dr. S.R. Ranganathan and Henry Evlin Bliss and then Vranda Broughton, who has revised second edition of 'Bliss's Bibliographic Classification'.S.R. Ranganathan has been considered as an originator of analytico-synthetic classification scheme. He has postulated five fundamental categories. These were again revised in the Seventh edition of Colon Classification Scheme. But, there has been observed an ambiguity in relation to category described in the Seventh Edition of Colon Classification.

The categories, Matter Property [MP], Matter Method [MM], and Matter Material [MMt] and Special Energy Isolates. Special Energy Isolates, Matter Property and Matter Method always create confusion in the minds of common practitioners in librarianship. To avoid pitfalls in categories and to make selection of categories simpler, the researcher has made selection of various types of concepts in the beginning. The researcher has observed and studied the roles of these various types of concepts in interpreting or predicating genus. Therefore, while selecting categories the resemblance between role and the type of categories have been studied along with the types of concepts. On the basis of the study, following types of concepts found to be suitable.

- Concepts related to Basic Subject.
- Concepts describing range of ideas of Basic Subjects.
- Action related concepts.
- Process or operation related concepts.
- Agent performing action, process and operation related concepts.
- Space related concepts.
- Time related concepts.

Selected Categories

Entities / Things	Express Basic Subject
Properties	Entails range of various ideas coming under subject.
Process	These include all sorts of action. Therefore, 'Action' has been adopted as an independent category instead of Process and Operation. It makes the use of the two categories simpler.
Operation	It entails the action performed by.
Agent	These are self-explanatory and needs no explanation.
Space	
Time	

For Example, Constitution Reformation Bill in India in 1977

Entity	Property	Action	Agent	Space	Time
Political Sc.	Constitution	Reformation	Parliament (Non entity in indexing)	India	1977

It would render the subject in indexing language as follows:

Constitution, Amendment, India, 1977

Resources that are converted into digital format are known as 'digitized.' The process of digitization can be mentioned into following steps as given by Parekh : "Selection of the material, digitization, assessment and bench marking, implementation of the project, i.e. preparation of materials, image capturing, preservation, conservation, metadata, dissemination".

Architecture Used For Digitization

Hardware:

- Pentium lll/lV processor.
- 128/256 MB RAM.
- 10 GB HODS.
- 15" Digital monitor.
- Scanner Monilta P5 7000 series
- Mouse.

Software:

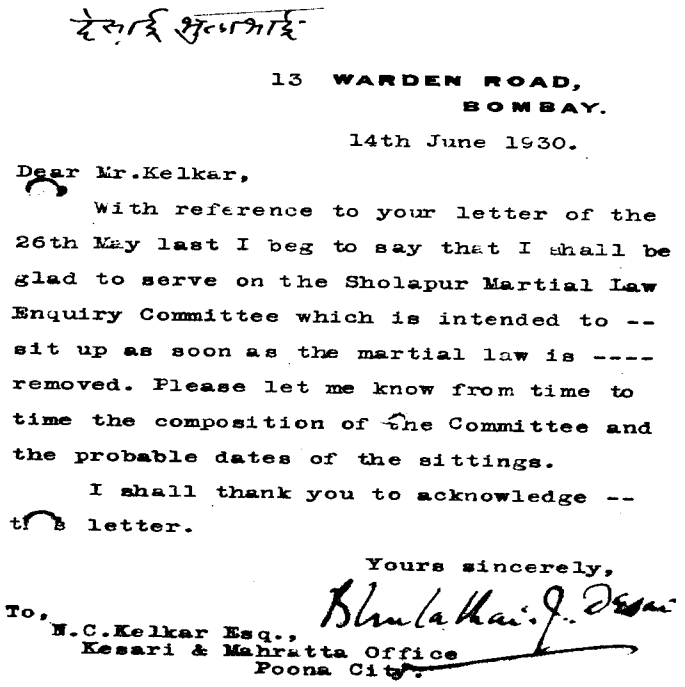
- Greenstone 2.72 version.
- Monilta P5 7000scanner drivers CD.
- Operating system windows 2000.
- Scanfix software.

9. Digital Library Software, version 2.72: An Overview

Greenstone is open source software. It has the ability to serve digital library resources and can build or develop new digital collections. It has the ability to provide a new way of managing information and making it available on the web and also on CDROM. This software has been developed by the New Zealand Digital Library Project at the University of Waikato. It is distributed in cooperation with UNESCO and the Human Information Non-government Organization (human info NGO). It is available on the internet from http:greenstone.org under the terms of GNU General Public License. _____

Since the researcher came across some problems in GSDLS, like –consuming a lot of time for building up the database of letters, getting hanged due to increase in data and was not running smoothly , therefore , the researcher made the database of only 340 letters and database was built up in small slots of 50 letters at a time. As GSDLS was creating problems the researcher made another experiment using MS-Access database development software. All the fields defined as per Dublin Core were created in it like in GSDLS. The metadata of all 500 letters have been prepared. The hyperlink from the metadata of every letter has been given to its text image.

The following types of exes can be generated with the help of GSDLS and MS-Access.



13 WARDEN ROAD,
BOMBAY.

14th June 1930.

Dear Mr.Kelkar,

With reference to your letter of the 26th May last I beg to say that I shall be glad to serve on the Sholapur Martial Law Enquiry Committee which is intended to -- sit up as soon as the martial law is ---- removed. Please let me know from time to time the composition of the Committee and the probable dates of the sittings.

I shall thank you to acknowledge -- this letter.

Yours sincerely,
Bhulabhai J. Desai

To,
N.C.Kelkar Esq.,
Kesari & Mahratta Office
Poona City.

Abstract of the Letter

The martial law was imposed in Solapur. An inquiry committee was appointed regarding martial law. Bhulabhai Desai accepted his nomination as a member of the committee; he mentioned his consent in this letter. He also requested N,C. Kelkar of the dates to be informed to him of the meetings of the committee.

1) Subject in Natural Language

HISTORY SOLAPUR 1930

Representation of subject in categories:

Entity	Property	Action	Agent	Space	Time
HISTORY.	-	-	-	SOLAPUR	1930

SUBJECT HEADING IN INDEXING LANGUAGE
HISTORY, SOLAPUR, 1930

2) SUBJECT HEADING IN NATURAL LANGUAGE:
HISTORY, MARTIAL LAW, IMPOSITION, GOVERNMENT, SOLAPUR, 1930

Representation of subject in categories:

Entity	Property	Action	Agent	Space	Time
HISTORY.	MARTIAL LAW	IMPOSITION	BRITSHERS	SOLAPUR	1930

SUBJECT HEADING IN INDEXING LANGUAGE
MARTIAL LAW, IMPOSITION, SOLAPUR, 1930.

3) SUBJECT HEADING IN NATURAL LANGUAGE:
HISTORY, MARTIAL LAW, INQUIRY COMMITTEE, SOLAPUR, 1930
Representation of subject in categories

SUBJECT HEADING IN INDEXING LANGUAGE

Entity	Property	Action	Agent	Space	Time
HISTORY.	MARTIAL LAW	INQUIRY COMMITTEE	-	SOLAPUR	1930

MARTIAL LAW, INQUIRY COMMITTEE, SOLAPUR, 1930

Inferences and Solutions

A) PROBLEMS IN RELATION TO SELECTION OF DOCUMENTS

- Selection of documents for preservation in digital form is an important task. The letters of N,C. Kelkar are rare but most of them are too personal and of trivial nature to be of interest to others and in public life. Some letters are related to household matters, marriage ceremonies, health and thanks giving matters.
- There was no uniformity as far as size of the letters is concerned. Disparity in size of letters brought a lot of problems in scanning.
- In the process of digitization quality of data has to be maintained. The use of 'Quality check' software was made for it. But, as the documents are too old spots on the documents could not be cleaned through cropping. Spread up of ink, illegible writings and incomplete letters were some other problems which brought obstacles in creating qualitative digital content.
- Some of the letters were in incomplete form. Therefore, while assigning subject headings to such letters the context of the content could not be identified. Context of the theme is important aspect while analyzing content of a document in question.
- Some letters were sent to N,C. Kelkar. Most of the letters were in reply to letters sent by N, C.Kelkar to replying person. Such letters (received to Kelkar) did not give an idea of the context of the letter.

B) Problems in relation to GSDLS

- GSDLS cannot be installed without Java and Image Magick. The process of installation of the software is very complicated and takes a lot of time.
- The build process is a very time-consuming. It takes at least four hours to build collection of 75 letters.
- It does not display Dublin core elements as it does not have the Dublin core plugin in the software.
- It does not have the facility of 'copy paste' for the repeated work.
- Dublin core fields selected for metadata can not be previewed with the images of the text except title.

- It does not have the facility of selecting all the written data which is repeating in some other letter indicating the same creator and subject of earlier one.
- The tagged images occupy huge space of the computer. it affects the speed of the computer. This big disadvantage of the software.
- Help provided by the developer of the software i.e. University of Waikato is not clear enough to understand to new users of the software. The explanation regarding the help needs to be explained by a person who has handled it for routine work many a times. Therefore, in spite of being an open source software it becomes difficult to use it with out proper training. In case of difficulties users of the software are left to Users' Group to discuss the problem. The website address of this group is http//greenstone.org. Users can email their problems to the members of Users' Group and get solution to the problem.
- It was found that when the data increase the function of the software gets slowed and sometimes hanged.
- GSDLS needs computer of high capacity RAM. Otherwise low capacity RAM cannot function efficiently to carry out functions of this software. The minimum RAM capacity should be of 564MB.
- It is not user-friendly from the point view of librarian and also the searchers of information
- No training facility is made available by the sponsorer and developer.

10. Conclusion

Twenty first century is an age of digital functions. Information technology has provided various facilities in industry, business, services, advertisements, entertainment and in the maintenance of records. The information profession has also got an opportunity and benefits of the changing scenario. It cannot only preserve the old documents in digital form but also make available new information in digital form. It can also produce value-added services to the users of information. These new forms of documents are cost-beneficial and cost-effective. Libraries can make use of these opportunities to provide qualitative contents and services to the users. Digital preservation can disseminate information about any type of document which would have not been brought to the notice of remote users of the information. In case of documents related to culture, history, arts and social problems would not have seen the remote users who are interested in studying these areas of a particular locality.

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Resource Sharing, Networking and Consortia: *An Overview*

Noorjahan A. Shaikh **Sheetal D. Naik**

Abstract

Libraries are redefining their role by adapting to state-of-the-art technology. With more and more library users turning to their desktop computers for information, has created the necessity for the librarians to change their role of keeper of library documents to that of a navigator of information. For so many years the term "Interlibrary loan or Exchange" has been in focus of library management. In present scenario, it has extended from its limited basis to become fully grown Consortia of various kinds. The phenomenon of Consortia has become very important in last few years. The paper covers this present scenario along with resource sharing and networking in Indian context. This paper discusses the development and growth with comparative statement of selected consortia and suggests that resource sharing is inevitable among libraries.

Keywords : Resource sharing, Networking, Library consortia, Consortia in India.

1. Introduction

For developing countries, it is a challenge to access the new information and communication technology amidst the lack of basic infrastructure and facilities. Increased price of journals have forced many libraries to cut journal subscriptions. Typically high-priced, low used journal subscriptions are targeted as the major culprit in the journal price escalation. Resource sharing is considered by many librarians to be a solution to the financial problems. Increasing pressure on the budgets of all libraries, especially research libraries, together with improved means of communication and delivery have forced librarians to make a virtue of necessity and pay increasing attention to resource sharing as an important element in the package of services offered to users.

Early on, union catalogues were developed, but searching through the union catalogues of printed books was quite a time consuming and a physically demanding job. Today's' librarians are looking for new and innovative ways to share their resources through web technologies and storage technologies which provides an ideal environment to deliver a full range library services in a number of ways. With the technology of interest Remote Databases can be accessed simultaneously using a distributed search engine Z39.50 computer-to-computer information retrieval protocol. The implementation of Z39.50 in library is sometimes called Virtual Union Catalogue.

Abstracting and indexing databases are now well established resources for library patrons that exist alongside the various types of catalogues. Increasingly, the extended functionality of local integrated library systems and the availability of Z39.50 is making it possible to offer access to catalogues and abstracting and indexing databases through common user interfaces. A query is given by using web browser to the Z39.50 server. The Z39.50 server distributes the request to member library servers, with Z39.50 client installed. These clients responds with the result passed back to the initiating Z39.50 server which delivers pooled results to the initiating browser client. In this way, use of internet for resource sharing provides libraries a cost effective way to share their resources.

Now, resource sharing and cooperative functioning through networking have become

inevitable and indispensable for libraries and information centers situated worldwide. India is no exception as well. To this particular direction, it has eventually given birth different library and information networks in India, for the purpose of resource sharing using networked environment.

2. Coordination among Library Networks

NISSAT envisaged formation of registered societies. These societies could frame their own rules appropriate to local condition and network development needs. The ADINET is strongly linked with INFLIBNET, DELNET with NIC, and MALIBNET with NISCAIR (INSDOC) and MYLIBNET with CFTRI. The BONET and PUNENET could be viewed more or less as institutional projects, where BONET is with NCST, PUNENET was managed by consortium of three institutions namely Bio informatics Center at Pune University, C-DAC and NCL.

The above networks are developed for providing information resources to its participating libraries but there is not a single agency which is taking care of promoting the cooperation among different networks.

By utilizing the support of the regional and national level networking, libraries in India should be cooperatively establish library consortia for offering and sharing electronic resources. Many libraries especially research libraries in India, have their own network existing within their own locations. These networks can be expanded to enhance the access to the information resources through collaborative partnerships, in the form of Consortia. Today consortium's purpose is shifted from mere sharing of resources to sharing of expertise between libraries and also to explore the need for libraries to make the most effective use of their funds collectively. That means basic purpose of Consortia is sharing of resources, money and manpower. In this digital context, it is the access to information rather than holding information. 'Collection Building 'concept has changed to 'Connection Building' with the help of information and communication technologies. The buzzword of present day digital environment is 'Consortium' with the objective to promote faster, better and cost effective means of providing access to the information needed by the users.

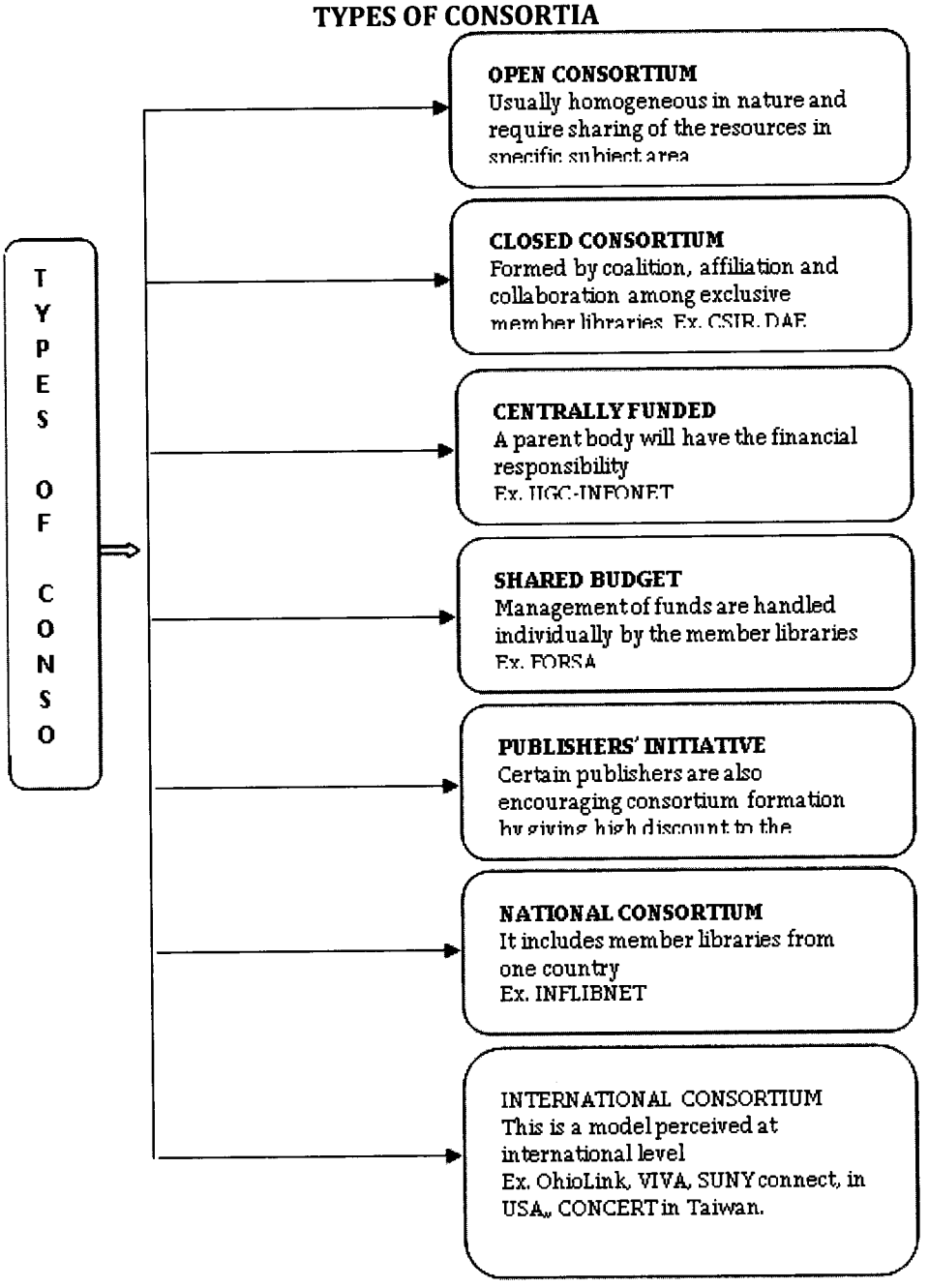
3. Managing Consortia

A library Consortia formation can be at local, state, national and inter-institutional levels for making the resources and services available both within the premises of members and outside for the benefit of members. There are a number of basic issues that Consortia members should be aware of like, number of participants in the Consortium, security methods, pricing formula, negotiation for Consortia which may differ according to the setup. Successful Consortia exists to expand further the mission of member- institutions by strengthening them.

Any type of Consortium requires a core committee which acts as a bridge between the Consortium members and the publisher/vendor to deal financial and legal aspects mainly. The contract with publishers must be carefully drafted so that the interest of consortium is fulfilled. Some important factors like content authenticity, equivalence to print, navigation characteristics, search features to other related articles, usage statics, and protection on increase of price, archival rights /policy and provision of e-journal dump shall be settled before signing the deal with the publisher/content providers. Most publishers maintain detailed usage statistics compliant to an international standard called 'COUNTER' for resources offered by them to the Consortium. At the end of every subscription year, activity of the Consortium must be evaluated to overcome the shortcomings if any. All the member libraries under Consortia must extend cooperation to make it a total success.

4. Types of Consortia

A wide variety of consortia exists today all over the world; each being shaped by a number of cultural, political and financial needs and factors. These range from rather very simple to very complex organizations. The predominating patterns that are found in the nature of the Consortia are



Many consortia are being run successfully by different organizations in India. Based on these patterns following six consortia have been selected and compared.

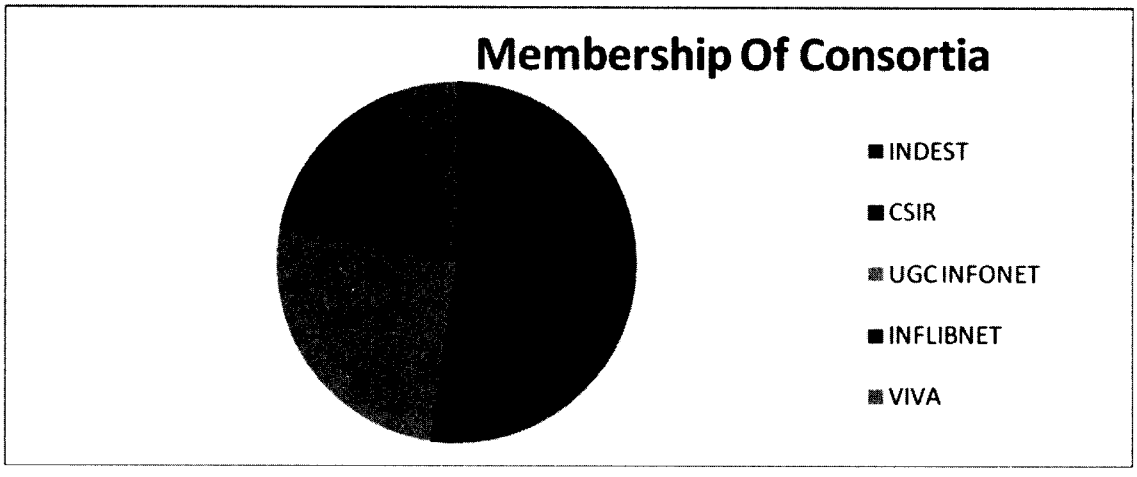
Table 1: Comparison of consortia

Acronym	Name of the Consortia	Year of Establishment	Type of Consortia
INDEST-AICTE	Indian National Digital Library in Engineering Sciences and Technology	2003	Open Consortium
CSIR	Council of Scientific and Industrial Research	2002	Closed Consortium
UGC-INFONET	Infonet Digital Library Consortium	2003	Centrally Funded Consortium
INFLIBNET	INFormation and LIbrary NETwork	1991	National Level Consortium
VIVA	Virtual Library of Virginia	1994	International Consortium

After analysing these different consortia, the data have been presented in tabular form and further supplemented by graphs wherever necessary.

5. Membership Of Consortia

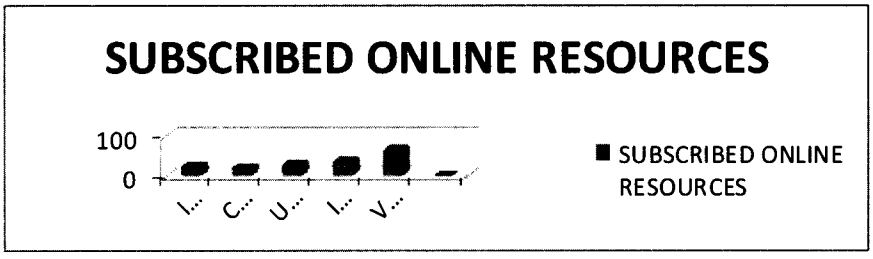
A consortium is more meaningful and effective if it has larger number of member institutions. The number of member institutions in a consortium is inversely proportionate to the rate of electronic resources. The INDEST-AICTE has three categories of members, namely core members, AICTE supported institutions and self supported institutions where as UGC-INFONET has two types of members namely Universities under purview of UGC and private Universities and other institutionscome under associate membership.INFLIBNET has become an independent Inter University Centre and acts as a gateway to India's academic and research community. The membership status is illustrated in Table 2



	INDEST	CSIR	UGC INFONET	INFLIBNET	VIVA
CORE MEMBER	108	40	160	300	74
ASSOCIATE MEMBER	820		315		34
TOTAL	928	40	475	300	108

6. Electronic Resources

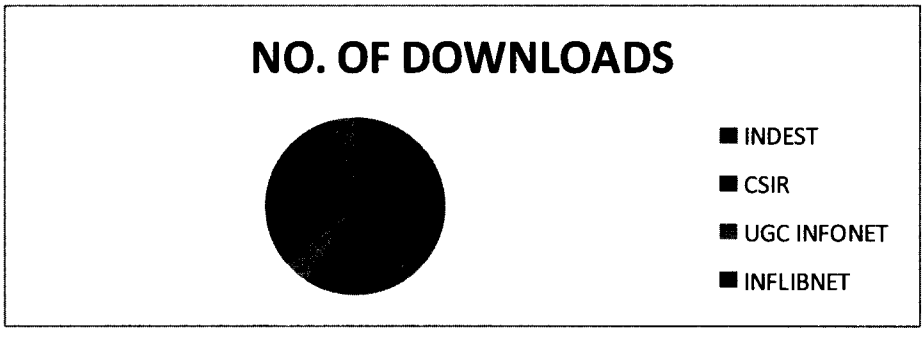
Each of these consortia provides both content and connectivity. They provide a set of electronic resources that are valuable and needed, usually by assembling these resources on a common website. They also provide connections and workstations that can access the Internet and all the services that are available there. Details of resources subscribed and accessible to the Core members of the consortium are given in Table 3



	INDEST	CSIR	UGC INFONET	INFLIBNET	VIVA
Full text	14	10	18	17	39
Statistical database	5	4	10	8	6
Bibliographic database	6	7	28	11	19

7. Usage Analysis

With a large pool of resources available in the consortium mode, it is necessary to assess the impact of the consortium. The impact is measurable on different parameters like revenue saving, usage in terms of downloads and contribution in international journals etc. The table 4 shows No. of downloads by different consortia and the data reflects increase in usage of various resources by downloading full text articles by different categories of institutions amongst the core members.



The consortium with its collective strength of participating universities, has attracted highly discounted rates of subscription coupled with most favourable terms of agreement. 'Cost Recovery' and 'Average Cost of article per download' can be used effectively to judge cost effectiveness of e resources.

8. Summary and Conclusion

It has been observed that the library consortium activity is the rejuvenated new face of the traditional concept of library resource sharing. Needless to say, that majority of the information in originated in digital form and it has been observed that there is an increasing trend in adding digital resources in the library. The libraries should focus on the users need and based upon the library collection should be developed libraries should not run blindly after the digitization and digital resources

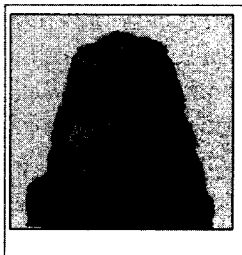
The present scenario has made a visible impact resulting in many institutions coming willingly and joining hands in forming consortia. Consortium has triggered remarkable increase in sharing of both print and electronic resources amongst participating library. Library consortia can provide a lower cost method of delivery of scholarly journal articles. Thus overall benefit is extended to academic community especially to the higher education system.

Though consortia efforts are time consuming and difficult to build and sustain they help libraries to achieve more collectively than they could accomplish individually The age of library consortia is at the doorsteps to prove the library cooperation locally, regionally, notionally and internationally. These arrangements are like concentric rings city, metropolitan area state region, national and international. For each library anyone level may be more important than the others depending upon the mission and the nature of the institutions. Libraries need reengineering of their processes and procedures and should aggressively participate in consortium

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Towards the Design of Tamilnadu Medical Library Consortia (TNMEDLIBCON): *A Proposal*

Ravi Sankar, G **Ramesh Babu, B**

Abstract

Medical libraries play a crucial role in disseminating knowledge to the medical community. The major objectives of this paper are to survey the Medical Educational Institutions in Tamil Nadu which are opting for consortia initiatives; to examine the reasons for joining consortia; to identify the constraints in joining consortia; and to create awareness among the LIS professionals about consortia. Based on the survey results the authors proposed a prototype model of library consortia for medical libraries in Tamil Nadu and named as TNMEDLIBCON. The organization structure, the planning and functioning of the corsortia has been explained.

Keywords : Medical Libraries, Library consortia, ICT, TNMEDLIBCON

1. Introduction

Medical libraries play a crucial role in disseminating knowledge to the medical community. Most of the medical colleges have teaching hospitals as appendages. These hospitals do not have a separate library. Hence, a medical college library is the main source of information for the students, teachers and clinical staff working in various specialties. No medical doctor, whether a general practitioner or a specialist, can adequately treat a patient without being informed of new views, new explanations, new treatments procedures, new theories and new approaches in medicine and allied subjects[1]. In order to meet the demand for medical information, the National Medical Library (India) makes the medical information effectively accessible for use in medical education, research, health care and administration[2].

A medical library maintained in a hospital premises contain a collection of print and online resources on medicine and allied health issues to serve the information and research needs of doctors, nurses, patients and staff. It is usually managed by a librarian. The primary purpose of such a library is to provide scholarly information to support health care, education and research conducted at these institutions. The mission of medical libraries is to acquire information, organise them to make it available and preserve it. [3]

2. Importance of Consortia among Medical Libraries

Resource sharing has been one of the fundamental principles for supporting library services, but the object of such sharing has changed over the years. Generally speaking, before the use of computers in libraries, resource sharing meant sharing materials like books and journal articles for interlibrary loan and creating a uniform list of serials. More recently, resource sharing has come to mean sharing computing resources since economies of scale apply. This practice has continued and even expanded to include the sharing of library automation systems and contracts for online databases.[4]

The libraries all over the world are forming consortia of all types and at all levels with an aim to take advantage of current electronic network to promote better, faster and cost effective ways of providing electronic resources to the information seekers. Therefore there is a need to form

a forum to help the users' community in all aspects and to provide a better platform is the basic concept of consortia.

3. Objectives of the study

- To survey the Medical Educational Institutions in Tamil Nadu which are opting for consortia initiatives.
- To examine the reasons for joining consortia.
- To identify the constraints in joining consortia.
- To create awareness among the LIS professionals about consortia.

4. Sample Size

The classification of responded medical institutions by university affiliation is shown in Table 1.

Table 1: Classification of Medical Institutions by University affiliation

Sl.No	Description	Frequency	Percentage
1	TNMGR Medical University	148	84.1
2	Annamalai University	4	2.3
3	Ramachandra Medical University	1	.6
4	Balaji University	3	1.7
5	SRM University	6	3.4
6	Vinayaga Mission University	6	3.4
7	Meenakshi University	3	1.7
8	Savitha University	3	1.7
9	MGR University	1	.6
10	Sri Jeyendra Saraswati University	1	.6
Total		**176**	**100.0**

The distribution of the questionnaires and the responses received from various categories of medical education libraries are presented in Table 2. It is observed from the Table 2 that there were 62 medical, 16 dental and 163 paramedical institutions at the time of survey. Out of these 176 have responded comprising of 42 medical, 13 dental and 121 paramedical institutions. The response rate is 73%, which is reasonably a good sample size for a questionnaire survey. Added to this, the investigator has personally visited most of the libraries and observed the library setup to supplement and complement the data collected by way of questionnaire. Further the investigator has also conducted unstructured interviews with the librarians and elicited certain clarifications.

Table 2: Number of Questionnaires Distributed and Responses Received

Sl. No.	Category	No. of Questionnaires Distributed	No. of questionnaire responded
1	Medical	62	42 (23.9%)
2	Dental	16	13 (7.4%)
3	Paramedical	163	121 (68.7%)
Total		**241**	**176 (73%)**

5. Analysis and Discussion

5.1. Year of Establishment of the Medical Education Institutions

The data in Table 3 present the distribution of libraries surveyed, by the year of establishment. It is found that only 3 medical colleges were established before Independence. Between 1976 and 1980, there were 4 medical and 2 dental colleges. After the formulation of the New Educational Policy, the establishment of medical education institutions by self-financing managements has grown and by 2007 there were about 241. Further it is observed that a maximum of 72(29.9%) institutions were established during 1991-1995. This is followed by 64(26.5%) institutions established between 1996 and 2000.

Table 3: Classification of Medical Education Institutions by Year of Establishment

Sl No	Period	Medical n=62	Dental n=16	Paramedical n=163	Total n=241
1	Before 1950	3(1.2%)	-	-	3(1.2%)
2	Between1951 and 1960	2(0.8%)	-	-	2(0.8%)
3	Between 1961 and 1970	5(2.1%)	-	-	5(2.1%)
4	Between 1971 and 1975	-	-	-	-
5	Between 1976 and 1980	4 (1.7%)	2(0.8%)	-	6(2.5%)
6	Between 1981 and 1985	4(1.7%)	-	6(2.5%)	10(4.2%)
7	Between 1986 and 1990	10(4.2%)	7(2.9%)	14(5.8%)	31(12.9%)
8	Between 1991 and 1995	5(2.1%)	-	67(27.9%)	72(29.9%)
9	Between 1996 and 2000	12 (4.9%)	4(1.7%)	48(19.9%)	64(26.5%)
10	Between 2001 and 2007	17(7.0%)	3(1.2%)	28(11.6%)	48(19.9%)
Total		**62(25.7%)**	**16(6.6%)**	**163(67.7%)**	**241(100%)**

5.2. Extent of Library Automation:

It is seen in Table 4 that out of 176 libraries, 67 libraries (38.1%) are not automated. While 6.3% of libraries (11) are fully automated, on the other hand, 55.7% (98) are partially automated. Although about 163 libraries have computer infrastructure, only 109 libraries are either fully automated or partially automated.

Table 4 Status of Library Automation Vs Institutions

S No	Extent of Automation	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Fully Automated	2 (1.1%)	1 (0.6%)	8 (4.5%)	11 (6.3%)
2	Partially Automated	25(14.2 %)	8 (4.5%)	65 (37.0%)	98 (55.7%)
3	Not Automated	15(8.5%)	4(2.3%)	48(27.3%)	67(38.1%)
Total		42(23.9%)	13(7.4%)	121(68.8%)	176(100.0%)

5.3. Participation in Library Consortia

In the present digital environment, library consortia have gained momentum in developing countries like India in general and Tamil Nadu in particular. In India there exist consortia for academic libraries namely U.G.C. Infonet and INDEST for engineering libraries. But there are no active consortia for medical libraries, although HELLNET consortia for health science libraries and information network exists in Bangalore. There is no consortia in Tamil Nadu for medical libraries and therefore the respondent librarians were asked to state their awareness about the existence of library consortia.

Table 5 Awareness about Library Consortia

Sl No	Opinion	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Yes	42(23.9%)	13(7.4%)	115(65.3%)	170(96.6%)
2	No	0(0%)	0(0%)	6(3.4%)	6(3.4%)
Total		42(23.9%)	13(7.4%)	121(68.8%)	176(100.0%)

It is found from the Table 5, that a majority of the librarians 170 (96.6%) are aware about the library consortia. Further the respondents were asked to state their willingness to join consortia for medical libraries and responses are shown in Table 6.

Table 6 Willingness to join Library Consortia

Sl No	Opinion	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Yes	40(22.7%)	13(7.4%)	111(63.1%)	164(93.2%)
2	No	2(1.1%)	-	10(5.7%)	12(6.8%)
Total		42(23.9%)	13 (7.4%)	121(68.8%)	176(100.0%)

From the Table 6, it is found that 93.2% respondents are willing to join consortia. However 10 respondents of paramedical libraries and 2 medical libraries did not have any interest to join consortia. It is interesting to note that all the dental libraries are willing to join the Consortia.

The data in Table 7 analyses the reasons for joining consortia. It is observed that a majority of the librarians (155) felt that the main reasons for joining consortia are to *"saving in the cost of the journals"*, followed by *"to participate in inter library loan"* (154) as the first and second ranks respectively.

Table 7 Reasons for Joining the Consortia

Sl. No	Reasons for Joining the Consortia	Medical	Dental	Paramedical	Total	Rank
1	Participating in Inter Library Loan	37 (21.0%)	12 (6.8%)	105 (59.7%)	154 (87.5%)	2
2	Sharing of expertise	38 (21.6%)	10 (6.7%)	102 (58.0%)	150 (85.2%)	4
3	Saving the cost of journals	37 (21.0%)	13 (7.4%)	105 (59.7%)	155 (88.1%)	1
4	Co-operative catalogue	35 (19.9%)	11 (6.3%)	90 (51.1%)	136 (77.3%)	5
5	Co-operative collection development	35 (19.9%)	11 (6.3%)	107 (60.8%)	153 (86.9%)	3

Further responses were analysed in 5 point scale and the WAM value have been derived as shown in Table 8. Accordingly the first 3 reasons with WAM values are as follows:

- Saving the cost of the journals (4.48)
- Sharing the expertise (4.44)
- Participating in Inter library loan (4.33)

Table 8: WAM Test for Reasons for Joining the Consortia

Sl No	Reasons for Joining the Consortia	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree	WAM	Rank
1	Participating in Inter Library Loan	89 (445%)	65 (200%)	16 (48%)	4 (8%)	2 (2%)	4.33	3
2	Saving the cost of Journals	120 (600%)	30 (120%)	20 (60%)	3 (6%)	3 (3%)	4.48	1
3	Sharing of expertise	110 (550%)	45 (180%)	15 (45%)	1 (2%)	5 (5%)	4.44	2
4	Co-operative catalogue	46 (230%)	90 (360%)	34 (102%)	2 (4%)	4 (4%)	3.97	5
5	Co-operative collection development	38 (190%)	115 (460%)	17 (51%)	5 (10%)	1 (1%)	4.04	4

The reasons for not joining consortia, [though the number of libraries are minimum (12)], has been analysed and presented in Table 9. *"Inadequate staff and funds"* are the major reasons wherein all the 12 librarians expressed, followed by 10 librarians felt the *"lack of cooperation from the management"* is the another reason.

Table 9: Reasons for Not Joining the Consortia

Sl No	Reasons for Not Joining the Consortia	Medical n=2	Dental n=0	Paramedical n=10	Total n=12
1	Need more information on consortia	2 (16.7)	0	5 (3.1%)	7 (58.3%)
2	Lack of infrastructure	2 (16.7)	0	6 (3.4%)	8 (66.7%)
3	Inadequate funds	2 (16.7)	0	10 (83.3%)	12 (100.0%)
4	Lack of co-operation from management	2 (16.7)	0	8 (66.7%)	10 (83.3%)
5	Inadequate staff	2 (16.7)	0	10 (83.3%)	12 (100.0%)

From the analysis made in the foregoing pages, it is evident that there is consortia awareness among librarians of Medical Educational Institutions in Tamil Nadu. It is necessary to form consortium exclusively for medical education. Keeping the urgency in mind, it is proposed to design a model consortium among Medical Educational Institutions in Tamil Nadu. The model has been named as Tamil Nadu Medical Library Consortia (TNMEDLIBCON). The working of the model has been conceived from the experiences and earlier proposed models of consortia for public libraries[6], Sanskrit Vidyapeethas[7], National Institutes of Fashion Technology in India[8] and University libraries[9] and Engineering Colleges in Tamil Nadu[10] and Kerala[11]

6. Factors necessitating Consortia among Medical Libraries in Tamil Nadu

Although a large number of medical education institutions are functioning with qualified librarians, they are not fulfilling the necessary requirements with regard to information resources and other infrastructure facilities. In order to overcome the problems of medical libraries in Tamil Nadu and based on the survey conducted, wherein the librarians expressed a willingness to form medical library consortia, this study has proposed medical library consortia. In addition to the above, the following factors influenced medical libraries in Tamil Nadu towards consortia:

- Increase in prices of books and journals;
- Limited library budget;
- Cost of providing library services;
- Exponential growth of information in medicine;
- Inadequacy of information materials required for a single medical library;
- Increase in variety and degree of user needs; and
- Developments in information and communication technology[12].

7. Objectives of TNMEDLIBCON

The objectives of proposed TNMEDLIBCON are as follows:

- To promote sharing of resources among the medical education libraries in Tamil Nadu, through consortia for maximum use of resources and better facilities for users;
- To co-ordinate efforts for suitable collection development and reduce unnecessary duplication wherever it is possible;
- To enable each medical college library to provide its users access to the vast amount of information resources available with other medical colleges libraries under study;
- To develop a wide range of information services using latest information and communication technologies;
- To utilise the services offered at national level by NML, NIC etc. and to have access to variety of external resources such as MEDLARS/MEDLINE, BIOSIS, and Pub-MED etc;
- To evolve standards and uniform guidelines in techniques, methods procedures, hardware software and services and promote their adoption in the libraries; and
- To establish a referral centre for maintaining a central on-line union catalogue of books, serials and non-book materials of all the participating libraries.

8. Organisational structure of TNMEDLIBCON

TNMEDLIBCON has been proposed as distributed consortia, with the Tamil Nadu Dr.M.G.R. Medical University Library to act as the Nodal Centre. The other medical college libraries will collect, process and hold information on local computers, which will be linked with the Nodal Centre Library and also with one another. In addition to the advantages of its location, the Tamil Nadu Dr. M.G.R. Medical College Library has adequate funds, rich collection of current documents and adequate computer facilities. The Tamil Nadu Dr. M.G.R.Medical University has academic control over all the medical colleges and educational institutions and it also facilitates to improve the system for higher education and research.The Nodal Central Library will be linked to the National Medical Library (NML), New Delhi. The Nodal Centre Library will act as input and output centre of health information of the region. All the participating members will hold resources to share with one another.

The adhoc committee may consist the following:

- Principal/Head of the Institution — Chairman - 1
- Senior Faculty of the Nodal Centre — Member - 1
- Consortia Administrator — Member - 1
- Library and Information Science Expert — Member - 1
- System Analyst — Member - 1
- Librarians (Regional Centres) — Member - 5
- Librarian (Nodal Centre) — Convener - 1

The adhoc committee will be responsible to establish the consortia in one of the potential libraries identified. Further it will be responsible to establish the consortia in the nodal centre identified, after the evaluation of the magnitude of the library and other aspects of utility of ICT and other facilities. The Figure 1 shows the organisational structure of the proposed consortia for medical libraries in Tamil Nadu.

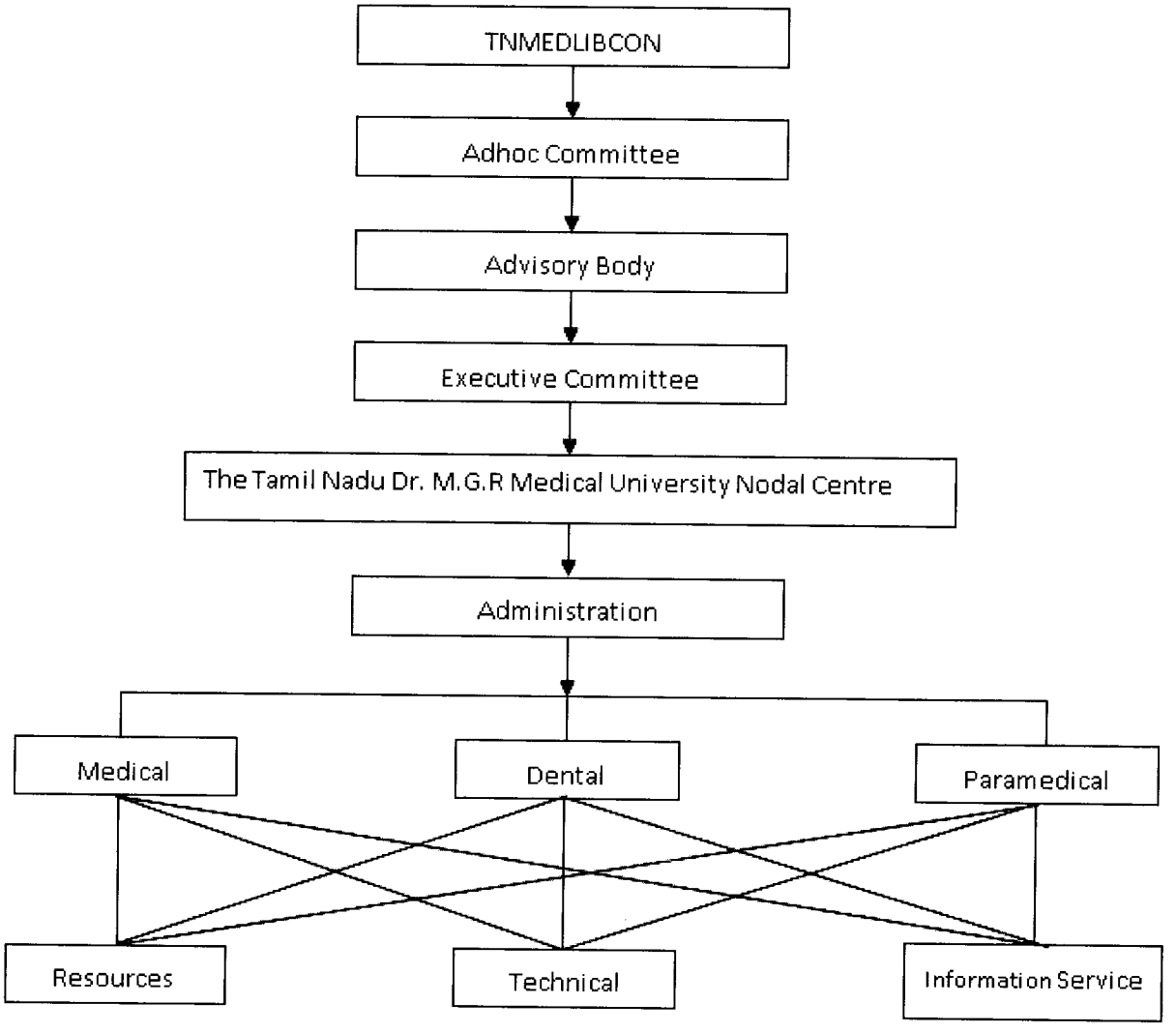


Fig: 1: Organizational structure of TNMEDLIBCON

8.1. Advisory Body

The advisory body may consist of 16 members. The Vice Chancellor of the Tamil Nadu Dr. M.G.R. Medical University shall be the chairman of the advisory body. To give proper participation to the heads of the institutions of participating libraries, the librarians from the participating institution shall be co-opted as the members.

• Vice-Chancellor	Chairman	1
• Experts in Consortia	Member	2
• Experts in LIS field	Member	2
• Representatives of the Heads of the institution from Participating libraries	Member	5
• Representatives of the Librarians from Participating libraries	Member	5
• Librarian of the Nodal centre	Convener	1

8.2. Executive Committee

After the establishment of the nodal centre, the executive committee will chalk out the implementation of the consortia in a phased manner. The executive committee comprises of the following members:

• Head of the institution (Nodal centre)	Chairman	1
• Representatives of librarians from participating libraries	Member	5
• Representatives of users	Member	3
• System Analyst at the Nodal Centre	Member	1
• Senior faculty members in the Nodal Centre	Member	2
• Librarian of the Nodal Centre	Convener	1

8.3. Working of TNMEDLIBCON

For the successful functioning of TNMEDLIBCON, all the participating libraries are required to develop the necessary infrastructure. First of all, they must computerise their library operations and create databases of their holdings. These would include adequate provision of computer systems with appropriate hardware and software, trained manpower and financial support. Secondly to avoid unnecessary duplication of the resources and the services, a central union catalogue of books, serials and non-book materials of all the participating libraries will be compiled by which all the participating libraries will have comprehensive collection in all subjects at their disposal and the user will also have an access to the collection of not only his/her library, but also other library collections in the consortia.

Participating libraries will have to follow certain procedures and practices without which, the resources held by them cannot be effectively and meaningfully shared. It will be quite advantageous if TNMEDLIBCON advocates the use of CCF so that records will be generated much faster and they can be inter-changed with any ISO-2709 based format in the world. AACR II could be used for cataloguing purposes and MeSH for producing standard subject descriptors. For

monitoring the system, there should be a Monitoring Committee, which would evolve policy guidelines after discussions with the concerned medical libraries. To ensure the success of such an innovative venture, the ICMR (Indian Council of Medical Research) which is taking care of the growth and development of medical research in the country, should come forward to provide the necessary financial support, guidance and the encouragement for this consortia. The state of Tamil Nadu should also provide the required finances for this establishment. The authorities of concerned medical colleges should also make a provision for a greater allocation towards the library budget to pave way for its success.

9. Conclusion

The main concept of Library Consortium for Medical Educational Institutions in Tamil Nadu is fertile one. If properly planned and implemented, it will certainly yield fruits. But the success of consortium like other co-operative efforts depends on the proper mix of enthusiasm, innovative thinking, caution and skepticism. The consortium co-operation is in reality a step towards inter-institutional collection development, where libraries pool shares of their funds for collection development into mutual commitments. The dictum, *"coming together is a beginning, work together is progress and sharing together is success"* is very apt to the library consortia in India, in general and Tamil Nadu, in particular. Therefore in the light of changing environment, all the Medical Educational Institutions in Tamil Nadu shall take immediate initiatives to join this consortium approach model, so that it will be able to access more number of e-resources at minimum cost.

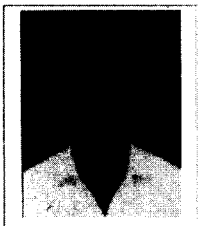
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Author's Profile



Dr.G.Ravi Sankar holds, M.A., M.Lis and Ph.D., degrees in Library and Information Science in Madras Universities. Currently he is working as a Deputy Librarian in the Tamil Nadu Dr. M.G.R. Medical University, Guindy, Chennai-32.He has published articles in festschrifts and conference proceedings and attended many conferences, seminars and workshops. His PhD Thesis Title is "ICT Facilities and Services in Libraries of Medical Education Institutions in Tamil Nadu: An Analytical Study" under the supervision of Dr B. Ramesh Babu, Professor, Department of Information Science, University of Madras, Chennai
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Dr. B. Ramesh Babu is former **Professor** in the Department of Library and Information Science, University of Madras. He has been awarded **Dr. S.R. Ranganathan Memorial Gold Medal** from the University of Mysore for the First Rank in M. Lib. Sc., degree. He has been awarded **Commonwealth Fellowship for Post-Doctoral research** for the year 1999/2000. He has visited United Kingdom, France, Bangladesh and Nepal, South Korea, Muscat, Thailand, and delivered lectures in LIS schools there. He has been awarded **C. D. Sharma Best Paper Award** by the Indian Library Association for the Year 1999 and **READIT 2001 Best Paper Award** by the IIT, Madras, IGCAR and MALA at the National Conferences. He has also been conferred **Prof. Parvathaneni Gangadhara Rao Memorial Award for 2007** by the Potti Sreeramulu Telugu University, Hyderabad for the significant contributions in the field of Library and Information Science. He has also been conferred the **Best Teacher and Researcher Award by the National Association of Indian libraries (NAIL) for the year 2008**. He has been awarded **IATLIS-MOTIWALE Best LIS Teacher Award for 2011** by the Indian Association of Teachers of Library and Information Science. He has prepared **course materials** for **Distance Education in LIS** for various universities in India. Also serving as Member of Editorial Board for national and international journals. **Twenty five candidates were awarded Ph. D degree** under his guidance. He is the **Life Member** in ILA, IASLIC, IATLIS, MALA, APLA, ALSD, FIC, MULISSANet, and TLA.
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Use and need of e-Resources by Users Community at BNMIT Library & Information Centre: *A Case Study*

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Abstract

This paper presents the scenario of usage of e-Resources in an Engineering college environment on the expectation of academic Libraries in terms of functionality of their resources, utility, application. Usage of IR as shown interesting statistics to improve further developments of the services to the users and e-Resources in the changing environment. This paper is highlighting impact on institutional repository in terms of institutional collections, like e-Books, e-Journals, and question papers and so on.

Keywords : E-resources, Use and Users study, BNMIT library

1. Introduction

We are aware of the fact that huge amount of information is being published every next second through various sources and applications of information technology in several media such as both print and electronic. The Information communication technology brings new dimension in the field of information generation, information processing and dissemination. It opens the doors of knowledge by crossing all the barriers such as time distance, region, language and so on and it brings the universe of information on the finger tips. The rapid growth of electronic resource in libraries are experiencing issues related to managing e-resources are more complex than those for print resources. A process that consisted of selecting, evaluating, approving, licensing, billing and registering access and is accompanied by a series of technical aspects, such as usability, performance, access technologies, public interfaces, troubleshooting and usage statistics. The librarians who deal with electronic resources extremely challenging: the amazing growth of electronic collection, the increasingly central role that these collections play an vital role in libraries, the large budgets that are involved in their acquisition, the endless variation in the packages offered by the hundreds of players in the market (such as publishers, interface providers, and subscription agencies), the frequent changes in business models, and, above all, the lack of automated tools to deal with the complexity of e-resource management.

2. About BNMIT

B N M Institute of Technology is one of the leading technical institution in Karnataka under the VTU umbrella. The Library has a total collection of 25000 Books, 5000 titles, and audio visual facilities and comprising E-resources as per the AICTE norms. BNMIT has 6 disciplines in Undergraduate programme and 4 disciplines in PG Programme in addition to MBA programme. From a humble beginning the BNM group of Educational Institutions is now leaders of repute in the field of Education, providing the most modern methods while maintaining the rich cultural heritage of a great Indian tradition. Education starts at BNM offering Montessori system to Tiny Tots at the tender age of two and half years in the BNM Montessori House. BNM has an amalgam of Educational Institutions: BNM Primary (State Syllabus), BNM High School (State Syllabus), BNM Public School (Central Syllabus), BNM PU College, BNM Degree College and BNM Institute of Technology.

3. E-Resources at BNMIT

To provide access to physical collections, especially unique items collections, though these

may not be physical holdings to manage collections and licenses, though this may be partly subscriptions to various e-resource contents. Among the things academic libraries are increasingly doing for themselves is building and maintaining institutional repositories -- collections of scholarship and records created at BNMIT using DSpace will support research in socially intelligent computing arising from human-computer partnerships that range in scale from a single person and computer to an Internet-scale array of machines and people. The program seeks to create new knowledge about the capabilities these partnerships can demonstrate new models of collective, social, and participatory computing, and new algorithms that leverage the specific abilities of massive numbers of human participants.

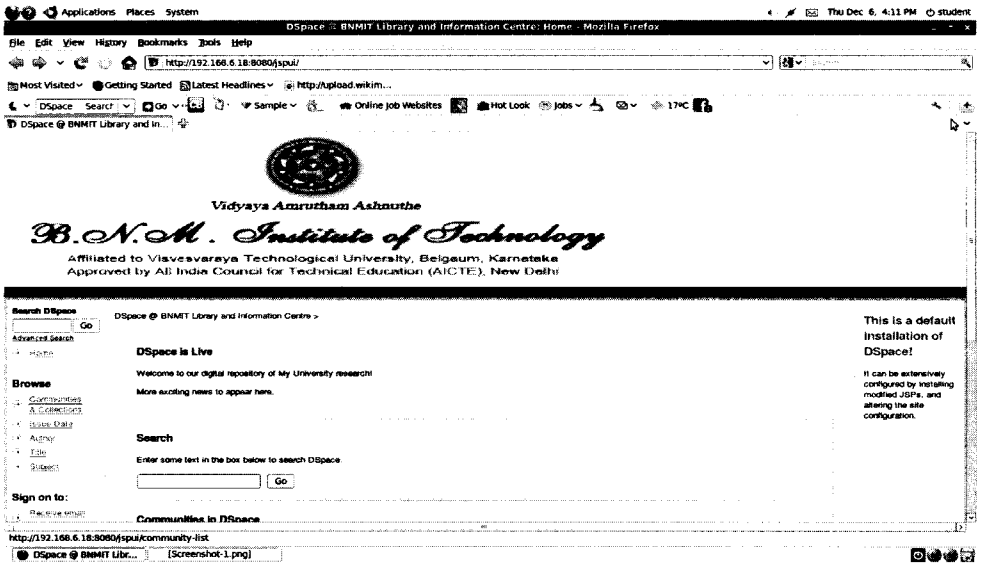


Figure 1. Main page of IR at BNMIT Library

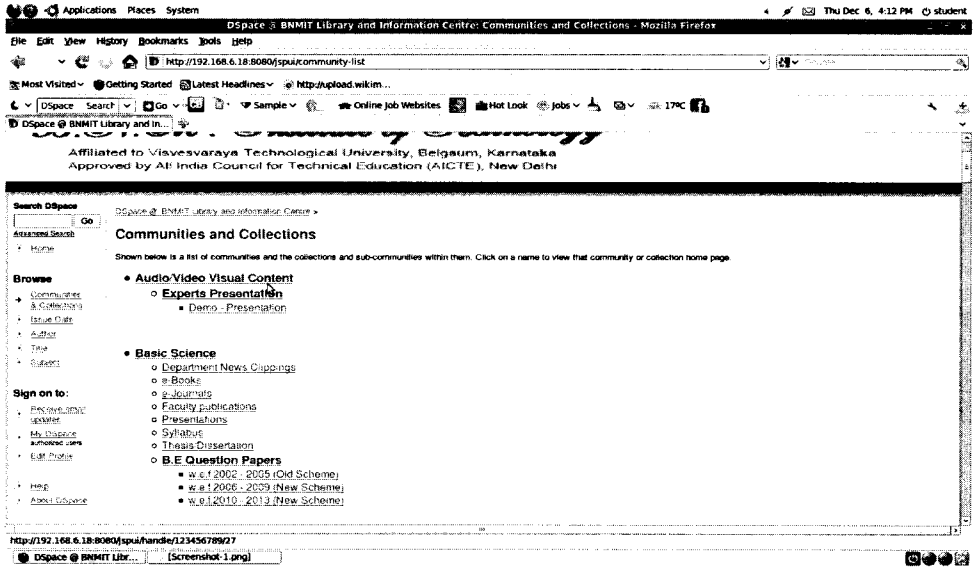


Fig.2 Browsing of Communities

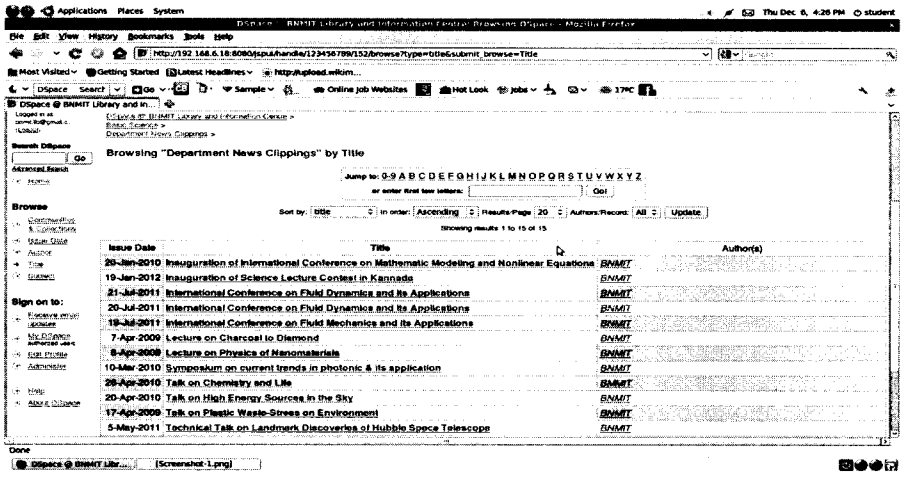


Figure 3. Browsing e-news clippings at BNMIT IR

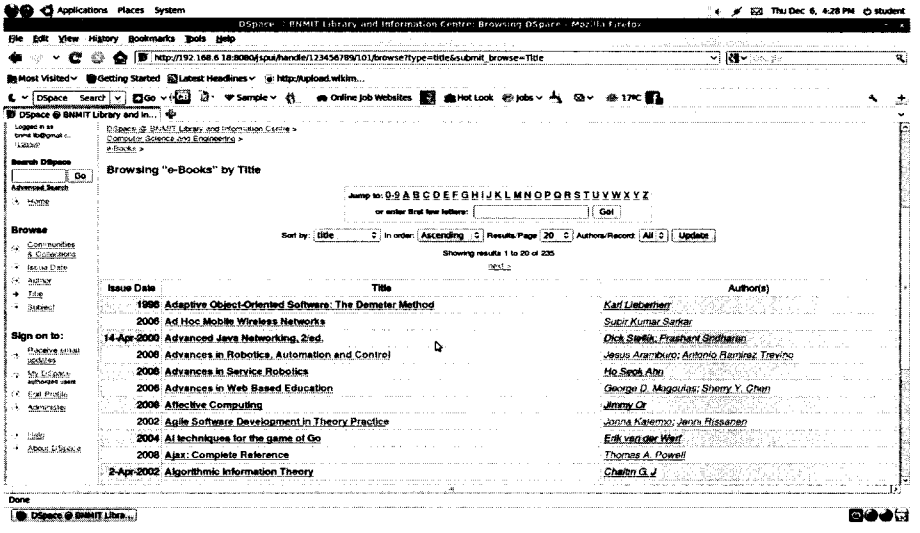


Figure 4. Browsing e-Books at BNMIT IR

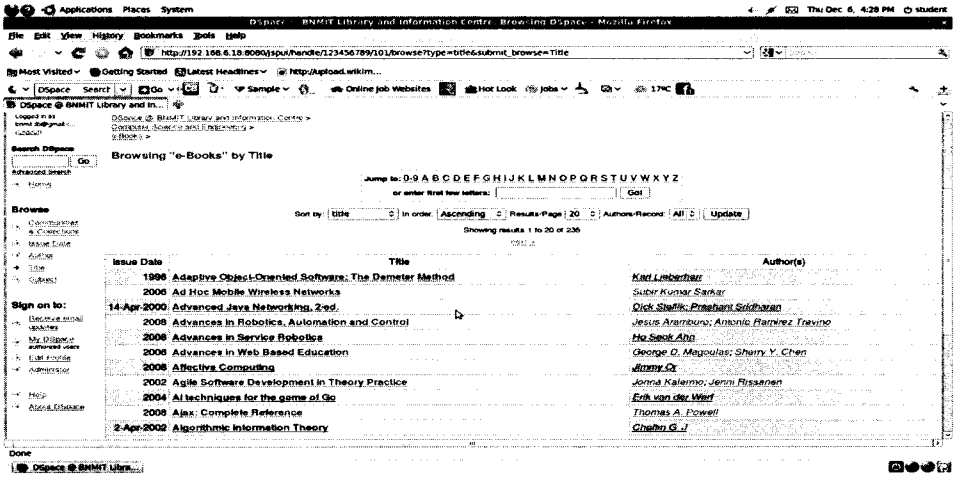


Figure 5. Browsing e-Question papers by Title at BNMIT IR

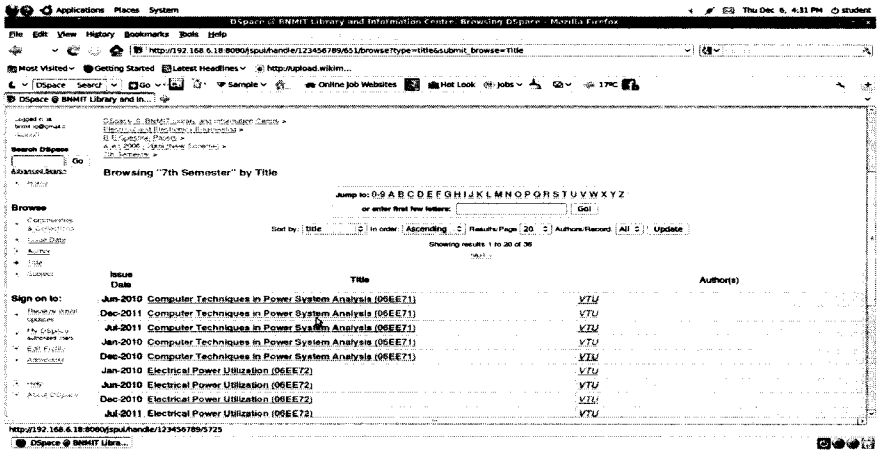


Figure 6. Browsing IEEE e- Journals at BNMIT Library

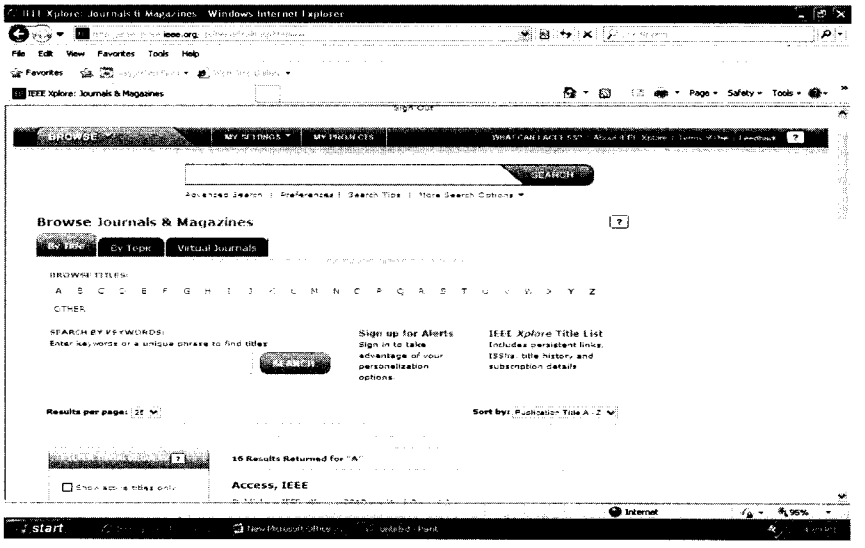


Figure 7. Browsing IEEE e-books at BNMIT Library

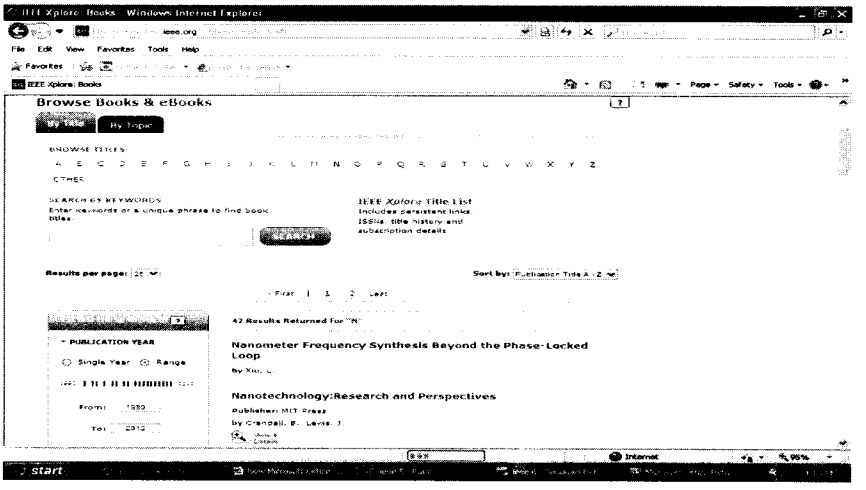


Figure 8. Browsing e- Journals by Title at BNMIT Library

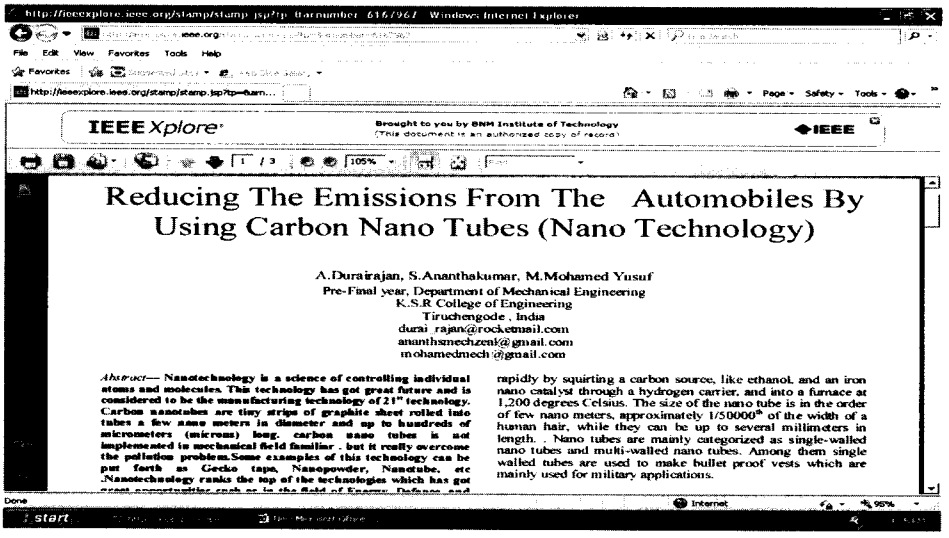


Figure 9. Downloading of full-text e-Journals by Title at BNMIT Library

Table 1. Statistics of Institutional Repositories at BNMIT Library as on 10-01-2013

Dept.	e-Books		e-Journals		Handbooks		Question Papers		Fac.	Pro. Rep.	News Clip.	Syllabus
	Downloaded	Uploaded	Downloaded	Uploaded	Downloaded	Uploaded	Scanned	Uploaded	Pub.			
CSE	235	235	09	09	06	06	700	700	08	0	10	3rd - 8th
ECE	155	155	09	09	09	09	726	726	05	0	11	3rd - 8th
EEE	120	120	07	07	16	16	592	592	12	09	09	3rd - 8th
ISE	01	01	0	0	0	0	651	651	0	0	10	3rd - 8th
TCE	24	24	0	0	01	01	689	689	01	0	04	3rd - 8th
Basic Sc.	35	35	34	34	0	0	283	283	02	0	15	1st - 2nd
Civil	08	07	0	0	0	0	0	0	0	0	01	-
Mech.	14	14	06	06	0	0	59	59	0	0	02	3rd - 8th
M.Tech (CSE)	0	0	0	0	0	0	44	44	0	0	0	1st - 4th
M.Tech (ECE)	05	05	0	0	0	0	44	44	0	0	0	1st - 4th
M.Tech (EEE)	0	0	0	0	0	0	5	5	0	0	0	1st - 4th
MBA	03	03	0	0	0	0	687	687	0	0	15	1st - 4th
Gen.	06	06	0	0	0	0	0	0	0	0	68	-
Placmnt	10	10	0	0	0	0	0	0	0	0	06	-
Total	616	616	65	65	32	32	4480	4480	28	9	151	11

The usage of IR at BNMIT shows significantly from users ranging from students to faculty. The new availability of huge amounts of data, along with the statistical tools to crunch these numbers, offers a whole new way of understanding the world.

4. NPTEL

NPTEL (National Programme on Technology Enhanced Learning) is a joint initiative of IIT and IISc, Bangalore. NPTEL provides E-learning through online Web and Video courses in Engineering, Science and humanities streams. The mission of NPTEL is to enhance the quality of engineering education in the country by providing **free online courseware**. The video lecture content in Hard Disk may also be procured from IIT Madras, Chennai by paying Media and distribution expenses only. This facility can be extended across the campus with high Quality MPEG4 lectures through local streaming for any number of users without depending on Internet. Also, it can be made available in Hostels, R&D Labs, etc. The bandwidth problem will not arise to download nearly 1.2 Terra Byte of data. The various disciplines under the scheme are as follows:-

Aerospace Engineering (51)	Environmental Science (5)
Atmospheric Science (7)	General (2)
Automobile Engineering (2)	Humanities and Social Sciences (60)
Basic courses(Sem 1 and 2) (36)	Management (46)
Biotechnology (28)	Mathematics (68)
Chemical Engineering (94)	Mechanical Engineering (154)
Chemistry and Biochemistry (59)	Metallurgy and Material Science (59)
Civil Engineering (125)	Mining Engineering (2)
Computer Science and Engineering (89)	Nanotechnology (14)
Electrical Engineering (76)	Ocean Engineering (29)
Electronics & Communication Engineering (91)	Physics (75)
Engineering Design (12)	Textile Engineering (28)

5. Conclusion

The concepts of Digital and Virtual libraries are actually services added to the traditional libraries wherein the resources which can only be utilized with computers. We hope digital libraries will coexist with traditional libraries whether within them or as separate entities. However the role of professionals will be drastically changed in digital environment .Digital libraries have customers instead of users and provide pull and push information delivery methods. Range of electronic resources is huge growing .The type, quality and usefulness varies enormously.The strengths/weaknesses and support needs must be considered for sustainable use.Many useful programmes and partners that can help with access to resources

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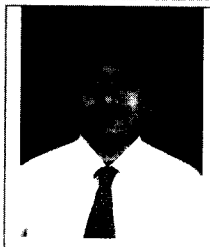
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Use of E-Journals by Students of Bio-Science Department at Kuvempu University: *A Study*

Shreedhar .S **Santosh Kumar K.T.** **Shubha Kumar** **Sangeetha** **Seema**

Abstract

The present study examined the use of e-journals by the Bio-Science students of Kuvempu University. A questionnaire was prepared to draw opinions from the users of e-journals. The responses were gathered from 100 users. The survey results provided information about the e-journals usage, purpose of use, benefits of using e-journals, influence of e-journals on individual academic efficiency, views regarding the unique features of e-journals, and problems faced by the users while accessing e-journals.

Keywords : ICT, Information Sources, E-journals, Kuvempu University.

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Use of Electronic Information Resources in University Libraries of Tirupati (A.P): *An Analytical Study*

Konappa, D **Chandran, D** **Srinivaslulu, R**

Abstract:

The present study has been undertaken with an attempt to evaluate the use of electronic resources made available in the Tirupati (A.P) University Libraries under the UGC- INFONET E-Journals / Digital Library Consortium of UGC/INFLIBNET amongst the P.G students of Science and Technology with special reference to Sri Venkateswara University, Sri Padmavathi Mahila Viswa Vidyalayam, Acharya N.G. Ranga Agricultural University and Rastriya Sanskrit Vidyapeeth which represent truly population. For that purpose, survey method has been adopted by the investigators, which comprises of administration of questionnaire, observation of the participants, and interview of some of the participants for knowing the opinion of the respondents in respect of use of electronic resources (e-journals/e-books/databases) for their academic and research activities.

Keywords : ICT, Electronic resources, Use and User study, University libraries.

1. Introduction

The significant developments in the field of Information and Communication Technology (ICT) have created revolutionary changes in all fields of knowledge. Libraries, being the reservoirs of knowledge, are no exception to this development. The society and environment around the libraries are changing and getting altered. As a result of information explosion users are getting access to vast amount of information. In this information explosion era, libraries play a pivotal role in preserving and serving the information requirements of the users. In the present scenario, libraries are the main facilitators in the scholarly communication system. The communicated information has been selected, acquired, processed, stored and retrieved by the library for current use and for prosperity. Therefore, the library is a place where books and other sources of information kept for teaching, learning, research and extension activities.

Electronic information resources are diminishing the central role of traditional libraries. Librarians need to accept their responsibilities as information specialists in the new paradigm. Due to information explosion, the traditional library services such as reference service and selective dissemination of information need to be supplemented by selective elimination of information and the evaluation of information to separate quality information from junk. This change has brought libraries and librarians to the threshold of a new era.

2. Objectives of the Study

- To study the present situation of the use of Electronic Information Resources (EIRs) available through the UGC-Infonet Programme in the Four University Libraries of Tirupati.
- To determine the level of Postgraduate student's frequency of access to Electronic Information Sources
- To study the different purposes of using EIRs.
- To study the Methods of learning to use EIRs in university libraries.
- To identify the challenges faced in the use of Electronic Information Sources

- To suggest suitable recommendations to provide the EIRs and services for the benefit of users.

3. Scope and Limitations of the Study

The scope of the present study is limited to study the use of electronic information resources in the university libraries of Tirupati. The present study has limited to four Universities, viz. Sri Venkateswara University, Sri Padmavathi Mahila University, Acharya N.G. Ranga Agricultural University and Rastriya Sanskrit Vidyapeeth. The population of this study consists of P.G. Students of Science and Technology.

4. Methodology

The survey method was adopted for the present study and a questionnaire was used as a data collection tool. The majority of the questions were objective type designed keeping the objective of the study in view. The questionnaire was distributed to all the P.G. Students of Science and Technology. In total 837 questionnaires were distributed among the P.G. Students of Science and Technology and responded with the response rate is 636 (75.99%), and asked of fill-up the same by allowing sufficient time.

5. Data analysis

A total 636 out of 837 regular Postgraduate students are selected four universities they were taken for the study of Tirupati, and responded with the response rate is 75.99%, which is presented in Table 1

Table 1 Distribution of Questionnaires and Responses

Sl. No	Universities	PG students	Distributed	Received	Percentage
1	SVU	1856	372	256	68.82
2	RSVP	524	104	87	83.65
3	SPMVV	981	196	171	87.24
4	ANGRAU	827	165	122	73.94
Total		**4188**	**837**	**636**	**75.99**

As already noted, the total sample of users covered in the study is 636, comprising 75.99% postgraduate students. University wise 87.24% of the Sri Padmavathi Mahila Viswa Vidyalayam, 83.65% of the Rastriya Sanskrit Vidyapeeth 73.94% of the Acharya N.G. Ranga Agricultural University and remaining 68.82% Sri Venkateswara University postgraduate members.

Table 2 Classification of Respondents by Sex

S.No	Universities	Male		Female		Total	
		No.	%	No.	%	No.	%
1	SVU	164	64.06	92	35.94	256	40.25
2	RSVP	56	64.37	31	35.63	87	13.68
3	SPMVV	0	0.00	171	100.0	171	26.89
4	ANGRAU	83	68.03	39	31.97	122	19.18
Total		**303**	47.64	**333**	52.36	**636**	**100**

Hence this result shows the sex wise distribution of respondents. Of the total 636 respondents surveyed, 303 (47.64%) are male and about 333 (52.36%) respondents are female. It can be inferred from table 2 that female respondents dominate over male respondents.

Table 3 Library Collection Development of University Libraries

S.No	Library Collection	SVU	RSVP	SPMVV	ANGRAU	Total
1	Books	355000	88871	124896	90125	658892
2	Journals	325	175	256	276	1032
3	Thesis/Dissertations	3086	2000	1782	9064	15932
4	Reports/Patents/Standards	251	0	126	30	407
5	CD-ROM Databases	-	-	630	11536	12166
6	Microfilm/Microfiches	1500	100	276	-	1876
7	Audio/Video Sources	675	12	237	-	924
8	On-line Databases/E-Journals	9000	-	6000	2965	17965
Total		**369837**	**91158**	**134203**	**113996**	**709194**

It is obvious, that the total Book collection of Sri Venkateswara University Library being the highest while University clearly sweeps its strength in Journal collection by subscribing 325 scientific journals and also 9,000 of online databases (e-Journal) are subscribed.

Sri Venkateswara University Library has collecting the 3086 of theses and dissertations and 675 various Audio/Video Sources. It is pathetic find from the table that, the CD-ROM products, a major information storage and retrieval sources in the Internet era. Acharya N.G Rang Agricultural University (11,536) and Sri Padmavathi Mahila Viswa Vidyalam (630) are the only libraries having CD-ROM Information Technology products. Microfilm/Microfiche readers have in Sri Venkateswara University (1500), Sri Padmavathi Mahila Viswa Vidyalam Library (276) and also Reports/Patents/Standards are collecting of Sri Venkateswara University (251), Sri Padmavathi Mahila Viswa Vidyalam Library (126) and Rasthriya Sanskrit Vidya Peetha Library (30).

Table 4 Frequency of use of EIRs

S.No	Frequency	SVU		RSVP		SPMVV		ANGRAU		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%
1	Everyday	82	32.03	39	44.83	57	33.33	31	25.41	209	32.86
2	Twice a week	56	21.88	21	24.14	39	22.81	37	30.33	153	24.06
3	Once in a week	43	16.80	12	13.79	31	18.13	26	21.31	112	17.61
4	Twice a month	35	13.67	8	9.20	24	14.04	14	11.48	81	12.74
5	Once in a month	21	8.20	5	5.75	10	5.85	7	5.74	43	6.76
6	Occasionally	5	1.95	0	0	3	1.75	4	3.28	12	1.89
7	Never use	14	5.47	2	2.30	7	4.09	3	2.46	26	4.09
Total		256	100	87	100	171	100	122	100	636	100

Table 4 is general understanding that the frequency of users' visit to library depends upon the resources. Organization maintenance and value added services that it provides. Table 4 shows that the majority of 209 (32.86%) respondents are use of electronic information resources of an everyday. Also 153 (24.06%) of the respondents use EIRs on twice a week and 112 (17.61%) of the respondents are using the EIRs once in a week, 81 (12.74%) use EIRs on twice a month and 43

(6.76%) of use it once in a month. Only 12 (1.89%) of the respondents respectively use it occasionally. It is interesting to note that 26 (4.09%) of the respondents are never use of electronic information resources.

Table 5 Experience in EIRs use

S.No	Experience	SVU		RSVP		SPMVV		ANGRAU		Total	
		No.	%	No.	%	No.	%	No.	%		
1	Less than year	18	7.03	6	6.90	9	5.26	5	4.10	38	5.97
2	Between 1 and 2 years	69	26.95	14	16.09	29	16.96	12	9.84	124	19.50
3	Between 2 and3 years	56	21.88	22	25.29	44	25.73	38	31.15	160	25.16
4	More than 3 years	113	44.14	45	51.72	89	52.05	67	54.92	314	49.37
Total		**256**	100	**87**	100	**171**	100	**122**	100	**636**	100

Table 5 summarizes the situation for all the respondents. It is seen that 49.37% respondents have been using EIRs for More than 3 years and 25.16% respondents have between 2 and3 years of experience in using EIRs. The table also depicts that only 19.50% of the respondents started using the EIRs since between 1 and 2 years and few respondents (5.97%) have less than a years of experience. Overall, respondents had good amount of experience to exploit optimally the electronic sources and services.

Table 6 Location of computer use for EIRs

S.No	Location	SVU		RSVP		SPMVV		ANGRAU		Total	
		No.	%	No.	%	No.	%	No.	%		
1	Library	219	85.55	73	83.91	137	80.12	111	90.98	540	84.91
2	Computer centre in campus	176	68.75	43	49.43	89	52.05	61	50.00	369	58.02
3	Department	79	30.86	37	42.53	68	39.77	44	36.07	228	35.85
4	Other places	95	37.11	49	56.32	91	53.22	39	31.97	274	43.08

The different locations of access for EIRs are depicted in Table 6. About 84.91%, of the respondents indicated that they have access to the computer and use it for EIRs also access it from library. While 58.02% access the EIRs through the facility at campus computer centre. The respondents who chose 'other places' mainly referred to it as their home and private cyber café accessed EIRs from this location were 43.08%. Only 35.85% of the respondents indicated that they use it from their departments.

Table 7 Purpose of using EIRs

S.No	Purpose of using EIRs	SVU		RSVP		SPMVV		ANGRAU		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%
1	Ongoing study work	162	63.28	56	64.37	121	70.76	68	55.74	407	63.99
2	Preparation of notes	243	94.92	79	90.80	162	94.74	109	89.34	593	93.24
3	Project/Dissertation	126	49.22	42	48.28	89	52.05	57	46.72	314	49.37
4	Writing a article for publication	46	17.97	17	19.54	45	26.32	59	48.36	167	26.26
5	For seminars	62	24.22	19	21.84	39	22.81	64	52.46	184	28.93
6	Curriculum design	58	22.66	16	18.39	19	11.11	21	17.21	114	17.92

Majority of the respondents (93.24%) reported that they use electronic information sources for the purpose of Preparation of notes. About 63.99% of the respondents use electronic information sources for the purpose of "Ongoing study work". Also 49.37% of the respondent's use of electronic information sources for their "Project/Dissertation work" and 28.93% of the respondents are using electronic information sources for the purpose of "Attending seminars". About 26.26% of the respondents use electronic information sources for the purpose of "Writing a article for publication" and only 17.92% of the respondents use the same for "Curriculum Design".

Table 8 Methods of learning to use EIRs

S.No	Methods	SVU		RSVP		SPMVV		ANGRAU		Total	
		No.	%	No.	%	No.	%	No.	%		
1	Self study (reading books/articles, tutorials	209	81.64	69	79.31	132	77.19	68	55.74	478	75.16
2	With the assistance of collegues/friends	221	86.33	65	74.71	126	73.68	87	71.31	499	78.46
3	Courses offered by institution/college	112	43.75	49	56.32	91	53.22	52	42.62	304	47.80
4	By attending formal courses (paid, official training)	98	38.28	41	47.13	72	42.11	63	51.64	274	43.08
5	Guidance from library staff	26	10.16	12	13.79	19	11.11	21	17.21	78	12.26

According to their responses, it was found that learning with the assistance of colleagues/friends (78.46%) and Self study (75.16%) is the most popular methods of electronic information sources learning among the respondents. It was followed by 47.80% of the respondents who learnt to use electronic information sources through courses offered by their institutions. Another 43.08% respondents learnt by attending formal course, either paid or through official training. Guidance or skills offered by the library (12.26%) play a minor role. That does not mean that support from the library is regarded as unimportant.

Table 9 Use of specific types of Subject and allied areas EIRs

S.No	Use of specific types	SVU		RSVP		SPMVV		ANGRAU		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%
1	Subject specific information websites	219	85.55	65	74.71	126	73.68	87	71.31	497	78.14
2	International/Regional institution websites	209	81.64	69	79.31	132	77.19	68	55.74	478	75.16
3	E-Journals	164	64.06	56	64.37	121	70.76	68	55.74	409	64.31
4	E-Books	178	69.53	43	49.43	89	52.05	61	50.00	371	58.33
5	CD-ROM databases	115	44.92	47	54.02	91	53.22	69	56.56	322	50.63
6	Research project sites	112	43.75	49	56.32	91	53.22	52	42.62	304	47.80
7	Professional association websites	79	30.86	37	42.53	68	39.77	44	36.07	228	35.85
8	Online bibliographic databases	56	21.88	22	25.29	44	25.73	38	31.15	160	25.16

It is clear that, a majority of respondents (78.14%) of the higher education institutions browse the internet for their "Subject specific information websites" followed by 75.16% for "International/Regional institution websites" and 64.31% use the "E-Journals" similarly, 58.33% use the "E-books", while 50.63% use the "CD-ROM databases". 47.80% and 35.85% of the respondents use "Research project sites" and "Professional association websites" respectively. Only 25.16% of the respondents are use of "Online bibliographic databases".

Table 10 Use of different EIRs by the respondents

S.No	Different EIRs	SVU		RSVP		SPMVV		ANGRAU		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%
1	E-mail	52	20.31	15	17.24	39	22.81	18	14.75	124	19.50
2	Web	111	43.36	39	44.83	79	46.20	62	50.82	291	45.75
3	CD-ROM	44	17.19	14	16.09	11	6.43	11	9.02	80	12.58
4	Professional groups	35	13.67	17	19.54	35	20.47	28	22.95	115	18.08
5	IRC	14	5.47	2	2.30	7	4.09	3	2.46	26	4.09
Total		**256**	100	**87**	100	**171**	100	**122**	100	**636**	100

The above table indicated that 45.75%, of the respondents indicated that they have used the web. Also 19.50% of the respondents are used the e-mail. The respondents who chose 'Professional groups' mainly referred to use of EIRs. 12.58% and 4.09% of respondents used "CD-ROM" and "IRC" respectively.

Table 11 Problems encounter while using EIRs

S.No	Items	SVU		RSVP		SPMVV		ANGRAU		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%
1	Too few computers with internet facilities	219	85.55	65	74.71	126	73.68	87	71.31	497	78.14
2	Incessant power outage	209	81.64	69	79.31	132	77.19	68	55.74	478	75.16
3	Slow internet connectivity	164	64.06	56	64.37	121	70.76	68	55.74	409	64.31
4	Non-connectivity	56	21.88	22	25.29	44	25.73	38	31.15	160	25.16
5	Inability to use computer	115	44.92	47	54.02	91	53.22	69	56.56	322	50.63
6	Selecting search terms	112	43.75	49	56.32	91	53.22	52	42.62	304	47.80
7	Finding relevant information	79	30.86	37	42.53	68	39.77	44	36.07	228	35.85
8	Lack of IT skills	178	69.53	43	49.43	89	52.05	61	50.00	371	58.33

The above table showed that few computers with internet facilities were got 78.14% and also incessant power outage (75.16%) highest among the problems encountered by the respondents. More than half of the respondents (64.31% and 58.33%) are indicated to have slow internet connectivity and Lack of IT skills. This was followed by incessant power outage which was ranked at 910 (41.61%) while lack of IT skill was ranked lowest at 77 (3.52%). Similarly, 50.63% of the respondents are encounter the problem of Inability to use computer, while 47.80% of the respondents are encounter the problem of selecting search terms. 35.85% and 25.16% of the respondents are encountering the problem of "Finding relevant information" and "Non-connectivity of internet" respectively.

Table 12 Benefits of use of EIRs

S. No	Benefits of use of EIS	SVU		RSVP		SPMVV		ANGRAU		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%
1	Better access to information	215	83.98	71	81.61	135	78.95	109	89.34	530	83.33
2	Time saving	207	80.86	65	74.71	126	73.68	87	71.31	485	76.26
3	Decrease in use of post mail	162	63.28	56	64.37	121	70.76	68	55.74	407	63.99
4	Access to current data/information	164	64.06	57	65.52	124	72.51	65	53.28	410	64.47
5	Improved professional competency	209	81.64	69	79.31	132	77.19	68	55.74	478	75.16
6	Increased professional collaboration with distant colleagues	155	60.55	54	62.07	119	69.59	66	54.10	394	61.95
7	Access to comprehensive information	176	68.75	43	49.43	89	52.05	61	50.00	369	58.02
8	Decrease in the use of printed sources	127	49.61	47	54.02	91	53.22	69	56.56	334	52.52
9	Decrease in use of telephone calls	113	44.14	45	51.72	87	50.88	64	52.46	309	48.58

From the analysis it is evident that a large majority (83.33%) of the respondents got better access to information by using EIRs. Also 76.26% of the respondents got saved their time by using of EIRs. Again 75.16% of respondents are able to improve their professional activities due to the use of EIRs. Large majority of the respondents agreed to have the benefit of better access to current up-to-date information. The decrease in the use of postal mail was reported by 63.99% of respondents. More than half of the respondents (61.95% and 58.02%) indicated to have increased professional collaboration with distant colleagues, and better access to comprehensive information, respectively due to the use of EIRs. And also 52.52% and 48.58% of the respondents are stated that the use of EIRs decrease in the use of printed sources and decrease in use of telephone calls respectively.

Table 12 Satisfaction level of access to EIRs

S.No	Satisfaction level of access to EIS	SVU		RSVP		SPMVV		ANGRAU		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%
1	Highly satisfied	42	16.41	9	10.34	21	12.28	12	9.84	84	13.21
2	Satisfied	57	22.27	16	18.39	37	21.64	32	26.23	142	22.33
3	Neutral	113	44.14	45	51.72	87	50.88	64	52.46	309	48.58
4	Dissatisfied	26	10.16	14	16.09	17	9.94	9	7.38	66	10.38
5	Highly dissatisfied	18	7.03	3	3.45	9	5.26	5	4.10	35	5.50
Total		**256**	100	**87**	100	**171**	100	**122**	100	**636**	100

The respondents were asked to rate their overall satisfaction with the level of access to EIRs use on a five-point scale from 1 (Highly satisfied) to 5 (Highly dissatisfied).

The respondents are overwhelmingly positive about the level of access for the use of electronic information sources. A majority of the (84.12%) indicated they are moderately to highly

satisfied, whereas only 15.88% indicated dissatisfaction. It can be seen from Table 5.13 that 13.21% of the respondents indicated that highly satisfied with the access they have to EIRs. Followed by 22.33% of respondents were satisfied with the access to EIRs. Further, nearly half of the respondents (48.58%) were moderately satisfied whereas only 10.38% were dissatisfied and 5.50% of respondents were highly dissatisfied with the access they are having in using EIRs in their universities.

6. Major Findings of the study

- The total Book collection of Sri Venkateswara University Library being the highest while University clearly sweeps its strength in Journal collection by subscribing 325 scientific journals and also 9,000 of online databases (e-Journal) are subscribed.
- It is found that the majority of 209 (32.86%) respondents are use of electronic information resources of an everyday.
- Majority (84.91%) of the respondents indicated that they have access to the computer and use it for EIRs also access it from library.
- Majority of the respondents (93.24) reported that they use electronic information resources for the purpose of Preparation of notes.
- The survey found that learning with the assistance of colleagues/friends (78.46%) and Self study (75.16%) of the users, most popular methods of electronic information resources learning among the respondents.
- The study found that 58.33% of respondents are using the "E-books", while 50.63% use the "CD-ROM databases".
- The different EIRs are used by the respondents (45.75%) indicated that they have used the web.
- It can be inferred from the data that the majority of users do face problems of few computers with internet facilities and incessant power outage.

7. Conclusion

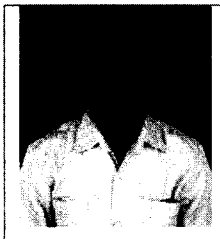
The use of EIRs respondents varied according to their program of study, the need to carry out postgraduate students to excel in their academic endeavour and versatility in the use of information technologies to search for information. The current trends in electronic environment, suggest a complete revolution in the status of collection development. As Information Technology (IT) advances, the emphasis of academic libraries has focused upon the intrinsic excellence of collection development suitable to electronic information resources.

The present study reveals that electronic information resources have a positive impact on library users. The future of the library and information services at academic libraries depends upon major factors, like, availability of manpower in adequate proportion, which continuously keeps updating its IT skills and determination of higher authorities in allocating appropriate recurring grants to procure, update and maintain IT infrastructure and electronic information resources.

The present study also makes an all out effort to present the profile of all the selected universities of Tirupati. Further, the study also attempts to make an assessment of the use of electronic information resources on library users. It can be seen that users' attitudes towards library resources are changing, and have realized the importance of electronic information resources.

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Use of Online Public Access Catalogue by Users of JSS Arts, Commerce and Science College Library, Mysore

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Abstract

The patrons in the library can search the bibliographic details and location of required documents online through OPAC. The search facility also apprises the user about the availability of each item in the library for circulation, including current status of individual copies of a title and its reserve status. It also shows titles on order displaying current status in acquisition. This paper examines Online Public Access Catalogue usage by the students and faculty of JSS College Library. A questionnaire-based survey on use of OPAC was conducted for JSS College Library on its categories of users such as faculty members and students, covering different disciplines such as Science, Social Science and Humanities. The paper discusses various aspects of OPAC such as awareness, frequency of use, purpose, satisfaction level etc. The results of the study show that 38.9% of the respondents used OPAC frequently. The study also found that majority of users consulted OPAC to know the availability and location of the requisite documents.

Keywords : Online Public Access Catalogue (OPAC), College Library, User, Use

1. Introduction

A library tends to be prominent for its organized rich collection and effective services. Organization of resources according to Islam (2011) is attained through cataloguing and classification. A large number of libraries in India have automated their operations and services using Information and Communication technology to fulfill their users' needs. Computerized catalogue is termed as Online Public Access Catalogue (OPAC). It is an information retrieval system characterized by short bibliographic records, mainly of books, journals, and audiovisual materials available in a particular library. This, coupled with a boolean search interface and a heterogeneous user population with diverse needs, presents special problems for subject searching by end users. To perform effective subject searching in the OPAC system requires a wide range of knowledge and skills. OPAC has revolutionised access to bibliographic information through search capabilities such as keyword searching, Boolean searching, truncation, proximity searching, and item identity number searching. These were not possible in the traditional catalogue. The development of Machine Readable Catalogue (MARC) in the 1960s made it possible to encode all areas of cataloguing record to be searchable.

2. Review of Literature

The first online public access catalogue was introduced in the libraries during early 1980s and researchers have been conducting usability studies of these catalogs ever since.

Kumar and Ranjana (2011) in their study investigated the use of Online Public Access Catalogue by the users at Guru Nanak Dev University Library, Amritsar (Punjab). A sample of 112 users was taken from various categories of users covering different disciplines such as Basic Sciences, Applied Sciences, Social Sciences and Humanities. The findings revealed that most of the users use the OPAC to locate the documents despite facing some difficulties. Kumar and Ranjana (2011) in their paper examined Online Public Access Catalogue usage by the students and faculty of Panjab University Library, Chandigarh. It was a questionnaire-based survey on use of OPAC was

conducted for A.C. Joshi Library on various categories of users such as faculty members, research scholars and postgraduate students, covering different disciplines such as basic sciences, applied sciences, social sciences, and humanities. Ansari, Mehtab Alam (2008) conducted a study with the objective establish the opinion of users with respect to the awareness and utilisation of, as well as their satisfaction level with, the use of the online public access catalogue (OPAC). Regarding results, sometimes users face problems of recall and precision. However, in some searches users are not able to find relevant documents on account of various factors. A study by Adedibu (2008) at the University of Ilorin investigates catalogue use by science students. A questionnaire was randomly distributed to 500 users in the 2004/ 2005 session; the preponderance of the respondents (90.1%) used the library catalogue to gain access the library stock; three-quarter (74%) claimed to know, how to use both the card catalogues and the OPAC. Rajput, Naidu and Jadon (2008) conducted a study on utilization and satisfaction of users about OPAC highlights the suggestions made by the user community for further improvement.

Novotny (2004) conducted a protocol analysis study to determine the usability of the Pennsylvania State University Library OPAC. Participants were to complete five structured tasks using the catalog and were to tell observers exactly what they were thinking while they completed each task. Sridhar (2004) carried out a comparative study of use of OPAC and card catalogue of the library at ISRO. The study examines for the declining use of OPAC by end-users and the associated problems like the present data highlighting, negligible use of Boolean operators and combination searches, too many records tagged, too broad descriptors, etc. Halcoussis et al (2002) conducted a usability study of California Institute of the Arts Library OPAC to identify causative factors determining catalog user success in finding information, user attitudes to catalog organization, and user ability to navigate the catalog. Chisman, Diller, and Walbridge (1999) conducted a usability study of the Washington State University Library OPAC. The library was preparing to implement a new version of the OPAC, and before it did so, wanted to test how usable the new catalog was, test whether or not people understood its features, and incorporate participants' feedback into the design of the new OPAC. They found that most of the OPACs problems were related to subject indexes and article databases; participants could not find and did not understand how to use these features.

Seymour and Large and Beheshti (1997) provide in-depth overviews on OPAC research from the mid-1980s through the mid-1990s. Much of this research has addressed system design and user behavior including: user demographics, search behavior, knowledge of system, knowledge of subject matter, library settings, search strategies, and OPAC systems. Shishido, Nami (1997) presented results of a survey conducted at two university libraries to identify difficulties that students face when they use online public access catalogs (OPACs). Interviews with a total of 190 students after they used OPACs indicate that the purpose of using the OPAC varies according to class level. For example, juniors are most likely to use an OPAC for a seminar class, and seniors for their theses. Also, 60% of respondents conducted known-item searches, while 40% conducted subject searches, and more than 30% of the latter were fairly satisfied with their search results.

3. Objectives of the Study

- To assess the awareness about existence of OPAC among faculty members and students of JSS Arts, Commerce and Science College, Mysore.
- To access as to what extent the users are using OPAC.
- To find the purpose and utilization of the OPAC service.

- To find the level of satisfaction of while using of the OPAC.
- To suggest the improving the effectiveness of the use of the OPAC.
- To know the difficulties encountered by the users while using OPAC.

4. Scope and limitations of the Study

The present study included students and faculty members of JSS College Library. The main aim of the study was to assess the purpose, knowledge and frequency of using OPAC and problems faced by users. A sample of 200 users was taken covering various disciplines such as Arts, Science and Humanities. The major limitation is that the present study covers only the OPAC users.

5. Methodology

A questionnaire was designed to gather primary data which was distributed among 200 users of JSS College Library during academic year 2011-2012. Proper care was taken to select the representative sample from each category proportionately on the basis of total strength of category concerned. A total of 190 out of 200 respondents completed and returned the questionnaires giving overall, a response rate of 95 per cent.

6. Results and Discussion

6.1. Discipline-wise distribution of Respondents

Table-1: Category-wise Respondents

Subject disciplines	Number of Responses from Faculty Members	Number of responses from Students	Percentage
Science	12 (54.54)	105 (62.00)	117 (61.58)
Social Science	5(22.73)	32 (19.40)	37(19.47)
Humanities	5(22.73)	31(18.50)	36(18.95)
Total	22(11.50)	168(88.04)	190(100.00)

The faculty and student wise users surveyed are shown in Table 1. Out of 190 responses received from the faculty members and students, 12 (54.54%) were from science discipline, 117 were from science discipline representing (61.5%). There are 37 and 36 responses received from social science and humanities disciplines representing 19.5% and 18.9% respectively.

Out of 22 questionnaires distributed to the faculty members 12 (54.54%) were from science discipline. There are 5 each was from Social science and Humanities disciplines representing 22.73% each. Out of 168 questionnaires distributed to the students 32 and 31 students were from social science and humanities disciplines representing 19.4% and 18.5% respectively. Remaining 105 (62%) are from Science discipline.

6.2. User awareness about Existence of OPAC

The users may or may not aware that the existence of the OPAC in their library. Therefore, the investigator felt it necessary to know the awareness about their college library. The responses received are analyzed and presented in Table-2.

Table-2: User Awareness about Existence of OPAC

Response	Faculty Members	Students	Total Percentage
Aware	11 (50.00)	98 (58.3)	109 (57.4)
Not Aware	10 (45.4)	64 (38.1)	74 (38.9)
Not Responded	1 (4.5)	6 (3.5)	07 (3.7)
Total	22 (11.5)	168 (88.4)	190 (100)

The Table 2 shows that out of 190 users 109 (57.4%) are aware about existence of OPAC in their library where as 74 (38.9%) expressed that they were not aware of the OPAC in their library. The category-wise data reveals that 11 (50%) teachers out of 22 were aware of the existence of OPAC against 10 (45.4%) teachers were not aware of the OPAC in their library. That who was not responded is only 1 (4.5%). Those students who were aware of OPAC are 98 out of 168 representing 58.3% of the total against 64 student respondents who were not aware of OPAC representing 38.1%. Those who have not responded are 6 (3.5%).

6.3. Use of OPAC

The OPAC is to be used to a great extent by teachers and students in the college library. Therefore, the investigator felt it necessary to know the extent of use of OPAC in the library by the users. The responses received are analyzed and presented in Table-3.

Table -3: Category-wise Opinion of Users about Using OPAC

Response	Faculty Members	Students	Total Percentage
Don't Use	8(36.3)	105(62.5)	113(59.4)
Use	12(54.5)	62(36.9)	74(38.9)
Not responded	2(9.1)	1(0.5)	03(1.6)
Total	22(100)	168(100)	190(100)

The Table 3 shows that out of 190 users 74 (38.9%) make use of OPAC where as 113 (59.4%) expressed that they do not make use of the OPAC. The category-wise data also reveal that the majority of the teachers i.e. 12 (54.5%) teachers out of 22 uses the OPAC against 8 (36.3%) teachers who do not use the OPAC. Those students who make use of OPAC are 62 out of 168 representing 36.9% of the total against 105 student respondents who do not use the OPAC representing 62.5%.

6.4. Frequency of use the OPAC

The frequency of use of OPAC by the users indicates its familiarity with users. Hence, the investigator has obtained the data relating to the frequency of use of OPAC by the users. The data so obtained is analyzed and presented in Table-4.

Table -4: Frequency of Use of OPAC

Frequency of Use	Teachers (N=12)	Students (N=62)	Cumulative (N=74)
Occasionally	8(66.67)	34(54.84)	42(56.76)
Once in a week	4(33.33)	8(12.90)	12(16.22)
Once in two weeks	_	7(11.29)	7(9.46)
Daily	_	6(9.68)	6(8.20)
Once in two days	_	7(11.29)	7(9.46)
Total	12	62	74

The Table 4 exhibits that out of 74 respondents, 42 users use the OPAC occasionally. They represent 56.76% of the total respondents. Next are those who use OPAC once in a week, and they represent 16.22% of the total. The assessment of the total responses by different types of users indicates that out of 12 teaching staff 8 (66.67%) teachers make use of OPAC occasionally. Similarly, those teachers who use OPAC once in a week are 4 (33.33%). The frequency of use of OPAC by students shows that 34 representing 54.84% out of the total 62 students use the OPAC occasionally. There are 8 students use the OPAC once in a week and 7 students use OPAC once in two weeks. They represent 34.84% and 12.9% respectively of the total student respondents. Those students who use the OPAC daily and once in two days are 6 and 7 representing 9.68% and 11.29% respectively.

6.5. Purpose of consulting the OPAC

Users consult OPAC for needs a specific document or bit of information. It is for this reason that the investigator has attempted to know from the respondents that the purposes of consulting OPAC. The responses received are analyzed and presented in Table-5.

Table- 5: Purpose of Consulting OPAC

Purposes	Faculty Members (N=12)	Students (N=62)	Total (N=74)
To check whether the required book is available in the library or not	3(25.00)	37(59.68)	40(54.06)
To locate the book in the library	7(58.34)	18(29.03)	25(33.78)
To find the bibliographical details	1(8.33)	7(11.29)	8(10.81)
To check the number of copies of the required book in the stock	1(8.33)	-	1(1.35)

Total percentage will not be hundred because responses are more than one.

The Table 5 shows that there are 40 (54.06%) users whose purpose of consulting OPAC is to check whether the required book is available in the library or not. Those who consult the OPAC to locate the book in the library are 25 (33.78%). The other purposes for which users consult OPAC include are to find bibliographical details and to check number of copies available. They account for 10.81% and 1.35% each. The category-wise data also reveal that in the first place the purpose of consulting OPAC is taken by faculty members and students is to check whether the required book is available in the library or not and in the second place to locate the book in the library. It may be

observed for the users hardly consult the OPAC in the find bibliographical details of the library materials.

6.6. Time spent by users using the OPAC

The time required by each user in consulting OPAC varies according to their search requirements. The data so obtained is analyzed and presented in Table-6.

Table -6: Time Spent by Users in Using the OPAC

Time spent	Faculty Members	Students	Total
Less than a hour	8(66.67)	60(96.77)	68(91.89)
One hour	4(33.33)	2(3.23)	6(8.11)
Total	12	62	74

The Table 6 exhibits that out of 74 respondents, 68 users spend less than an hour in consulting OPAC. They represent 91.89% of the total respondents. Next are those who spend an hour time in consulting OPAC. They represent 8.11% of the total. An observation of the total responses by different types of users indicates that out of 12 teaching staff 8 (66.67%) Faculty Members spend less than one hour in consulting OPAC. Similarly, those teachers who spend one hour are 4 (33.33%). The time spent in using the OPAC by students shows that 60 representing 96.77% out of the total 62 use OPAC less than one hour. There are 2 (3.23%) students who use the OPAC for an hour. It is observed from the table that consulting OPAC for less than one hour is more frequent than other frequencies among different categories of users.

6.7. Users approach in searching the OPAC

The users can search the OPAC through different access points such as by author, title, subject, class number, ISBN etc. The responses are received in this regard are analyzed and presented in Table-7.

Table -7: User Approach in searching the OPAC

Access points	Faculty Members (N=12)	Students (N=62)	Total percentage (N=74)
Author	4 (33.33)	35 (56.45)	39 (52.70)
Title	7 (58.34)	23 (37.10)	30 (40.54)
Subject	1 (8.33)	4 (6.45)	5 (6.76)

Total percentage will not be hundred because responses are more than one

The Table 7 shows that there are 39 (52.7%) users who approach by the author. Those who use title approach to locate the book in the library are 30 (40.54%). The other approach by which users consult OPAC include by subject catalogue. They account for 6.76%. The category-wise data also reveal that in the first place the approaches in consulting OPAC are taken by teachers and students are by author and the second approach is the title.

6.8. Sources of Learning in using OPAC

The college library users may not be familiar with the use of the OPAC. The extent of use of the library depends on the knowledge about the use of the OPAC. Therefore, users were asked to

furnish whether their library has given instruction to familiarize them with the OPAC provided by the library. The responses received are analyzed and are presented in the table below.

Table-8:Category-wise Respondents Training/Orientation given in Using OPAC

Training/Orientation	Faculty members	Students	Total Percentage
Orientation/Training Given	3(13.60)	61(36.30)	64(33.70)
Oreintation/Training Not Given	17(77.20)	100(59.50)	117(61.50)
Not Responded	2(9.10)	7(4.10)	09(4.70)
Total	22(11.50)	168(88.40)	190(100)

The Table 8 demonstrates that out of 190 users, 64 representing 33.70% have expressed that they were given training using the OPAC. However, 117 respondents comprising 61.5% of the total have stated that they have not been given training using OPAC. The category-wise data shows that 3 teachers out of 22 have expressed that they have been given training, 17 teachers have expressed that orientation was not being given to them. They account for 13.6% and 77.2% respectively. The students who have expressed positively about the instruction in the use of OPAC are 100 against 61 students who have expressed negatively. They account for 59.5% and 36.3% respectively.

6.9. Sources of instruction given to the users

The library users come across different sources of instruction in using OPAC to locate and to obtain the required documents in the library. These sources of instructions may be men or tools designed for the purpose. Therefore, the investigator has attempted to collect information about the source of instruction from the users in using the OPAC. The data so collected is analyzed and presented in the Table-9.

Table-9: Sources of Instruction given to the Users

Response	Faculty members (N=22)	Students(N=168)	Total (N=190)
Member of the library staff	9(90.00)	21(36.2)	30(44.1)
A chart in the library	1(10.00)	14(24.1)	15(22.0)
Teachers in your classroom	_	12(20.7)	12(17.7)
The library guide	_	11(17.1)	11(16.2)
Total	10(14.70)	58(85.29)	68(100)

** Total percentage will not be hundred because responses are more than one.*

The Table 9 shows that 30 out of 190 users have expressed that their source of instruction for using OPAC was library staff and 15 respondents have said that they were guided by a chart in the library about OPAC. They represent 44.1% and 22% respectively. For 12 users representing 17.7% the source of instruction was the teachers in the classroom and for 11 (16.2%) the source of instruction is library guide. The category-wise data also reveal that nearly 90% teachers and 36% students have expressed that their source of instruction was library staff as a source of instruction in using the OPAC in their library. There are nearly for 24% students and 1% teachers whose source of instruction were a chart in the library and nearly for about 21% students' source of instruction in consulting OPAC was teachers in the classroom and for 14 students the source of instruction to locate required documents was library guide.

6.10. Satisfaction about Assistance of library staff in using OPAC

In any library system the assistance of the library staff in the use of OPAC is a vital one. Unless the users are provided proper guidance and assistance by the library staff the use of OPAC cannot be optimized. In such environment library users not only find difficult in making proper use of the OPAC to their desired extent but also they waste their time and sometimes become disgusted and finally give up using OPAC. With a view to know whether the assistance given by library staff in college library is satisfactory or not the information was sought. The information so sought is analyzed and is presented in Table-10.

Table -10: User Satisfaction about Assistance of Library Staff in using OPAC

Opinion	Faculty Members	Students	Total Percentage
Satisfactory	17 (77.27)	87 (51.7)	104 (54.7)
Moderately satisfactory	5 (22.72)	60 (35.7)	65 (34.3)
Not at all satisfactory	_	21 (12.5)	21 (11.00)
Total	22 (11.5)	168 (88.4)	190 (100)

It is observed from the Table 10 that 54.7% of respondents have opined that the assistance given by library staff in using OPAC is satisfactory, while 34.3% expressed that they are moderately satisfactory. There are 21 (11%) respondents who have not at all satisfied with the assistance of library staff. The category-wise analysis also reveals similar responses as majority of different category of users have opined that the library staff assists in using the OPAC. Among 22 teachers 17 (77.27%) who have opined that the assistance given library staff in using OPAC is satisfactory. Similar type of opinion is observed among students (87; 51.7%) also. On the other hand, 5 teachers and 60 students representing 22.72% and 35.7% respectively in their respective categories have expressed their views that the assistance given by library staff in using OPAC is moderately satisfactory. Remaining 21 (12.5%) students have responded that the assistance given is not at all satisfactory.

6.11. Satisfaction Level in Using OPAC

With a view to know whether the OPAC is satisfactory or not the information was sought. The information so sought is analyzed and is presented in Table-11.

Table-11: Satisfaction Level in Using OPAC

Opinion	Faculty Members	Students	Total
Satisfactory	14(63.63)	84(50.00)	98(51.6)
Not satisfactory	_	9(5.3)	9(4.8)
Cannot say	8(36.36)	75(44.6)	83(43.6)
Total	22(11.5)	168(88.4)	190(100)

It is observed from the Table 11 that 51.6% of respondents responded that using OPAC is satisfactory, while 4.8% expressed that it is not satisfactory. There are 14 (63.63%) faculty members

and 84 (50%) students who responded that they are satisfied in using OPAC. On the other hand, 9 students representing 5.3% responded that the using OPAC is not satisfactory.

7. Major Findings of the Study

- Out of 190 users 109 (57.4%) are aware about the existence of OPAC in their library where as 74 (38.9%) expressed that they were not aware of the OPAC in their library. There are 11 (50%) teachers out of 22 were aware of the existence of OPAC against 10 (45.4%) teachers who were not aware of the OPAC in their library. Those students who were aware of OPAC are 98 out of 168 representing 58.3% of the total.
- Out of 190 users 74 (38.9%) make use of OPAC where as 113 (59.4%) expressed that they do not make use of the OPAC. The category-wise data also reveal that the majority of the teachers i.e. 12 (54.5%) teachers out of 22 uses the OPAC against 8 (36.3%) teachers who do not use the OPAC. Those students who make use of OPAC are 62 out of 168 representing 36.9% of the total.
- Out of 74 respondents, 42 (56.76%) use the OPAC occasionally. Those who use OPAC once in a week are 16.22% of the total. Out of 12 teaching staff 8 (66.67%) teachers make use of OPAC occasionally. Similarly, those teachers who use OPAC once in a week are 4 (33.33%). The frequency of use of OPAC by students shows that 34 representing 54.84% out of the total 62 students use the OPAC occasionally.
- There are 40 (54.06%) users whose purpose of consulting OPAC is to check whether the required book is available in the library or not followed by those who consult the OPAC to locate the book in the library are 25 (33.78%).
- Out of 74 respondents, 68 users spend less than an hour in consulting OPAC. They represent 91.89% of the total respondents. Out of 12 faculty members 8 (66.67%) spend less than one hour in consulting OPAC. The time spent in using the OPAC by students' shows that 60 representing 96.77% out of the total 62 use OPAC less than one hour.
- There are 39 (52.7%) users who approach by the author. Those who use title approach to locate the book in the library are 30 (40.54%). The category-wise data also reveal that in the first place the approaches in consulting OPAC are taken by teachers and students are by author and the second approach is the title.
- Out of 190 users, 64 representing 33.7% have expressed that they were given training using the OPAC. However, 117 respondents comprising 61.5% of the total have stated that they have not been given training using OPAC. The category-wise data shows that 3 (13.6%) teachers out of 22 have expressed that they have been given training, 17 (77.2%) teachers have expressed that orientation was not being given to them. The students who have expressed positively about the instruction in the use of OPAC are 100 (59.5%) against 61 (36.3%) students who have expressed negatively.
- There are 30 (44.1%) out of 190 users expressed that their source of instruction for using OPAC was library staff and 15 (22%) respondents have said that they were guided by a chart in the library about OPAC. The category-wise data also reveal that nearly 90% teachers and 36% students have expressed that their source of instruction was library staff in using the OPAC in their library.
- There are 54.7% of respondents opined that the assistance given by library staff in using OPAC is satisfactory, while 34.3% expressed that they are moderately satisfactory. The category-wise analysis also reveals similar responses as majority of different category of

users have opined that the library staff assists in using the OPAC. Among 22 teachers 17 (77.27%) who have opined that the assistance given library staff in using OPAC is satisfactory. Similar type of opinion is observed among students (87; 51.7%) also.

- There are 51.6% of respondents who are satisfied with use of OPAC in their library. There are 14 (63.63%) faculty members and 84 (50%) students who responded that they are satisfied in using OPAC.

8. Suggestions

- On the basis of the findings, the following suggestions have been made for optimum utilisation of OPAC facility in the college library:
- To facilitate the users, the college library should organise quality instruction programmes on the use of different techniques and strategies in retrieving information about the documents. The instruction programmes may enhance user knowledge and basic skills for searching OPAC. In addition to this, printed instruction may be provided to understand the functions of OPAC.
- It is evident from the study that the users were not having basic skills of searching OPAC. Therefore, they needed the assistance of library staff near OPAC terminals for optimum utilisation of this service.

9. Conclusion

The world of academics is enjoying the fruits of information technology in this IT era and the users of the OPAC have basic knowledge to handle the IT resources. The institutions involved in academic work should provide technical training to their users. OPAC will definitely make a significant impact on its users. The overall information is gathered about OPAC use in the JSS college library. Most of the users are satisfied with the use of library OPAC. There is a need to train the users to use the OPAC. College librarians should assist the users to use the OPAC. The orientation should be given to new students and Faculty Members using OPAC. Users usually come to OPAC when they want to search the required materials on the topic of their interest. In this process, OPAC, as a retrieval tool, plays an important role for finding out the required documents. From the present study, it is evident that majority of users use OPAC to know the availability and location of library materials, and at the same time, they expressed that they face difficulty in its use. Therefore, the college library should arrange instruction programmes on the effective techniques and strategies of OPAC so that maximum number of users could utilise this facility efficiently. Further, library professionals have to ponder what changes should be made to it. In this regard, library professionals should convey users' problems as well as their needs and requirements to library software developers; they should also collaborate with the software vendors. Finally, the system designers should design user-friendly OPAC.

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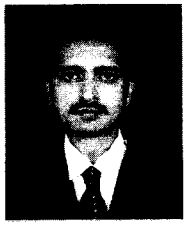
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Collaboration through Digital Libraries

Amoji, D S **Suresh Sharanappa** **Mallikarjun Vaddenkeri**

Abstract

The collaborative aspects of digital libraries are getting more and more attention the appearance of Web 2.0 sites. New social sites are driving digital libraries together with other types of networked information systems towards establishing and supporting new ways of cooperation with and among users. This also opens up new areas of research and generates research momentum in areas overlapping with digital libraries. However, collaboration support is not yet in the focus of DL research, as shown by the recent version of the DELOS Digital Library Reference Model, where collaborative functions represented with four small groups containing collaborative authoring, information exchange, conversation and finding collaborators. While these subgroups cover the most basic categories of collaboration, we hope to see a much richer palette appearing soon in digital libraries. Paper also describes briefly the collaboration through the Digital Library.

Keywords : Digital library, Electronic library, On line library

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Digital Library: *A study of Karunya University Library, Coimbatore*

Nirmala, P.J **Dominic, J** **Vasanthi, J**

Abstract

ICT has produced marvels like the Internet, the world wide web, interactive multimedia, CDROMs, digital libraries etc. These developments have a wider impact on library services. This paper discusses the digital library at Karunya University, Coimbatore.

Keywords : Digital Library, Digitalization process, Digitalization application

1. Introduction

Library is now better known as center of network of information sources for distribution rather than as a centralized repository of recorded knowledge. Innovations in information communication technology have brought radical changes in every possible field of life. Digital libraries have attracted almost all the developed and developing countries due to its features and the opportunities it extend to the information providers and information seekers. Digital libraries can help the nation towards realizing the enormously powerful vision of any time any where access to the best and to the latest of human thought and culture. Digital library brings the library to the user, overcoming all geographical barriers.

2. Application of digitalization in Karunya University Library

- **Automation of basic library function:** Library automation is the first step towards the digital library. Automation is required for improving the efficiency of the services to be delivered at all levels.
- **On line Public Access Catalogue (OPAC):** OPAC has been the most common tool for library users and librarians and it will be commonly used in digital libraries. Library function in Karunya University Library is being automated with the network version of AUTOLIB multi user software version 6. The users can access the information resources of library from anywhere in the campus through the OPAC modules at their convenience.

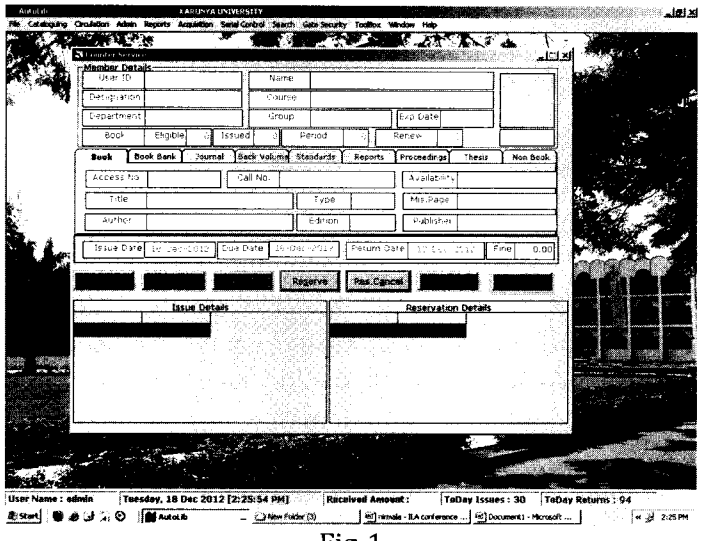


Fig-1

- **Access to Internet**

  Internet connectivity is the backbone of digital library activities. All the 7800 students and 525 faculty of Karunya University have either a laptop or desktop. The whole campus has been covered by wifi connection with the speed of 200Mbps. Karunya University being a fully residential campus has even provided LAN connection to the entire faculty who reside in the Quarters of the University. It is being observed that the students and the faculty achieve their goals easily by this facility.

- **Implementation of barcode technology**

  The application of barcode technology in circulation system of a library and information technology is most successful due its speed, accuracy and reliability. It is an identification tool that provides an accurate and timely support of the data requirement for sophisticated management system.

  Karunya University library started to implement the bar-coding system with more than 40,000 volumes in the year 1999. Currently it has crossed 77,358 volumes and the library uses the barcode technology for the following purposes.

  - student and staff ID cards for the security purpose
  - charging and discharging system of books
  - issues of no dues certificate
  - stock verification and
  - transfer of department books.



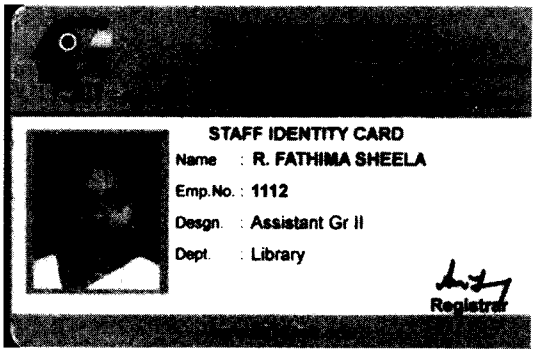


Fig-2

3. Collection of electronic resources

Electronic publishing can be defined as the publication process where the manuscripts are submitted in electronic format, edited, printed and even distributed to users by employing computers and telecommunications.

- **Online Journal Subscription:** An electronic journal is processed, published and distributed all over the world by electronic network. E – Journals are available online as well as in CD-ROM form.

  Karunya University subscribed Science direct from Elsevier Online data base subscription



Fig-3

The data bases will cover more number of web based publications. In Karunya University the following databases are procured. EBSCO: It contains 1,800 Management Journals with full text. Scopus: It contains the abstract of 10,000 Journals in all fields. Proquest: It contains the full PhD thesis.

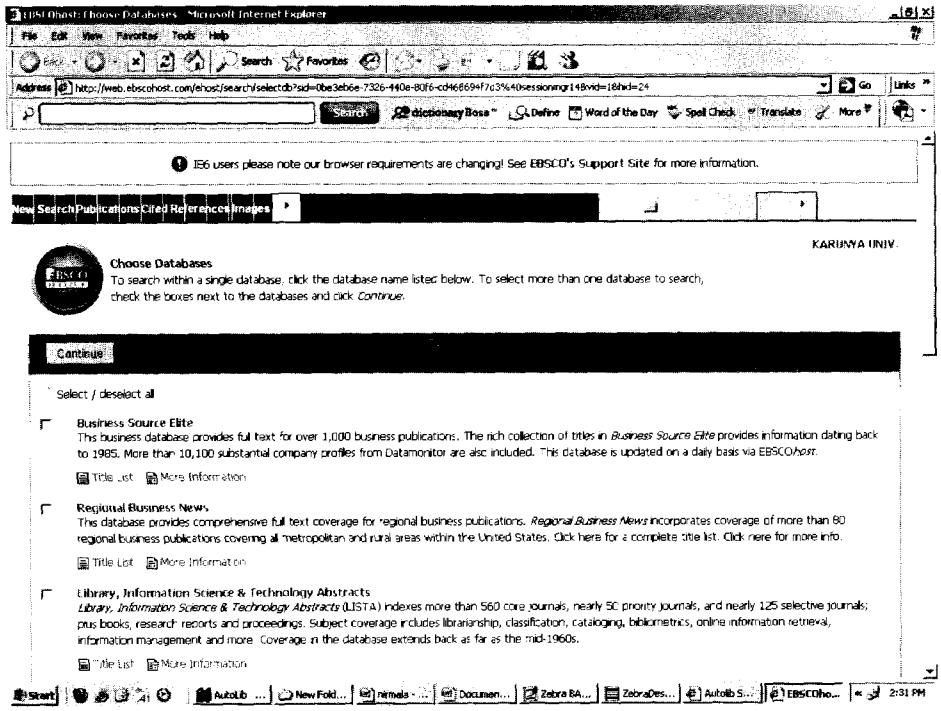


Fig-4

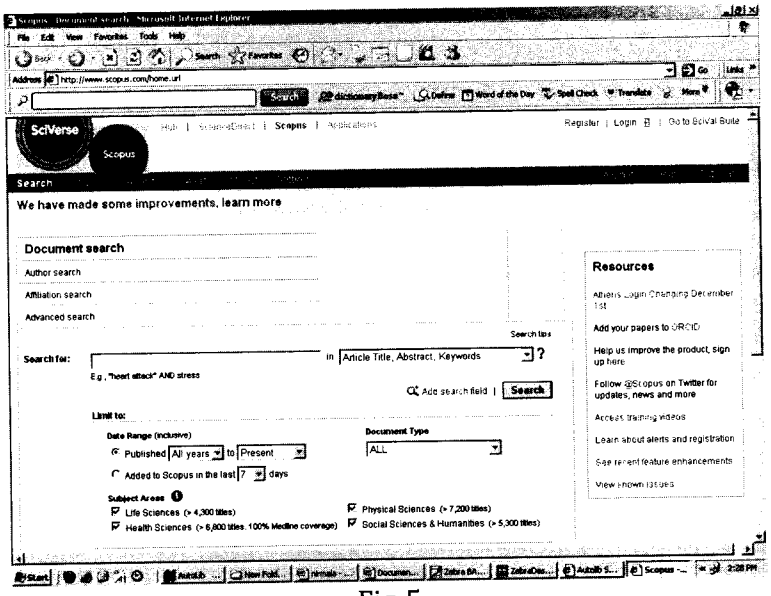


Fig-5

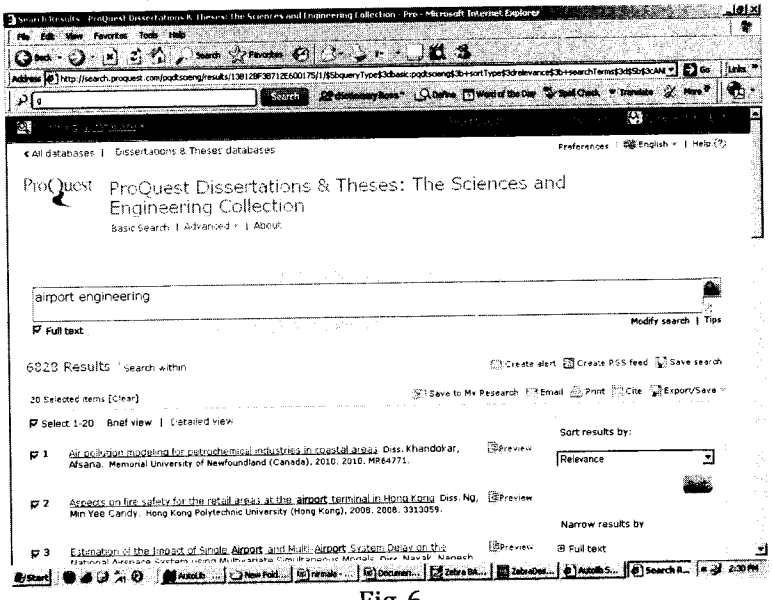


Fig-6

- **Procurement of e – books:** e - books are the electronic texts, which readers can see visually Electronic text can be saved in to a floppy disk, transferred into a CD-ROM, downloaded from the internet and built in to a palm sized digital reader. The e-books are available in the web–based languages. These e-books have the unique facility of multiple accesses. Any person from any part of the world, at any time can access these resources. Karunya University library is in the process of procurement of e – books.

- **Electronic News papers:** It is a self-contained, reusable and refreshable version of a traditional news paper, which acquires and holds information electronically. Information can be downloaded through an internet connection. Karunya University has subscribed only printed version of the newspapers in the library. The staff and students avail the facility of reading free online Newspapers through internet.

4. Digitalization of information:

It means process of converting paper documents such as text, graphics, etc in to digital images, which can be made accessible over electronic network. Some of the digitalized work made by Karunya University Library is

- Printed Question papers are converted into digital format and are uploaded in the web for easy access.
- The Karunya University thesis of M.Phil, M.E., and Ph.D are also digitalized and uploaded.

5. Developing Institutional Digital Repositories (IDR)

It is a digital collection of Institutions intellectual material. An IDR can be any collection of digital material hosted, owned or controlled, or disseminated by colleges irrespective of purpose or provenance. Digital repository in libraries should have trust – based and well co-ordinated relationship with faculty.

Karunya University library is in the beginning stages.

6. Formation of library consortium

It is a collective action to provide better services by group of libraries. The academic and research community depends on journals for their research work. So that the Karunya University library has signed a MOU with DELNET. Through DELNET the library can access one million records from the Union catalogue.

7. Developing Library information portal

A library can develop its own digital library portal. The portal is the entrance through which subscribed and free subscribed online journals and online data bases can be stored under the name of their own digital library. The library information portal can be used on the digital Black Board of the college by way of digitalize lesson plans, study materials, lecture notes etc., and made them available on the library information portal.

In Karunya University the lesson plans, study materials, lecture notes and the websites of free of cost open access journals are made available in the information portal.

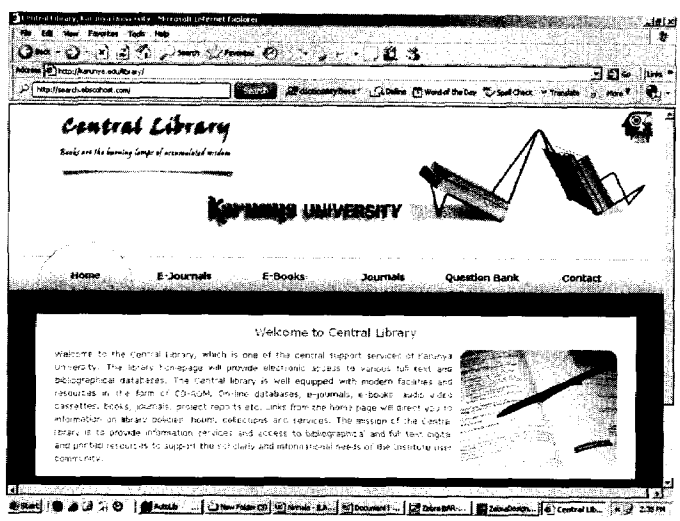


Fig-9

8. Multimedia services

It is a combination of text, graphic, art, sound, animation and video delivered by computers or other electronic means. When the user get these multimedia library services one can feel more satisfied in addition to the normal satisfaction level one attains while reading a printed textual document or book or periodical. In the Karunya University library a separate collection of 3232 CD RoMs and 74 cassettes are available to cater the needs of the student and staff.

9. Creation of Library Home page

In the website, "Library home page" contains the information about the library.

Karunya University library website contains:

- Catalogue (OPAC)
- Collections
- Journals
- Audio Visual Resources
- Data Bases
- New Arrivals
- News Clippings
- Question Bank
- Check Your Account
- Library Toning
- Librarian's Message
- What's New

10. Conclusion

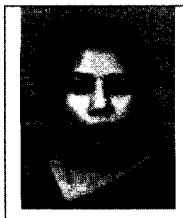
The technological advances today makes it possible to think in terms of storing all knowledge of the human race in digital form. The Karunya University library motivates the students and faculty to utilize the digital library resources to its fullest extent.

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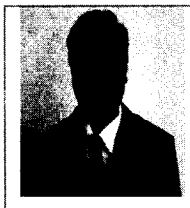
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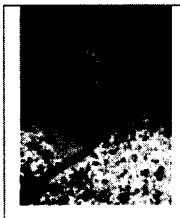
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Digital Library: *An Overview*

Vivek Sampatrao Sathe **Ganesh Kulkarni**

Abstract

This papers describe the various aspects of Digital Library in detail like, its emergence, its objective, needs, functions, aims, features, etc. It also describes the components of a digital library, functions of digital library, technologies for the digital library, contents of digital library, etc. In this paper advantages & disadvantages of digital library, impact of digital libraries also mentioned. Paper also describes briefly the Indian digital library scenario, Role of Digital Library, Role of Librarian etc

Keywords : Digital library, Electronic library, On line library

1. Introduction

Today, the advent of information technology has paved the way of reducing the size of the libraries from biggest to the very small. In fact, modern libraries are moving towards smaller & smaller but with rich potential of information. This smallness of the libraries is due to the digitization of information, which has outcome a number of problems faced by the traditional libraries since long. The digital libraries are based on digitized data of information which has gradually replaced paper based records. Because the visual information systems are getting more popular these days in comparison to text based information system, therefore digital libraries, today, are becoming more & more popular & more graphical in nature, digital libraries have reduced the space problem in them.[1]

There are number of terms which are used by authors to represent the concept of digital libraries. The terms are polygot library, electronic library, desktop library, online library, library without wall etc of these, the term digital library in the common used by majority of authors. Digital libraries are hetergenous in nature. These include work related to information a how to digitize, store, find, link, visualize, use, publish, manage and share information. Digital libraries provide instant access to digitized information by utilizing the avenues of information technology.[2]

Digital libraries are the outcome of information explosion, developed countries recognised the use of digital libraries quite early. In 1970 libraries in the developed countries began to connect remote hosts to conduct online searches for commercial digital bibliographic databases. The invention of CD Rom in 1980s was a turning point in the digitization of information. 1990s marked a progressive more towards digitization's due to networking, electronic document delivery services, online services, electronic journals etc. major advance in this field has been the document delivery service, which transmit by fax the full text of documents.[3]

In digital libraries services are fully automated & all resources are in digital form. It enables users to interact effectively with information distributed across a network. It may be based on a subject, a vocation or procession, a region or a nation.

Digital libraries are electronic libraries in which large number of geographically distributed users can access the contents of large and diverse depositories of electronic objects. Electronic objects include networked text, images, maps, sounds and videos. They also include hypertext, hypermedia and multimedia compositions.

The three main characteristics of digital libraries are a) Storage of information in digital

form b) usage of communication networks to access & obtain information, and c) copying either by downloading or on-line off line printing from master file.

A digital library is understood to have the information stored predominantly in electronic digital medium. The digital information collections may include digital books, digital / scanned images, graphics, textual & numerical data, digitized films, audio & video clips etc. A digital library is expected to provide access to the digital information collections.[4]

2. Why Digital libraries?

- Digital reading & referencing
- Effective image search
- Digital preservation
- Reduced space problem
- High update rates
- User more eager to do R & D remote
- Effective tool for bridging information gap
- Interactive access to the collection
- Instant access to multimedia based information
- Distributed knowledge environment
- Fully automated indexing & intelligent retrieval

3. Definitions of Digital Library :

William Arms (2005)[5] defined Digital library as "Managed collection of information with associated services, where the information is stored in digital formats and accessible over a network."

According to Borgman "Digital libraries are set of electronic resources and associated technical capability for creating, searching & using information."

4. Factors Responsible for Emergence of Digital Library :

The following factors had a catalytic effect in the emergence of digital libraries.[6]

- A well-informed and computer – literature user base has started demand more information at the desktop,
- Library budgets were not able to cope with the users rising demands for hard copy journal titles.
- Users demanding documents for their research were not concerned whether these were held locally in the library or obtained from outside as long as they could be supplied quickly.
- The distinction between library collection management and document delivery – the ownership and access approaches, was becoming increasingly blurred,
- The rapid growth of the internet has demonstrated the potential wealth of information resources available at the click of a mouse button, and
- Libraries started giving increased emphasis to provide access to resources available elsewhere rather than physically possessing resources.

5. Need of the digital Library:

Some of the common factor which are influencing to change to digital mode are the limited buying power of libraries, complex nature of recent document, storage problem etc. some other factors are.[7]

- Information Explosion
- Searching problem in traditional libraries
- Low cost of technology
- Environmental factors
- New generation needs

According to Mandhe S. D. & etc.[8]

- Better delivery of information, free flow of information.
- Maximum access to the information.
- Information available to limited people is now available to all.
- Economic in all aspects to the library professions (Space, Networking of libraries, Resource sharing, Consortium development is economical)
- Competition in research.
- Digital libraries contain multiform information.
- Effective searching & Retrieval
- Instant downloading of information.
- Multiple Accesses to resources.
- Digital libraries reduce the Need for space.
- Storage of large volume of Data
- Reduced Bureaucracy.
- Access @ anytime @ anyplace by any one.
- Faster Addition & gap Reduction.
- Connects users with Authors Instantly
- Users have no boundaries.

6. Aims / Goals of Digital Library :-[9]

- To provide library & information services to its users, anywhere, anytime, anyplace.
- Better utilization of the resources as the DL is time & space independent.
- Share the resources globally.
- To increase the access both online & off line
- To preserve the documents & manuscripts.
- Effective utilization of funds.

7. **Features of Digital libraries:** Following are the salient features of digital libraries. [10]

- It provides access to very large collection of information.
- If focuses on providing access to primary or complete information, not merely surrogates or indexes.
- It supports multimedia content.
- It provides user-friendly interface.
- Network accessible.
- Enable link representation to local, external object (hypertext)
- Clearly separate the user interface by employing client server architecture.
- It supports the advance search & retrieval.
- Available for a very long time i.e. should not be dependent on specific hardware & software.
- It integrates personal, group, enterprise, public digital libraries.
- It supports publishing, annotation & integration of new information.

Other features are [11] open accesses, greater variety of information, sharing of information, Up-to-datedness, Always available i.e. 24x7 hours universal accessibility.

8. **Components of digital library :-**

The following components are very essential to create digital library [12].

❖ **Hardware requirement:** The noted below are the requirement of digital library as follow.

- 24 hours Internet connectivity.
- Computer servers.
- LAN or WAN
- Scanners.
- Storage media: high power hard disk.
- Wi – fi tower and CDS
- Digital camera (High Resolutions)
- High power UPS
- Converters.
- Networks.
- Multimedia interfaces.

❖ **Software:**

The software requirement of the DL as indicated below:

- Linux operating system.
- Digital library software like greenstone & D-space
- Editing software.

❖ **Human ware :**

The key skills are required for digital library staff as indicated below.

- Management skills.
- Technical skills.
- Subject skills.

9. Objective of Digital Library ;

The objective of digital library as mentioned [13] below:

- To collect, store, organize & access information in digital form via communication channels.
- To meet the requirement of patrons by providing better services.
- To provide personalized and retrospective services in efficient way.
- To have large digitized databases.
- To save time of library staffs by avoiding routine jobs.
- To provide coherent view of all information within a library in any format.
- To serve widely dispersed communities through network.
- To minimize massive storage and space problem of large libraries.
- To reduce cost involved in various library activities.
- To digitize document for preservation.
- Better and value added library services.

According to Mundhe S.D. and etc.[14] following are also objectives of digital library:

- To provide remote logon facility
- Resource sharing through networks.
- To have the maximum storage of information and retrieve information.
- The overall objective is to provide efficient, economic, qualitative and pinpointed services.

10. Functions of Digital Library :-[15]

- Provide access to very large information collection.
- Support multimedia content
- Network accessibility
- Provide users-friendly interface
- Unique referencing of digital objects
- Enable "link" representation to local / external objects (hyper text)
- Support advance search and retrievals.
- Information available for a very long time (24 x 7) hours.
- To improve library operations.

- Support traditional library missions of collection development, organization, access and presentation of information.

11. Impact of Digital Libraries.[15]

- Brings information to the users
- Improved searching & manipulation
- Timely access to information.
- Improved use information.
- Reduction of digital divide.
- Improved facilities for information sharing.

12. Technologies for the Digital Library :-[15]

- Computer technology (H/W)
- Touch Screen
- Voice recognition system
- Scanners
- High resolution digital camera
- Image navigator software
- Storage technology to hold data & retrieve the data
- Processing technologies to create application software for running digital network.
- Communication technology.
- Display technology for the output
- Internet technology

13. Contents of the Digital Library [16]

- Text files (books, magazines, newspapers, other primary sources of information)
- Digitized sound
- Numeric data
- Scientific data
- Text and bibliographic data bases
- E-journals, E-books & E- Documents
- Moving visual images / still images / 3 D. Presentations

14. Changes in the contents of Libraries. [16]

- Phase – I : Hand written manuscripts.
- Phase – II : Paper based books & journals
- Phase – III : Non-print material like microfilms & audio visual films.
- Phase – IV : Digital CD/DVS & Web pages.
- Phase – V : Open access initiative & grid computing.

15. Pre-requisites for Digital Library :- [16]

- Planning
- Decide what is needed?

- Decide the existing library to be expanded or to have a separate building for the Digital Library.
- It is necessary to plan for Hardware requirement.
- To develop and maintain the digital library trained manpower.

16. Advantages of the Digital Library: Following the advantages of digital libraries.[17]

- **Information Retrieval:** Digital library provides very faster user friendly interfaces, single click of the mouse helps to access resources. The user is able to search entire collection of the library.
- **Cost:** The cost of maintaining a digital library is much than that of a traditional library.
- **Multiple Accesses:** Electronic resources can be accessed by number of users at the same time.
- **Networking:** A Seamlessly interesting resources sharing can be achieved by providing the link to any other resources of other digital by a particular library.
- **No Physical boundary:** People from all over the world could gain access to the same information as long as internet connection is available. The users of a digital library need not to go the library physically.
- **Preservation &Conservation:** An exact copy of the original can be made any number of times without any degradation in quality.
- **Space:** Where as traditional libraries are limited by storage space, digital libraries have the potential to storage much information.
- **Round the Clock availability:** Digital library can be accessed from anywhere and anytime is 24 x 7 hour service.
- It also provides the facility for **downloading & printing.**

Sharma R. K. Also mentioned following advantages of digital library. [18]

- Helps in Resource sharing facility.
- It saves the library manpower & funds
- Helps in inter-library loan.
- It minimizes the duplication of new inventions.
- Helps to reach information of their users at faster rate through-on-time Communication.
- Helps the libraries to get recent publications from the publishers.
- Researchers, Information scientists will get information with minimum time.
- Helps to get bibliographical information, retrospective search, union cataloge , Abstracting & indexing periodicals
- E-Publication may helps in overcoming the restrictions on the length of paper imposed by many scholarly journals.

17. Disadvantage of Digital Library: Digital libraries have also some disadvantages [19] Such as different standards, technological obsolescence, scene virus, untrained manpower etc.

- **Initial cost is high:** The initial infrastructure cost of digital library is very high. Such as hardware, software, networking cost; digitizing equipment etc.
- **Copyright:** Digitization violates the copyright law as thought content of one author can be freely transfer by other without his acknowledgement. How does a digital library distribute information at will while protecting the copyright of the author?
- **Technological obsolence:** Due to technological developments, a digital library can rapidly become out of date and its data may become inaccessible.
- **Physical problems:** One cannot read whole book with the help of computer. After reading lot of time in front of computer leads eye problem and mental stress.
- **Environment of library:** Digital library is cannot reproduce environment of traditional libraries.

According to **Dhakad Yogini** [20] following are also disadvantages of digital library.

- **Speed of access:** as more & more computer are connected to the internet its speed of access reasonably decreasing.
- **Band width:** digital library will need high band for transfer of multimedia resources but the band width is decreasing day by day to its over utilization.
- **Efficiency:** with much larger volume of digital information, finding the right material for a specific task becomes increasingly difficult.

According to **Sharma R.K.** [21] following are also the disadvantages of digital library.

- Problem in the scholarly publishing.
- Some documents are used only when it is seen.
- Locating the information on the internet requires good skill.
- Inadequacy of the libraries to predict the future use documents, irrespective of it type i.e. printed or digital.
- Problems of intellectual property rights of the author & publishers etc.
- There will be necessity to be proficient in computer usages and keep abreast of the state – of the art in the field;

According **to Mundhe S.D.** & etc[22] following are also disadvantages of digital library

- To depend on the WWW resources.
- Free information overload.
- Retro conversion is difficult.
- Lack of infrastructure requirements.
- Lack of well-trained manpower in the field.
- Locating information is skills.

With above draw backs, there are also some problems associated with digital library like information accuracy, compatibility of Hardware / Software, shelf life, developing electronic catalogues, finding a cost – effective way to digitize the material without spoiling the original in the

process, and making the digital material available while protecting the library rights of articles, writers & publishers are to be addressed.[23]

18. **Digital Library – Open Source Software:**Following software are useful software's for establish the digital library [24]

- **Greenstone digital library software:** (http:// www.greenstone.org)
- **D-space: open source software:** (http:// www.dspace.org.)
- **E-prints digital library software:** (http:// www.eprint.org/software)
- **FEDORA Digital Library software:** Flexible Extensible Digital object Repository Architecture. (http:// www.fedora.commons.org)

19. **Indian Digital Library Scenario[25]:**

- Information and Library Network (INFLIBNET) center, an autonomous Inter- University centre set up by the University grants commission (UGC), the highest university body of India. It's various programs like the formation of E-Journal consortia, retro-conversion, web-site hosting, and creation of network resources centers in different universities and research institutions across India.
- INDEST, The Indian National Digital Library in Engineering sciences and Technology consortium set up by the Ministry of Human resources development, has obtained nationwide prices for a number of electronic resources for its member libraries, which is helping the researchers.
- Developing library Network (DELNET) http ://delent.nic.in/
- Ahmedabad Library Network (ADINET) http ://www.alibnet.org/
- Madras Library Network (MALIBNET) http : // www.malibnet.org /
- FORSA (Forum for Resource sharing in Astronomy and Astrophysics), an informal cohesive group of the astronomy libraries in India has a major role to play in India's efforts t creating its own virtual observatory (VO)
- Traditional Knowledge Digital Library (TKDL), an indigenous knowledge database of the public domain traditional knowledge related to Ayurveda, Unani and Siddha system of medicine available in ancient literature.
- The National Spatial Data Infrastructure (NSDI) program launched by the Department of Space in the country is a right step in that direction. It would lead to a variety of applications. Making the best use of the geo-referencing technologies like Remote Sensing and Geography Information system (GIS).

20. **Role of Digital Libraries:** Digital libraries play their role as follows[26]

- As digital libraries are the networks of multimedia systems. Hence a typical digital library is a media server (group inter linked work stations) connected to high speed networks.
- The digital library is an information service in which all the information resources are available in computer process able form and functions of acquisition, storage, preservation, retrieval, access and display are carried out through the use of digital technologies.

- Digital libraries can disseminate their information across a network and the users can retrieve information in the same way.
- Digital libraries are global virtual libraries, i.e. the library of thousands of networked electronic libraries.
- Digital libraries are the systems which provide users with coherent access to a very large, organized repository of information and knowledge.
- Digital libraries need to span both print and digitized materials, for the foresable future.

Services of Digital Libraries[27]:

- On lines catalogue of library and information center
- Shared cataloguing
- Electronic Mail
- Current Awareness service
- Selective Dissemination of Information
- Bulletin Board Service
- World wide web.
- The document supply delivery services.
- Interlibrary loan service
- Union catalogue
- Internet Information
- CD-Rom Databases
- Referral service
- File transfer provided
- Remote information service

21. Role of Librarian in Digital Environment:

Though the digital environment is built as a system, which can be used by its ultimate end user directly from their desktop pc, the role of librarian cannot be over looked. [28] In digital environment also the librarian and information scientists will be needed for packaging and repackaging of information, for electronic publishing, for reference purpose, for advice the user about the strategy to identify relevant electronic sources etc. Thus the librarian will be more or less a hyper text engineer. In the new environment it will be very difficult for the librarian to decide what should be organized? How to give citation? How to organize the collection? Etc. because the new environment will be really challenging one for the librarian to decide who are the authors? Who are the publisher and who are user? In the new environment anyone who has access to the network of digital libraries can be publisher by merely posting messages to an on online discussion group or by other means. A virtual environment is really open for all. In some cases, librarians have the opportunity to digitize unique material in their libraries collections, which can then be made accessible to users of the World Wide Web at large [28].

22. Conclusion

Taking into consideration above all points we can conclude that digital library *is an* electronic library, in which information is acquired, store and retrieved in digital form, Digital library is a group of interlinked work stations connected to high speed networks. It includes text, photographs drawing, art work, numeric data, images etc. The concept of digital library is a future vision but even today many of the libraries are changing into digital formats[29]. Because the digital libraries have solved the important problem of spacing the documents, the physical storage of information has become less wear & tears on objects. Digital libraries have the ability to view for several persons at the same time. These also have the ability to view the content in the home, office or other non library locations and the potential for increased cost-effectiveness. It does not reside in building.

The role of librarian has changed in the digital library environment. Building a digital library is expensive one. But due to information explosion, technological development, increasing cost, globalization etc. there is need for digital library with modern facilities. Digital library plays on important role in promoting the use of information. The digital library concept is growing at fast space. Digital library are not going to replace the physical existence of document completely but no doubt to meet the present demand to satisfy the non local users, digitization must be introduced so that least libraries becomes of hybrid nature.

Librarian must be well-equipped with up to-date skills, knowledge of the computer and networking with other libraries and be flexible, librarian should take positive approach to provide better services by converting their libraries into digital libraries.

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Digital Preservation for Global Users

O. N. Chaubey

Abstract

The Digital age creates new delivery and access alternatives for fulfillment of the user's requirements at global level. Over the last few years huge amount of information has been produced digitally and libraries have become major providers of information in digital format. Digital resources are one of the new categories of information resources in the library and information centers. The introduction of digital technology into the process of production distribution and storage of information has made the libraries to go to digital environment. Digital preservation involves the use of well defined techniques to prevent the original artifact from deteriorating further need to perhaps even improve it to the point where it can be used again. This paper presents the need, objectives, infrastructure required for digital preservation, preservation strategies and better dissemination techniques for maximum use of the digitized information.

Keywords: Digital Preservation, Digital Techniques, User's Need, Digital Preservation Strategies.

1. Introduction

In a very short time preservation has developed into critically important part assets, its collection. Abby smith "Preservation in the future Tense". Preservation is the activity of protecting something from loss or danger. Preservation can be done for betterment in improvement advancement a change for the better and for progress in development. Perseveration is the oldest and most fundamental function and libraries and archives. Traditionally libraries have been responsible for the collection preservation and provision of information is print format and a specific location, However over the last few years huge amount of information has been produced digitally and libraries have become major providers of information in digital format. Digital resources are one of the new categories of information resources in the library and information centers. The introduction of digital technology into the process of production distribution and storage of information has made the libraries to go to digital.

2. Digital Preservation

Digital Preservation refers to the various method of keeping digital material alive into the future typically centers on the choice of interim storage media the life expectancy of a digital imaging system and the life expectation to migrate the digital files to future system full functionally and the integrity of the original system. It includes everything from electronic publication on CD Rom to online databases and the collection of experimental databases in digital format maintain the ability to display, retrieve and use digital collections in the face of rapidly changing technological and organizational infrastructures and elements.

3. Need For Digital Preservation

The vision of creating digital libraries that will be able to preserve our heritage

currently rests an technology quicksand. There is as yet no viable long term strategy to ensure that digital information will be readable in the future. Not only are digital documents vulnerable if the software needed to interpret them or the hardware on which that software runs is lost or become obsolete unlike the preservation of paper or microfilm. The preservation of digital information demands ongoing attention. This constant input of effort time and money to handle rapid technological and organizational advance is considered the main stumbling block for preserving digital information indeed while we are still able to read our written heritage from several thousand year ago. The digital information created merely to decade age is in serious danger of being lost. Preservation is therefore a more immediate issue for digital than for traditional resources.

4. Objectives of the Digital Preservation

- To reduce the effect of deteriorating factors such as temperature, light, humidity, flood, fire, bacteria, insects, pollution, dust and the important factor called human.
- Illustrate the combination of developments events and decision that led us to where we are today, in regard the technology that pertains to digital preservation
- Keep a place for new and emerging technology in the context of digital preservation programs
- To maintain the historical value of information.
- To make its easy to use and handle. To make information service longer.
- To provide wide accessibility.

5. Infrastructure Required for Digital Preservation

The computer system having the multimedia facility integrates all the media components to a single platform and provides interactivity to the system.

The following IT components are suggested for the preservation of the collection

- Central processing unit with high speed processor
- Large memory (RAM)
- Hard disk with high volume
- Floppy drive
- CD drive (Read/ Write)
- Modem
- Sound blaster card
- Key board having multimedia key mouse scroll
- Color monitor
- Color B & W laser printer
- Better digitization tools (Scanner)
- Digital Camera (Still /Move)
- Video camera for capturing analog video and convert into digital
- Graphic cards

6. Strategies for Digital Preservation

There are several strategies which individual's organizations may use to combat the loss of digital information

7. Refreshing

Refreshing is the coping data onto newer media or system for example transferring census data from an old tape to new one or transferring on MP3 from a hard drive to CD. This strategy may need to combined with migration when the software or hardware requird to read the data is no longer available or is unable to understand the format of the data refreshing will be likely always be necessary due to the deterioration of physical media.

8. Migration

Migration is an approach that involves periodically files from one file encoding format to another that is useable in more modern computing environment (An example would be moving a word star file to word perfect, then toward perfect then to word 3.0 then to word 5.0 then word 97) Migration seeks to limit the problem of files encoded in a wide variety of file formats that have existed ever time by gradually bringing all former formats into a limited number of contemporary formats.

9. Replication

Creating duplicate copies of data on one or more systems are called replication data that exists as a single copy in only one location is highly vulnerable to software or hardware failure. International or accidental alternation and environmental catastrophes like fire flooding etc. digital data is more likely to survive if it is replicated in several locations. Replicated data may introduce difficulties in refreshing migration versioning and access control since the data is located in multiple places.

10. Emulation

Emulation seeks to solve a similar problems that migration addresses,but its approach is to focus on the application software rather than on the files containing information. Emulation backers want to build software. Every application that has ever been written for every type of file format and run on whatever the current computing environment. Emulation is most closely associated with the writing of R and scientist Jeff Rothenberg(Rotherberg 1995,1999,2000)

11. Universal Virtual Computer

Raymond A Lorie has suggested a universal virtual computer(UVC) could be used to run any software in the future on a yet unknown platform (Loric 2001). The UVC strategy uses a combination of emulation and migration. The UVC strategy has not been widely adopted by the digital preservation community.

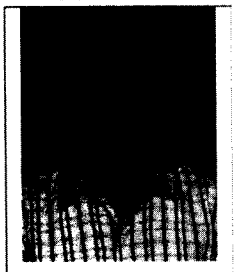
12. Trustworthy Digital Objects

Digital objects that can speak to their own authenticity are called trustworthy digital objects (TDO_s) TDO_s were proposed by Henry M Gladney to enable digital objects to maintain a record of their change history so future users can know with certainly that contents of the object are authentic (Gladney 2004) other preservation strategies like replication and migration are necessary for the long term preservation of TDO_s.

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Institutional Digital Repositories in India: *Growth & Development*

Sushma Gupta **Ramniwas Soni** **Gupta, P.M.**

Abstract

Institutional Digital Repositories are becoming an essential tool for information perpetuation, repackaging, and online sharing. Institutional Repositories are bridging the gap between scholarly Publications and their readers by providing them open access platform through Internet to expose their knowledge. In India, Now libraries are positive in open access initiative by establishing and maintaining IRs. This paper throws light on growth and development of Indian IRs and an introduction of OSS for setting up an IR.

Keywords : Scholarly Publications, Open access & open source software, IR, ROAR, DOAR,

1. Introduction

Fast Growing Information & Communication Technologies made a great impact on the function of Libraries particularly academic Libraries. Advances in Information Communication Technology (ICT) has created enormous methods for creating, storing, maintaining, accessing and preserving the traditional printed documents in digital form. Present day scenario LIS Centre of an Institution plays a vital role in facilitating dissemination of new Knowledge. In the Changing Information Environment, Libraries are making various efforts to the development of different type of digital repositories, mainly those housing digitized versions of locally held works. Few years ago, IR movement initiative was taken by some Developed countries but it became more prominent after 1990s with the advent of open source software packages such as Dspace, Eprints and some others which are not only economically feasible but technically well advanced also. Now the institutions especially the academic institutions are starting to establish their own repository to serve their community locally and globally. Some institutional repositories in India are only providing access to metadata to the external communities on the web, they provide full text to the intranet members only. These limitations subsist due to various reasons involving copyright issues, bandwidth issues, local institutional policies etc.

2. Why an Institutional Repository?

Most of the institutions have set up IRs as there are a lot of reasons for building Institutional repository, including:

- to create global visibility for an institution's scholarly research;
- to collect content in a single location;
- to provide open access to institutional research output
- to store and preserve other institutional digital resources including Grey literature
- to provide collaborative storage platform.
- to find faculty and student work more easily by organizing and indexing
- to Preserve the information content for perpetual access
- to provide unified access to your institution's scholarship
- to provide open access to your institution's scholarship
- to preserve your institution's scholarship
- to provide self archiving to the student and faculty of pertaining IR.
- a workspace for work-in-progress, and for collaborative or large-scale projects;

- To develop national level, domain-specific or omnibus harvesting services
- Enabling and encouraging interdisciplinary approaches to research

Besides these above mentioned points, it is very easy to digitize your library or setting up IR in this present day scenario of financial crisis, shrinking budgets and lack of man power ,as a no. of freely available open source software available on the internet for establishing an IR.

3. Open source Software used for setting up an IR

Price of the library software is very high, most of the Libraries mainly private Institution's libraries are not in a position to purchase such commercial software due to their budget constraints. OSS gives the opportunity to the library community to take initiative in IR movement in India. There is no restriction but everyone can use, study, customize and distribute the open source software. Open-source software is computer software whose source code is available under a copyright License that permits users to customize and improve the software, and to redistribute it in customized or original form. Also a help guide is available on the owner's website to install and customize the software. The core of the concept of open source is the user's access to the source code and right to alter and distribute the software which is laid down in an open source license.

The history of open source softwares began with the early stages of computer and software development. Milestones in the history of open source Software are:

1983 - Richard Stallman formed GNU project.

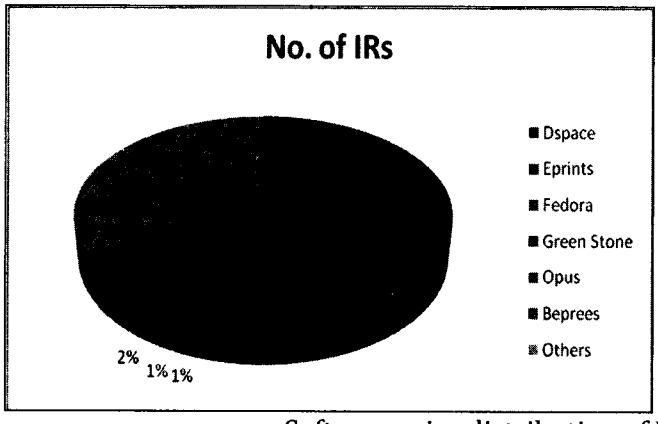
1985 – Creation of Free Software Foundation.

1991 – Development of Linux kernel by Linus Torvalds.

1998 – Open Source Initiative (OSI) formed by EricRaymond.

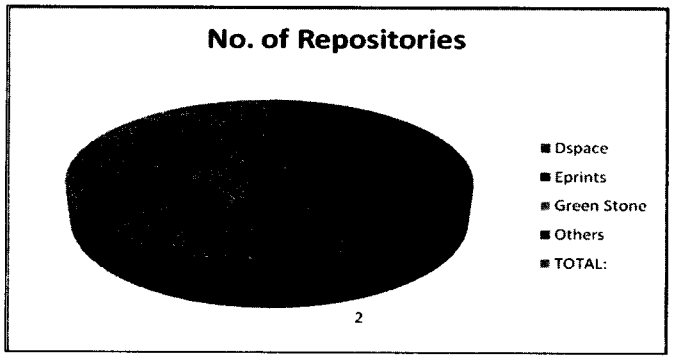
Name of Software	Developer	Available at	License	System requirement	Operating system
CDS INVENIO	CERN Document Server	http://invenio-software.org/#	GNU general Public License	Apache Web Server,MYSQL,	Unix
Dspace	(MIT) libraries the postgre SQL & Hewlett-relational	http://www.dspace.org	Creative Common License	Apache web Server,Tomcat, Postgres SQL,Apache ANT, Apache Maven	Linux, Unix or window
Eprints	University of Southampton	http://software.Eprints.org/	GNU General Public License	Apache,My SQL Database,Perl Language	Unix
Fedora	Virginia and Cornell Public Universities	http://www.fedora.info	Mozila Public License	Sun Java Software,My SQL,Oracle 9	Windows or Unix
Ganesha Digital Library	YLTI & IDRC	http://gld.itb.ac.id	GNU general Public License	Apache Web Server,MYSQL,Perl Lang.	Windows or Unix
Greenstone	University of Waikato, UNESCO and thehuman Info (NGO)	http://.greenstone.org	GNU general Public License	Apache Web Server,MYSQL,Perl Lang.	Windows or Unix/Linux
ROADS	Inst. of Learnc & Res. Tech. (ILRT) UK Office of Lib. & Infor. Networking	http://www.ukoln.ac.uk	Artistic LicenseGNU/GPL	HTTP Apache web server & Perl language	Unix

There are 1205 Institutional repositories using DSpace & 479 Institutional repositories using Eprints out of 2993 IRs in the world. On the other hand out of 94 Institutional repositories in India, 53 Institutional repositories using Dspace & 29 Institutional repositories using Eprints (Source: http://roar.Eprints.org). Institutional repositories in India are developing rapidly. Open source software, especially DSpace, is increasingly being used for the creation of digital repositories.



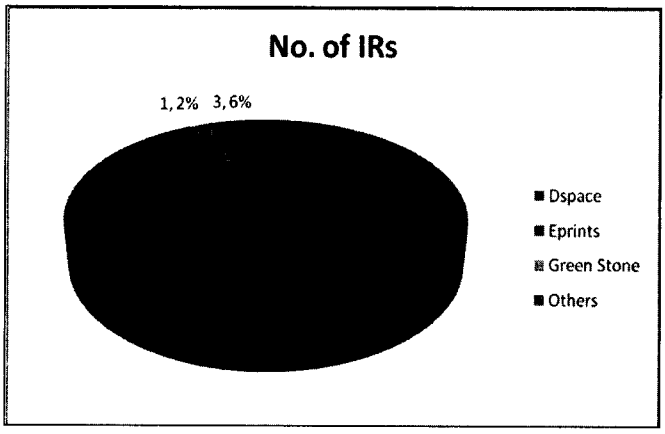
Software	No. of Repositories	% (Approx.)
Dspace	1205	40
Eprints	479	16
Fedora	43	1
Green Stone	18	1
Opus	48	2
Beprees	138	5
Others	1062	35
TOTAL:	**2993**	

Software wise distribution of Digital repositories in the World
(According to Open ROAR as on 03/11/2012)



Software	No. of Repositories	%
Dspace	53	56.38298
Eprints	29	30.85106
Green Stone	2	2.12766
Others	10	10.6383
TOTAL:	**94**	

Software wise distribution of Digital repositories in India
(According to Open ROAR as on 03/11/2012)



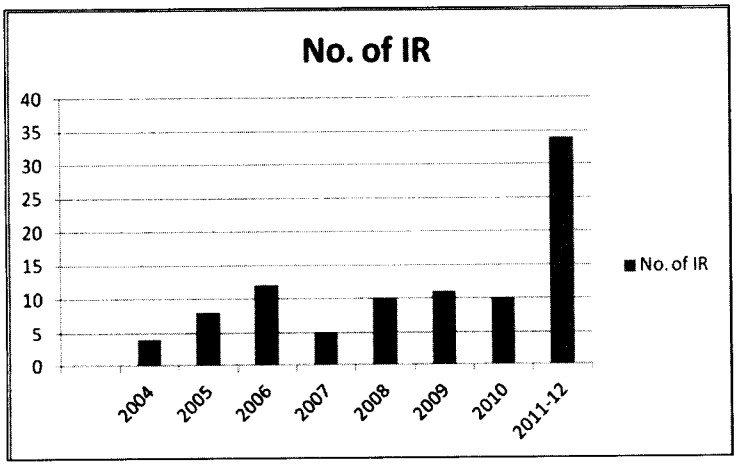
Software	No. of Repositories	%
Dspace	37	68
Eprints	13	54
Green Stone	1	2
Others	3	3

Software wise distribution of Digital Repositories in India
(According to Open DOAR as on 03/11/2012)

4. IR Movement in India:

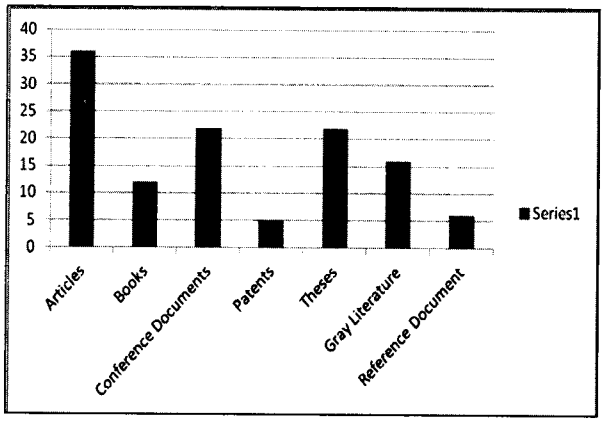
Now a day, it is a trend of Institutional repository all-around. Many of the institution have their repositories which they have built using various open source software. In India IR movement was started in 2004 and it is getting momentum in last few years. There are 93 Digital Repositories in India which are listed by Open ROAR (54 listed in Open DOAR) run by various types of Organizations including universities, institutes, research organizations, government and non-government organizations, etc. These repositories contain various types of items, with various types of dissemination policies. According to ROAR, .Institutional repositories in India are increasing rapidly. Open source software, especially Dspace and Eprints is increasingly being used for the creation of digital repositories in India. The leading IRs are developed by IISc, ISI,NAL, IIMs, IGNOU,INFLIBNET,NCL, NIO, RRI, DU, IITs, DRDO, etc.

The Indian Institute of Science, Bangalore, was the first to setup an institutional repository in India. It uses e-prints archiving software. It is limited to the IISc research community only. It has approximately 34051 e-prints in its archive (as of 1st Nov 2012). Recently, the Government of India has setup the Knowledge Commission (KC) to prepare a clear cut road map for the institutions of higher learning in India for taking the initiative like up gradation of libraries and building Intellectual Repository. Similarly, The University Grant Commission has already setup a separate agency INFLIBNET with the objective of modernization of libraries and Information centers for accessing and sharing the vast knowledge of research. **Shodhganga@Inflibnet** is reservoir of Indian Theses. **Vidyanidhi** Projects, digital Library and E-Scholarship Portal hosted by University of Maysore is India's premier Digital library initiative to facilitate the creation, archiving and accessing of doctoral theses.. Vidyanidhi is a digital archive of dissertations, as well as a set of resources for doctoral research in India. Vidyanidhi is being developed as a national repository and a consortium for electronic dissertations, through participation and partnership with universities, Vidyanidhi enhances access to Indian theses and enlarges the reach and audience for Indian doctoral research works.



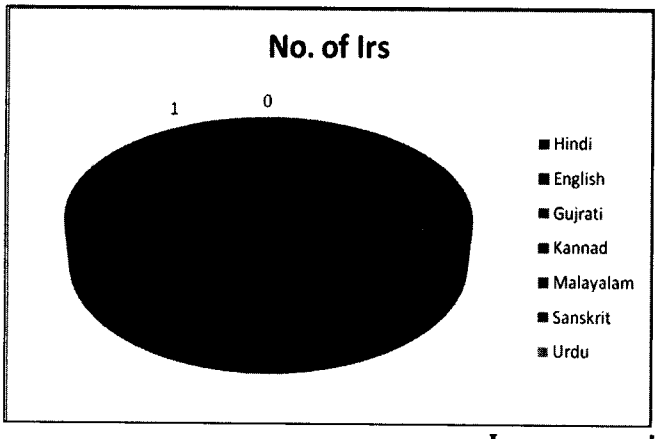
Year	No. of IR	Percentage (%)
2004	4	4
2005	8	8
2006	12	13
2007	5	5
2008	10	11
2009	11	12
2010	10	11
2011-12	34	36
Total	**94**	**100**

Growth of Digital Repositories in India (Year Wise)
(According to Open ROAR as on 03/11/2012)



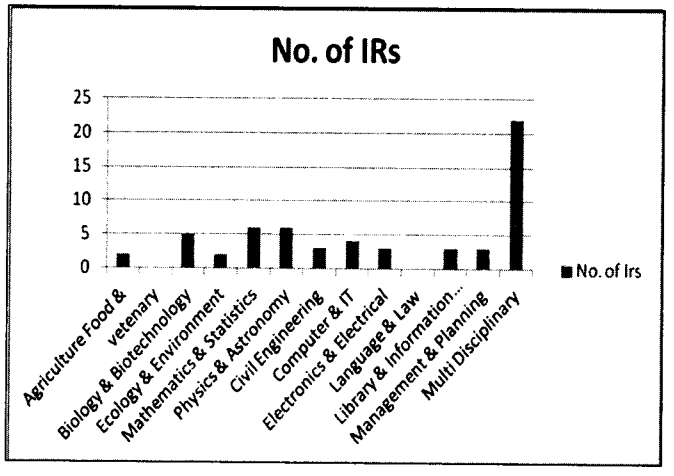
Document type	No. of IRs
Articles	36
Books	12
Conference Documents	22
Patents	5
Theses	22
Gray Literature	16
Reference Document	6

Content wise Distribution of IRs in India
(According to Open DOAR as on 03/11/2012)



Language	No. of IRs
Hindi	6
English	53
Gujrati	1
Kannad	2
Malayalam	2
Sanskrit	1
Urdu	0

Language wise Distribution of IRs in India
(According to Open DOAR as on 03/11/2012)



Subject	No. of IRs
Agriculture Food & vetenary	2
Biology & Biotechnology	5
Ecology & Environment	2
Mathematics & Statistics	6
Physics & Astronomy	6
Civil Engineering	3
Computer & IT	4
Electronics & Electrical	3
Language & Law	0
Library & Information Science	3
Management & Planning	3
Multi Disciplinary	22

Subject wise Distribution of IRs in India
(According to Open DOAR as on 03/11/2012)

Some Leading IR in India

Institution	Name of IR	No. of Records	URL	Software
IISC Banglore	etd@IISc	1698	http://etd.ncsi.iisc.ernet.in	DSpace
IISC Banglore	eprints@IISc	34051	http://Eprints.iisc.ernet.in/	Eprints
IIT, Bombay	Dspace@IITB	14075	http://dspace.library.iitb.ac.in/jspui/	DSpace
IIT, Delhi	eprints &ETD@IITD	2141	http://eprint.iitd.ac.in	DSpace
INFLIBNET	Sodhganga	3385	http://shodhganga.inflibnet.ac.in/	DSpace
NIC	OpenMed	2810	http://openmed.nic.in	Eprints
NIT, Rourkela	Dspace@NITR	1654	http://dspace.nitrkl.ac.in/dspace	DSpace
IIT, Kharagpur			https://www.dspace.iitkgp.erent.in	DSpace
IIT Roorkee	Bhagirathi	1008	http://bhagirathi.iitr.ac.in/dspace/	DSpace
IGNOU	e-gyankosh	25424	http://www.egyankosh.ac.in/	DSpace
NISCAIR		572	http://nsdl.niscair.res.in/dspace	DSpace
University of Mysore	Vidyanidhi	5482	http://DSpace.vidyanidhi.org.in:8080/	DSpace
National Aerospace Laboratories	IR@NAL	5223	http://nal-ir.nal.res.in/	Eprints
Indian Inst. of Astrophysics	Print	5679	http://prints.iiap.res.in	DSpace

(Data Collected from respective Repositories websites on 01/11/2012

Country Wise Distribution of World Digital Repositories:

Country	Australia	Germany	India	USA	New Zealand	Netherland	UK	Japan	China	South Africa
DOAR	47	164	54	590	12	24	208	137	33	24
ROAR	73	153	94	472	19	39	242	152	80	30

Table shows that India is comparatively slow in building IRs while in USA has maximum no of Digital repositories and UK takes the 2nd place.

5. Key Issue and Challenges :

5.1. Main problems in building IR in India

The growth in IRs brings along many new problems and challenges including those of copyright, digitization problems, long term preservation of e-theses etc. There are numerous challenges and issues before the organizations to integrate the management of IRs into their organizational structure. The following major issues are being faced in many developing countries:

- Lack of Expertise/ Awareness
- Lack of support from Faculty/academic staff
- Leadership problem- The lack of initiatives on the part of parent institutions and the absence of action plans or priorities.
- Access and security
- Copyright and Intellectual Property Right
- Lack of management support

- unavailability of IR expertise in library professionals,
- Unwillingness of authors to participate
- Lack of a well defined institutional policy is a serious constraint for IR development.
- Proper training of involved staff.
- Apathy of Creators/authors for depositing content
- Diversity of content and the language used in the full texts.
- Unchanged syllabus of Bachelors & Masters degree in library science.
- Lack of Training courses on Open sources software in India
- Language barrier in training Programme of Open Source Software
- Unwillingness of Library Professionals to learn about Open sources software and IR concept.
- Legal Aspects

5.2. Problems after Taking an IR Initiative

- **Acceptability:** Beside the approval of the Authority of the institute/university for setting up an Institutional Repository it's also difficult to get research output of faculty members and research scholars for putting into the intellectual repository of the university or institute. Library professionals have to convince the intellectual community for setting up of an IR by proving its importance and its role.
- **Visibility:** In India, It has been noticed that many organizations having Institutional Digital Repositories are not interested to share the information with the society.
- **Sustainability:** It is necessary to maintain and sustain the IR for long term preservation. Maintenance of an IR includes reviewing of the contents, revising and updating of the hardware, and sustaining the accessibility. It is observed that most of the Indian institutional repositories are not being maintained properly as lack of knowledge and dedicated staff. Many of them are closed and are not being updated since long time.
- **Accessibility:** A dedicated staff should be appointed by the institution responsible for maintaining intellectual repositories regularly check their accessibility. Following are the some problem in accessing IR's content.
- The web server is not operational 24/7due to power Failure
- Not updating the links URLs after making the change in them
- Some time, the server does not work due to under maintenance.
- Bandwidth of Internet Connection

6. Future of IR in India

More than 2000+ IRs have been set up in the world, and India with 50+ IRs as listed in Open DOAR or ROAR leads the developing countries with in this regard. IITs, IIMs, NITs, INFLIBNET, IISC Banglore, UGC and other institution are promoting the IR concept in libraries. Many organizations in India are conducting the programme in supporting to the OSS for building IR. Since Govt.

Institution are ahead in establishing An IR in India , Private institution should be motivated in Open Access movement and putting them self in line with other Institutions having IR. Govt. and other private Agencies engaged in Library development should try to organize some more awareness programme so that library professional can be prepared to set up institutional repositories even at private level.

7. Findings

- Study shows that Dspace & Eprints are most commonly software used for developing Institutional Repositories not only in India but also in the world.
- In India Hindi Language repositories are very least while English at the top in the list.
- Multidisciplinary IR are highest in numbers
- Private Institutions are very slow to adopt the IR concept by their libraries.
- Maximum no. of Items (34051) posted by IISC Bangalore in India.
- Growth Rate of IR in India is comparatively very slow.

8. Conclusion

Institutional repositories are now recognized globally as essential infrastructure in the digital learning world. It is the most powerful tool to publish & provide the efficient service among the Researchers community. Digital library movement is getting pace in developing countries, especially India. In India, a clear-cut national plans and polices are needed for infrastructure, standards, metadata, interoperability, multi-lingual databases, training, co-ordination, copyright, preservation methods, so that present and coming generations can be guided and benefited by our heritage of knowledge and culture . In a digital age to be successful information services providers, library need to develop services like IR In order to support and furnish the need of users demands. Libraries and LIS professional should have to take initiative in building Institutional Repositories for their institution and also must be able to manage Digital repositories for its sustainable development.

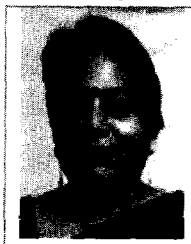
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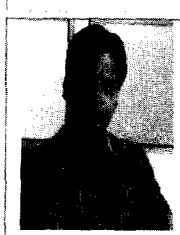
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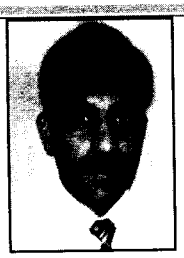
Author's Profile



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Mr. Gupta presently is with GLA University, Mathura (earlier GLA Group of Institutions, Mathura) from 2004 as a Librarian. Prior to this he had worked as Assistant Librarian in the Institute of Technology & Management, Gwalior, M.P. State from 2001 to 2004. He is a Science graduate with B. Lib. & M. Lib. M. Phil. He has also earned a Post Graduate Diploma in Library Automation and Networking (PGDLAN) from University of Hyderabad, Hyderabad. Currently he is pursuing his research work (Doctoral Degree) in Library and Information Science Under the guidance of Dr. Neerja Verma, Professor and Head, Deptt. of Library and Information Science, M.L.B. Govt. College of Excellence, Gwalior (M.P.), Jiwaji University, Gwalior. He has started so many services like ILL Service through DELNET, SDI, Email, Newspaper clippings etc. He has attended as well as organized various Orientation/Training Programmes/workshops/Conferences. He is life member of ILA & UPLA.

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Institutional Repositories in Delhi Based Institutions: *A Comparative Study*

Natarajan, M **Ranjan Karmakar**

Abstract

In this paper the authors have studied the Institutional Repositories (IRs-six) available within Delhi. The definitions of IR are given with the literature review to identify similar studies. It has been carried out for finding out the total number of collection available with the year of establishment of IR, with the subjects covered by each and identified that the collections are given by the library professionals, users, and others. It has been studied also for the different type of file formats maintained for IR collections like from word, excel, pdf, etc. have been used by the different types of users with the access mechanism, which is from within and outside organization. It has been suggested that library professionals should take more interest to carry out the activity and educating the users the benefit of creating the IRs.

Keywords : Institutional repository, file formats, NISCAIR, NIPFP, DSpace, SPARC.

1. Introduction

With the development and application of ICT, the services and the collection of the libraries are globalized. The prime objective of libraries is to keep their clientele up-to-date in their areas of interest. Due to information explosion, dwindling budget of the library, space problem, high information demand, increasing fees of journals have forced the libraries to seek other ways by which they can collect store and disseminate information among the users. To solve these types of problems, the concept of IR has started among the academic institutions in India. The universities and research organizations all over the world have begun to pay more and more attention to the production and usage of documents in the digital form, which includes text, graphics, photographs, archival materials, websites, blogs and vlogs. These institutions have been exploring ways and means to capture and reuse the intellectual output of teaching and research as more and more scholarly output is bypassing the traditional libraries and the publishers favour the internet. One of the approaches has been the Institutional Repository (IR), which is the collective intellectual output of an institution recorded in a form that can be preserved and exploited. An IR consists of formally organized and managed collections of digital content generated by faculty, staff and students at an institution. The content of these repositories can be made available for integration with on-campus library and course management systems. It can also be made available to colleagues and students at other institutions, as well as to general public. An individual IR can offer a set of services including digital content submission, organization, access, distribution and preservation. In a university setting an IR may provide a place for faculty work, student's theses and dissertation, e-journals, datasets and so on.

The IR concept has gained momentum as universities begin to question the logic of buying back its research, as libraries drop journal subscriptions due to publisher fees outstripping resources. IRs can preserve and provide access to a university's unpublished material, establish alternatives to the high costs of traditional publications, and contribute to a university's prestige. As information and knowledge resources are increasingly digitized and distributed by local and global networks, those facing the above issues are exploring alternatives to the preservation and distribution of information. [2] Some progress has also been made on the standards for the underlying metadata itself. The leadership of the Massachusetts Institute of Technology (MIT) in

the development and deployment of the DSpace IR system created in collaboration with the Hewlett Packard Corporation has been a model pointing the way forward for many other universities. This article deals with the IRs in Delhi based institutions about the hardware / software used, the type of collection available in different subjects with different file formats. It is also to find out the access method and users who are using these contents.

2. Definitions Of IR

- According to Clifford Lynch (2004) "a university-based IR is a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. It is most essentially an organizational commitment to the stewardship of these digital materials, including long-term preservation where appropriate, as well as organization and access or distribution." [9]

- Dictionary of library and information science define IR as "a set of services offered by a university or group of universities to members of its community for the management and dissemination of scholarly materials in digital format created by the institution and its community members, such as e-prints, technical reports, theses and dissertations, data sets, and teaching materials". [3]

- Chang (2003) [1] defines an institutional repository as a new method for capturing, collecting, managing, disseminating, and preserving scholarly publications created in digital form by the constituent members of an institution. The term was coined by Scholarly Publishing for Academic Resource Coalition (SPARC), and IR s have been defined by SPARC as 'digital collections capturing and preserving the intellectual output of a single or multi university community (Crow, 2002) [3].

- An IR is a digital archive where a university community's intellectual work is made accessible and preserved for posterity. The concept of IR suggests the tantalizing possibility of greater library influence over the full cycle of scholarly communication on campus, from research through publication, collection, and preservation. Libraries are performing lead role in shaping institutional digital repositories all over the world.

3. Review of Related Literature

The first step in reviewing the related literature is the identification of the material that is to be read and evaluated. A general study reviews on IRs in developing countries like India and its benefits have been provided by many authors. A recent study on open access initiatives in India-an evaluative by Liela Fernadez(2006) [4] carried out briefly on implementation of IRs in many organizations like IISc (E-prints), INFLIBNET (DSpace), Indian Statistical Institute (DSpace), etc. and the authors from these organizations have published articles on institutional repositories as case studies for their showcase of research output. Richard Johnson (2006) [6] Director at the United Kingdom's scholarly publishing and Academic Resources Coalition (SPARC), defined a digital IR as "any collection of digital material hosted, owned or controlled, or disseminated by a college or university, irrespective of purpose or provenance. Kashimura (2007) [7] describes digital archive is a system for preserving valuable digital information obtained by the digitization of cultural material in a secure and reliable manner and for using it effectively. Kaur (2007) [8] said that, today, most of the cultural and heritage, materials are being converted into digitized forms to provide immediate accessibility anywhere in the world. One feature that all digital libraries share is a system of

organization or management. The impetus for IR could be said to have emerged the Open Archive Initiatives (OAI) in 1999. This application to institutional archives, or repositories, was reinforced with the emergence of IR software. A large number of repositories have been built using software such as E-prints, DSpace and other software in India and many of the studies on IR carried out to evaluate studies on IR in India (Ghosh and Das, 2007) [5]. It provides insight of the status on Institutional Repositories.

4. Objectives of The Study

For this study on "Institutional repositories in Delhi based institutions: a comparative study" following main objectives are planned:

- To find out the hardware and software available or used for IR's in the respective institutions.
- To find out total number of collection added in the IR.
- To find out the types of collections added/being added.
- To find out the different type of subjects covered in the content.
- To find out the different types of file formats stored.
- To find out who all depositing the digital collections to the IRs.
- To find out the access method available for IRs (LAN / WAN).
- To find out the users, who are using the IRs.
- To compare and evaluate institutional repositories.

5. Scope of the Study

The scope of the study is limited to the IRs available in the following institutions:

- IGNOU (eGyanKosh), New Delhi;
- Indian Institute of Technology Delhi (IIT Delhi);
- Indira Gandhi National Center for the Arts (IGNCA);
- National Institute of Public Finance and Policy (NIPFP), New Delhi;
- National Institute of Science Communication and Information Resources (NISCAIR); and
- WHO Regional Office for South-East Asia (WHO SEARO), New Delhi.

6. Methodology

Methodology has its own importance in scientific investigation because objectivity in any research investigation cannot be obtained unless it is carried out in a very systematic and planned manner. There are several techniques for collecting data such as: Observation Method, Interview Method, Questionnaire Method, Schedules and Diary Method.

The study is conducted by using the following methods:

- A Comprehensive questionnaire has been prepared to collect the required data.
- By personally visiting the respective institutions and discuss with Library Professionals for collecting the details of the software used, collection details and the services available.

- By checking the respective institutions' websites, the data will be collected for further information. If required, print resources, including annual report will be studied.
- The institutional repositories will be studied in terms of their content, search ability, usability, etc. and the collected data will be analyzed by presenting in tabular form with the use of Excel, wherever required.

7. Analysis and Findings

With the recent advancement in information technology, a large number of IR software packages are available with varied facilities available in the market. This has made difficult for information professionals to choose the best IR software packages, which is capable of meeting their different requirements. To determine the best packages, analyze and identify the needs and match it with the features and functions of integrated IR system and also it satisfy the present and prospective needs of the institutions and its users. The main purpose of "Institutional repositories in Delhi based institutions: a comparative study" is to provide some basic idea to institutions, which may be helpful for selecting a suitable IR software package. Evaluation of IR software is a very complex and difficult process. To carry out the comparative study, a checklist has been formulated. The study is being carried out for the six institutions as abbreviated as IGNOU (eGyanKosh), IITD, IGNCA, NIPFP, NISCAIR and WHO SEARO in scope.

From the questionnaire, the data in relation to the collection available in IRs with details of the established year, that has been tabulated below in Table 1:

Table 1: IR established year and collection available

Sl. No.	Name of the institution	Year of Established	Collection available	Software used
1	IGNOU (eGyanKosh)	2006	37510	DSpace
2	IIT Delhi	2004	6176	DSpace
3	IGNCA	2004	407900	DSpace
4	NIPFP	2005	783	DSpace & Greenstone
5	NISCAIR	2008	12843	DSpace
6	WHO SEARO	2005	14009	DSpace

From the above Table 1, it is found that IIT Delhi and IGNCA have established its IR in the year 2004, which are the oldest one. NISCAIR has established its IR in the year 2008, which is the recent one. IGNCA has more number of collections in its IR (about 407900), whereas IGNOU (eGyanKosh) has the second highest collection (37510) which includes both the India: 35817 and Pan African e-Network: 1693. NIPFP has least collection (783) with different file formats. From the above it is found that WHO Regional Office for South-East Asia established its IR in the year 2005 and has more collection (14009) which includes both the document: 7041 and multimedia : 6968.

Also the data has been collected about the types of collection stored with the name of the software used in IRs, which are tabulated in Table 2 below:

Table 2: Name of the software used and types of collection

Name of the institution	Types of collection	
	Institutional publications	Staff publications
IGNOU (eGyanKosh)	Learning Objects; Course materials and Multidisciplinary.	Nil
IIT Delhi	Committee papers, Office Meetings.	Committee papers, Teaching materials, Thesis and Dissertation, Books and Patents.
IGNCA	Digital Images, Photographs, Catalogue of Slides, Photograph Collections, Video Recordings, Audio Recordings, Walkthrough, Multimedia CD, DVD, Multimedia Documentation, News Letters, Thematic Categories, Geographical Categories, Books, Research Reports, Bibliography, Manuscripts Catalogue, Databases.	Articles by IGNCA Officials, Conference Proceedings, Books Published by IGNCA, Papers and Essays.
NIPFP	Annual reports, Project reports, Newsletters.	Committee papers, Course materials, Photos and videos, Books review.
NISCAIR	17 NISCAIR journals, 3 Popular Science Magazines and Natural Products & Resources Repository.	Nil
WHO SEARO	Articles; Reports; Conference Proceedings; Unpublished; Learning Objects; Multimedia; Special videos.	Health Research, Consultative Committee for Programme Development and Management, Communicable Diseases (CDS), Policy Documents.

Collections available are categorized in two different ways viz. Institutional publications and Staff publications. From the questionnaire, the data is also collected for the subject coverage of the files and file formats, in which the data is stored. They are tabulated in Table 3 below:

Table 3: Subject coverage and file formats

Name of the institution	Subject coverage	File formats						
		Word	Excel	PPT	PDF	HTML	JPEG	TIFF
eGyanKosh	Applied Mechanics, Rural Development, Chemistry, Civil Engineering, Computer Science and Engineering, Educational Technology, Electrical Engineering, Humanities and Social Sciences, Industrial Tribology Machine Dynamics, Instrument Design Development Centre, Management Studies, Mathematics, Mechanical Engineering Physics, Textile Technology, etc.	0	0	0	32883	2397	0	0
IIT Delhi	Engineering (All), Computer science and Telecomm Technology and management, etc.	0	0	4891	980	0	0	0
IGNCA	Rural Development, Computer Science and Engineering, Humanities and Social Sciences, and Performing Arts , etc.	Word, Excel, Power Point, PDFs, HTML for Website, Bitmap, JPEG, PSDs, TIFF, Wave, Flash, Quick Time, MPEG etc. depending upon requirement created.						
NIPFP	Economics, Statistics, Rural Development and Humanities and Social Sciences, etc.	36	96	101	500	0	26	33
NISCAIR	Biochemical Engineering, Biotechnology, Chemical Engineering, Chemistry, Humanities and Social Sciences, Mechanical Engineering, Physics, Textile Technology, Biological /Life Sciences, Chemical/Physical Sciences, Library and Information Science, Popular Science, etc.	0	0	0	12843	0	0	0
WHO SEARO	Health and Medicine, Education, Multidisciplinary	13	0	9	5590	150	6918	50

It is found that, IGNOU is having files in PDF and HTML; IIT Delhi has only files in PDF and PPTs; IGNCA has different types of files like: Word, Excel, Power Point, PDFs, HTML for Website, Bitmap, JPEG, PSDs, TIFF, Wave, Flash, Quick Time, MPEG etc. depending upon requirement created; NIPFP is having files in Word, Excel, PPTs, PDFs, JPEG, TIFF, but don't have HTML files; NISCAIR has only files in PDF format. However, NIPFP has more files in word and excel rather than WHO SEARO and it has more files in JPEG and TIFF rather than NIPFP. More number of PPTs is available in IIT Delhi rather than NIPFP.

7.1. Subject coverage

In regard to the subject coverage, IGNOU is covering Applied Mechanics, Rural Development, Chemistry, Civil Engineering, Computer Science and Engineering, Educational Technology, Electrical Engineering, and many more. IITD is covering all engineering subjects, as IIT deals with engineering aspects mainly, with some portion of management science and computer science also. IGNCA is covering Rural Development, Humanities and Social Sciences, and Performing Arts in IR, as IGNCA deals with the ancient Indian culture and art aspects mainly, with some portion of Computer Science and Engineering also. NIPFP deals with finance and policy matters, hence it covers the subjects like Economics, Statistics, Rural Development and Humanities and Social Sciences in their IR files. NISCAIR covers a wide variety of subjects, as per their journals in Life Sciences, Chemical / Physical Sciences, Library and Information Science, Popular Science, etc. WHO SEARO is covering Health and Medicine; Education; Multidisciplinary in their IR.

7.2. Users of IR

The data has been collected for the type of users who are using the IR and the access facility available within or outside, which is tabulated below in Table 4:

Table 4: Users who are accessing IR

Name of the institution	Access mechanism	Type of users using IRs
IGNOU (eGyanKosh)	Within and outside the institution under LAN and WAN	Students, Faculty, Researchers, Administrative Staff, Librarian, Accountants, IT Person, Software Engineers, etc.
IIT Delhi	Within and outside the institution under LAN and WAN	Students, Faculty, Researchers, Administrative Staff, Librarian, and outsiders.
IGNCA	Within and outside the institution under LAN and WAN	Students, Faculty, Researchers, Librarian, Writers, Journalist, etc.
NIPFP	Within the library Under LAN and WAN (restricted access)	Students, Faculty, Researchers, Administrative Staff, Librarian, Economists, etc.
NISCAIR	Within and outside the institution under LAN and WAN	Students, Faculty, Researchers,
WHO SEARO	Within and outside the institution under LAN and WAN	Students, Faculty, Researchers, Administrative Staff, Librarian,

From the above Table 4, it is found that, IGNOU (eGyanKosh), IIT Delhi, IGNCA, NISCAIR and WHO SEARO NIPFP are providing access to IR from anywhere. But the types of users accessing is more in IIT Delhi, in comparison with NIPFP and NISCAIR. This may be the larger number of students are being admitted to IIT Delhi every year for different courses.

In the questionnaire, it was also requested about the contribution of contents to IR by different people like: Students, Faculty, Researchers, Administrative Staff, Librarian, and others. The same data has been collected and tabulated in Table 5 below:

Table 5: Collections contributed

Name of the institution	Type of users					
	Students	Faculty	Researchers	Administrative staff	Librarian	Others
IGNOU (eGyanKosh)	9165	2628	16	7	835	0
IIT Delhi	2050	1680	1520	1400	463	0
IGNCA	0	0	0	0	0	80000
NIPFP	0	45	40	0	290	0
NISCAIR	0	0	12843	0	0	0
WHO SEARO	0	0	0	0	0	14009

From the above it is concluded that at IGNOU (eGyanKosh), students and faculty are contributing more number of contents, in comparison with librarians or library professionals, researchers and administrative staff. At IIT Delhi, students, faculty, researchers and administrative staff are contributing more number of contents, in comparison with librarians or library professionals. At IGNCA, purchase and private donations are main contributing sources of the more number of contents, in comparison with students, faculty, researchers, administrative staff and librarians or library professionals. At NIPFP, librarian is contributing more number of files to the IR creation comparing with others contribution within the organization. At NISCAIR, only researchers are contributing more number of contents, in comparison with students, faculty, researchers, administrative staff and librarians or library professionals.

At WHO SEARO, different committees are main contributing sources of the more number of contents, in comparison with students, faculty, researchers, administrative staff and librarians or library professionals. It was informed during the data collection that open access is available from eGyanKosh, IIT Delhi, IGNCA and NISCAIR's IR, whereas NIPFP doesn't allow open access to its IR. However they are trying to add more contents now-a-days.

In regard to the possibility of any customization, eGyanKosh, IIT Delhi, NISCAIR and WHO SEARO are providing the customization possibility or feasibility to the administrator, in comparison with IGNCA and NIPFP. From the questionnaire, the data in relation to the operating system used, software performance and software standards, which has been tabulated below in Table 6:

Table 6: Software performance and standards

Name of the Institution	Operating systems	Software performance	Software standards
IGNOU	Multi user: Server 2008	Good	Dublin core and UNICODE
IIT Delhi	Multi user: Linux	Excellent	UNICODE
IGNCA	Multi user: Linux	Excellent	MARC
NIPFP	Multi user: Fedora	Excellent	MARC
NISCAIR	Multi user: Linux	Excellent	OAI-PMH and UNICODE
WHO SEARO	Multi user: Linux	Excellent	OAI-PMH and UNICODE

In regard to the IR software packages, IIT Delhi, IGNCA, NIPFP, NISCAIR and WHO SEARO have mechanism to check that data is not changed by the unauthorized person are providing the

customization possibility or feasibility to the administrator, in comparison with eGyanKosh. All IRs has the provision to maintain different user ID's and Password.

8. Conclusion

Delivering digital content through the IR is a challenging task to any organization. The deposit of all types of material should be encouraged from different types of people. The IR should be fully accessible from within and outside the institution. This study has been carried out for IGNOU (eGyanKosh), IIT Delhi, IGNCA, NIPFP, NISCAIR and WHO SEARO for their IR activity, which they have created using DSpace and Greenstone open source software. From the study it is found that, IGNCA having more number of collections (407900) in its IR, whereas NIPFP having less number of collections (783) with different file formats. From the study it is found that, all the institutions are using DSpace, but NIPFP using both the DSpace and greenstone software for their IR collection. IGNOU (eGyanKosh), IIT Delhi, IGNCA, NIPFP, NISCAIR and WHO SEARO are having specific subject coverage. IGNCA is covering Rural Development, Humanities and Social Sciences, and Performing Arts. NIPFP deals with finance and policy matters, hence it covers the subjects like Economics, Statistics, Rural Development and Humanities and Social Sciences in their IR files. NISCAIR deals with science, communication and information resources aspects mainly. WHO SEARO is covering Health and Medicine; Education; Multidisciplinary in their IR.

Students, Faculty, Researchers, Administrative Staff, Library professionals, Accountants, IT staff, journalists, economists and others are using all the IR within and outside the institution under LAN and WAN. All the institutions are following standards like UNICODE, OAI-PMH, MARC for their IR creation and all the IR having better search facilities. From the study it is found that, the literature growth of IR in the world is 29700 and in India is 8160 as on 4th Aug 2012. From the study it is recommended that, NIPFP should request the library staff and faculty to give their publication whatever they published for making them available on IR. However, all six IR's are having good collection in their respective subjects, which is attracting different types of users and are using the open source software DSpace for their creation of digital content. It is suggested that librarian and faculty to add more collections to the IR for more visibility in the field of public finance and policy. Faculty and students of IGNCA can make available the educational resources in IR for others to use. Librarian may encourage for this activity. India should take initiative to establish a national level IR centre along with some other countries to build an archival collection of important scholarly literature and to fill the gaps in existing library collections of back files.

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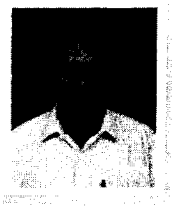
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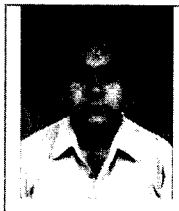
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Institutional Repositories in India: *A Case Study of I.I.M., Lucknow*

Srivastava, B P **Ravindra Kumar**

Abstract

Institutional repositories (IR) are overall collections that capture, collect, manage, disseminate and preserve scholarly work created by the constituent members in individual institutions. The rapid advent use of internet completely revolutionized the library systems and changed library services. Open Access Movement in India is getting momentum in libraries to overcome the access barriers of Scholarly published. Today it is very easy to get exhaustive information freely on web, but still it is difficult to get scholarly information freely. This paper discusses about Institutional Repositories in India with special reference to Indian Institute of Management, Lucknow where Green Stone Digital Library Software is used for creating repository. Although most of the Institutional Repositories (IRs) in India use D-space and E-print software.

Keywords : Institutional Repositories, Metadata Harvesting, Open Access Movement.

1. Introduction

Today is the age of information and the concept of the traditional library has been changed. Now Digital Library, electronic library and virtual library concepts are being popularized. Today libraries are not only the store house of printed documents but also the centre of digital information. With the development and use of ICT, the services and collection of the libraries are globalized. The main objective of libraries is to keep their cliental up-to-date in their area of interest. Due to information explosion, space problem, high information demand increasing cost of Journals, limited budget of the library forced the libraries to find out some other way to fulfill users demand. To solve these problems, the concept of Institutional Repositories are started among the academic institution in India. Today many Academic Institutions have started to build up their own repositories and they are also providing their services to users on Internet or Intranet.

2. Metadata Harvesting

Another feature that gained momentum after establishment of different institutional repositories or open access archives is the metadata harvester. A metadata harvesting service harvests or indexes metadata from QAI- compliant archives or repositories and journals through harvesting software that supports a protocol known as OAI-PMH (Open Access Initiative - Protocol for Metadata Harvesting). The standard protocol used is OAI PMH (Open Archives Initiative-Protocol for metadata harvesting). Some of the well known Metadata harvesters are; OAIster set up at University of Michigan which harvests and indexes from 634 institutions, ARC at Old Dominion University, ArXIV of physics, Mathematics and computer science, UIUC registry of cultural heritage materials etc.

3. Scholarly Publications Communication: Indian Context

India has developed through its strong academic and research establishments. The R&D organizations have also developed expertise in their respective areas that are now recognized worldwide. Leading Indian Scientific research institutions, such as Indian Institute of Science (IISC),

Indian Institutes of Technology (IITs), Indian Statistical Institute (ISI), laboratories under the Council of Scientific and Industrial Research (CSIR), Indian Council of medical Research (ICMR), Indian Council Agricultural Research (ICAR), Indian Space Research Organization (ISRO), Department of Atomic Energy (DAE), Central and State universities, Private Universities, deemed universities and Corporate R & Ds have been playing crucial role towards national development. The high quality research accompanied by innumerable scholarly communications to various national and internationals journals and conferences has put India in the forefront in the developing world and leader of South Asian countries. Only best institutions have reasonably good information provision facilities that support scholarly communications. On one hand paucity of funds for the subscription based scholarly journals and on the other the shrinking budged discourage both the access to vast scholarly publication process itself. The situation in India has improved to a considerable extent. The number of Internet subscribers in India were 140,000 in 1998 and now the number has increased about 150 million which is third in the world after China and U.S.A.

4. Open Access

There is a healthy sign of adopting the open access much faster in India compared to many developing countries. A good number of high quality, peer-reviewed open access journals are being published covering a wide spectrum of subjects. While there are many publishers in this category, but major six publishers are - Indian Academy of Sciences, Indian National Science Academy, Indian Medlars Center of NIC, Medknow publications, Indian journals com, and Kamala-Raj enterprises. Libraries and information centres in India attached to various types of institutions are now taking part in open access movement, by establishing institutional digital repositories to provide worldwide access to their research documents for the users.

5. Institutional Repositories

In India a few institutions, like Indian Institute of Science; Indian Institute of Management, Kozhikode; Indian statistical Institute, Bangalore; Indian Institute of Technology, Delhi; National Institute of Technology Rourkela; National Aerospace Laboratories (NAL); National Chemical Laboratory; Information and Library Network (INFLIBNET); National Institute of Oceanography; Raman Research Institute; etc. have set up open access institutional repositories (IRs) that archive and disseminate research outputs of respective institutions. There are some subject specific IRs as well, Librarian's Digital Library (LDL) of Documentation Research and Training Centre (DRTC), Bangalore and OpenMed@NIC of National Informatics Centre, New Delhi are examples giving access to LIS and biomedical literature respectively. IIT, Kanpur, IIM, Lucknow and BHU, Varanasi have also developed their repositories. Vidyanidhi of University of Mysore is an example of document type specific collection that archives and provides access to thesis and dissertations of Indian Universities. Registry of Open Access Repositories (ROAR) from University of South amption lists out 21 important IRs of Academic and Research Institutions in India as described in Table 1. These IRs have adopted self-archiving model and have been using two most popular open source software - Dspace and GNU Eprints. ROAR has not listed a few Indian IRs, but still a few are yet to be listed.

Table-1: IRs of Academic and Research Institutions in India

Name	Host Institution	URL	Items Dec, 2012	S/W Used
Eprinits@IISc	Indian Institute of Science, (IISc) Bangalore.	http://eprints.iisc.ernet.in/	34286	EPrints
Dspace@IIMK	Indian Institute of Management, Kozhikode (IIMK)	http://dspace.iimk.ac.in/	516	EPrints
Dspace@IIA	Indian Institute of Astrophysics (IIA)	http://prints.iiap.res.in/	5710	DSpace
Dspace@NITR	National Institute of Technology, Rourkela (IITR)	http://dspace.nitrkl.ac.in/dspace/	1736	DSpace
ETD@IISc	Indian Institute of Science (IISc)	http://etd.ncsi.iisc.ernet.in/	1807	DSpace
Dspace@ INFLIBNET	INFLIBNET	http://dspace.inflibnet.ac.in	4800	DSpace
Librarian's Digital Library (LDL)	Docum.Res.& Training Centre (DRTC)	https://drtc.isibang.ac.in/	465	DSpace
NAL Institutional Repository	Nat. Aerospace Laboratories (NAL)	http://nal-ir.nal.res.in/	5309	EPrints
EPrints at NCL	Nat. Chemical Laboratory (NCL)	http://dspace.ncl.res.in/	#	DSpace
Digital Repository Service of NIO	National Institute of Oceanography (NIO)	http://drs.nio.org/drs/	4175	DSpace
Eprints at OWSA	One World South Asia Open Archive Initiative	http://open.ekduniya.net/	#	EPrints
OpenMED at NIC	National Informatics Centre (NIC)	http://openmed.nic.in/	2866	EPrints
Eprint@DU	University of Delhi	http://www.du.ac.in/	#	EPrints
Digital Repository of RRI	Raman Research Institute (RRI)	http://dspace.rri.res.in/	5108	DSpace
Eprints@Bioin-formation	Bioinformation	http://www.bioinformation.net/	#	EPrints
DSpace@UOH	University of Hyderabad	http://igmlent.uohyd.ernet.in	#	DSpace
EPrints@IIMK	Indian Institute of Management, Kozhikode (IIMK)	http://eprints.iimk.ac.in/	#	EPrints
EPrints@IITA	Indian Institute of inf. Technology, Allahabad (IITA)	http://eprints.iiita.ac.in/	#	EPrints

ISI Library, Bangalore	Indian Statistical Institute, Bangalore	http://library.isibang.ac.in:8080/dspace/	#	DSpace
Eprints at RGCFB	Rajiv Gandhi Center for Biotechnology	http://www.rgcb.res.in/	#	EPrints
Eprints at Medknow	MedknowEprints	http://eprints.medknow.com/	#	Eprints

Table 1

 # Number of items could not be ascertained through respective IR sites as some of them were not accessible.

6. Metadata Harvesters

Some Indian institutions have been experimenting metadata harvesting. Search Digital Libraries (SDL) of DRTC is one such service harvesting library information science subject-specific open access archives and repositories. The 'Knowledge Harvester@INSA', is an experimental initiative from Indian National Science Academy that harvests metadata from 3 archives. "SJPI Cross Journal Search Service" is a recent initiative from NCSI at IISc that harvests metadata from 13 Indian open access journals. India Institute of Technology, Delhi has initiated a metadata harvesting service called SEED that indexes 4 archives. NAL has initiated harvesting OAI compliant IRs of CSIR Laboratories in India and making them accessible through a unified search interface. All these metadata harvesters in India use PKP Harvester, developed by Public Knowledge Project UBC, Canada. Open J-Gate *(www.openj-gate.org)*, a free service on net is an open access journals indexing service initiated by informatics India Private Limited. It covers more than 3,500 open access academic, research and industry journals world over of which > 1,500 are peer-reviewed scholarly journals. More than 0.3 million new articles added every year to this service.

7. Institutional Repository at IIML

- **Information Resource Centre at IIML (www.iiml.ac.in)**

The Indian Institute of Management (IIML) is situated at the outskirts of the historic and culturally rich city of Lucknow (U.P.) and was established in 1984, by the Government of India, as a national level school of excellence in management science.

IIML's mission is to be a global, socially conscious and integrated school of management, towards management development, both in India and abroad. Towards this, IIML undertakes a diverse range of academic activities and interventions aimed at creation, dissemination, and application of management knowledge and practices. These include : the Post Graduate Programme; the Fellow Programme; the Management Development Programme; Research Programmes; and Consulting Programmes. IIML is also entering into collaborative arrangements with leading business schools and research centres in India, Europe, Canada, South and Southeast Asia. The Institute has state-of-the-art computing and class-room facilities, supported by an extensive library of books, journals, films, and databases. The library caters to the information needs of its highly demanding clientele by offering a wide range of Information Technology (IT) based (and valve added) services and products. IIML has also its campus in Noida known as IIML Noida campus.

- **IIML - IR**

IIML initiated setting up of its own repository during 2007 using, the most popular open source software Greenstone Digital Library (GSDL), developed at university of Waikatoo,

Newziland. An Institutional Repository is built up here and till now about 100 Research Articles of 40 Faculty Members and Newsletters from 2003 to 2010 were uploaded & is made accessible on intranet. Today Newsletter (Monthly) is accessible on intranet, which was earlier bi-monthly. This knowledge base covers research articles, newsletter official forms, holiday list, bibliographic data and other administrative documents, etc. One can browse the document & download on intranet within the campus.

- **Technologies Used**

IIML-IR runs on GNU Green stone open archive software developed by the Unviersity of Waikatoo, Newziland. This IR is powered by MySQL for database, Apache Web server, scripting language PERL5, XML standard for retrieving, the Document Object Model (DOM) platform- and language-neutral interface that allow programs and scripts to dynamically access and update the content, structure and style of documents, ParaCite for both reference parsing and location.

8. Collection Organization & Search Features

Although the Academic staff is trained to contribute their publications and other documents directly to IR, but mostly the staff of information centre collects the documents available both in soft copy and hard copy form and upload them to IR. To facilitate the digitization job, especially for documents published earlier, high end scanners like Minolta book scanner, microfiche scanners and flatbed scanners with back to back and batch mode facility have been deployed. Access and retention policies have been adopted covering issues like - Who can deposit; What can they deposit; can items submitted once be withdrawn; Implications of staff movements; Publications brought out when one is on deputation abroad or to another institution; Interdivisional publications; Publications based on R & D work concerned to sponsored projects; etc. The level of accessibility include fully open, only on institute's Intranet with or without full text.

9. Immediate and Future Plan

IIML plans to open its repository for open Access and also try to upload thesis of faculty members & FPM scholars in future. IIML is also conducting workshop of GSDL software for creating their own IR for other library professionals and associated persons. Presently IIML IR is providing its services to all faculty members, staff and students through intranet.

10. Conclusion

Institutional repository is the most powerful tool to publish and provide the useful service among the community of the institution. University Grant Commission (UGC) is also realizing the importance of research activities of the institutions and because of that UGC is encouraging the institutions to create and develop their own repositories. Although a few institution have started creating and developing their IRs but still a lot of work needs to be done in this field.

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Study of Indian Repositories on DOAR

Jagdish R.Vyas **Vijay Ganpati Tibile**

Abstract

Institutional Repositories (IR) disseminates rich source of digitized material drafted and published by scholars. Many of the research institutions and universities across the world are facilitating open access (OA) to their intellectual outputs through their respective OAIR (Open access Institutional Repositories. Open Archive Initiative (OAI) based service provider harvest metadata from register OAI – compliant systems and build a central index on the harvested metadata .This central index serves as a discovery tool for end users, who need not be aware of the existence of distributed repositories .One such OAI based service provider is Directory of Open Access Repositories (DOAR). It is a union catalog of IR which gives access to OAIR in the world. This paper has made an attempt to evaluate IR available on DOAR. DOAR is a metadata harvesting service provider which provides access to open access repositories in the world. At present total 2233 repositories were found on DOAR from all country on different subjects. Out of 2233, 54 repositories were from India. Analysis is presented on the basis of selected criteria like software used, size of items, content included, languages and policy used etc.

Keywords : Institutional repositories, DOAR, India

1. Introduction

The closed access system to most of the scholarly literature both published and unpublished paved the way for IR. An IR is a web – based database of scholarly material. IR collects, stores, disseminates, digital resources and also preserves digital material for long term usage. The proponents of OA movement to scholarly literature believe that the access barrier to the scholarly literature can be overcome if the researcher takes advantage of the developments that are taking place in the information and communication technology by facilitating OA scholarly literature. To achieve OA, the Budapest Open Access Initiative has recommended two strategies. These are self archiving in an IR and Open access journal on internet.

A metadata harvesting service harvest or indexes metadata from OAI- compliant archives or IR through harvesting software that supports a protocol known as OAI-PMH (Open Access Initiatives protocol for Metadata Harvesting). DOAR is an attempt to build and maintain metadata harvesting service for all OAIR from the world. Repositories need to be categorized with clear information on their policies regarding tagging peer-reviewed/non-peer-reviewed material, their subject coverage, the constituency they draw on for content, their collection and preservation policies, etc. If this information does not exist, repositories should be encouraged to provide it as a means to further improve their visibility and the use of the content that they hold. Maintaining of all IR in their index has been done by DOAR regularly.

2. Methodology

DOAR website (http://www.opendoar.org) was studied for present research. On 28th November 2012, total 2233 repositories were found on DOAR from all country on different subjects. Out of 2233, 54 repositories were from India. Analysis is presented on the basis of selected criteria like software used, size of items, content included languages and policies etc.

3. Scope and Limitation

Only IR of India found in DOAR was chosen. Total 54 IR were analyzed based on selected study criteria. Access date of DOAR site is up to 28th November 2012.

4. Objectives of The Study

- To know Indian Repositories available on DOAR.
- To analyze 54 Indian IR available on DOAR based on selected study criteria.
- To know software used for repositories
- To know record (items) present in respective repositories
- To know languages used in IR
- To know URL of IR
- To know various types of policies of IR
- To know subject content in IR

5. Analysis and Interpretations of Data

DOAR contains 54 Indian repositories; these are analyzed based on criteria like software used, size of item, content included, type of IR, subjects, languages, and policies.

Table-1: Name of the Organization having Institutional Repositories

S.N.	Repository name	URL
1	Catalysis Database	http://www.eprints.iitm.ac.in/
2	CMFRI Digital Repository	http://eprints.cmfri.org.in/
3	Delhi College of Engineering Repository	http://www.dspace.dce.edu/
4	Dhananjayarao Gadigil Library	http://library.gipe.ac.in/jspui/
5	Digital Knowledge Repository of Central Drug Research Institute	http://dkr.cdri.res.in:8080/dspace/index.jsp
6	Digital Library at Indian Statistical Institute, Bangalore	http://eprints.iisc.ernet.in/
7	Digital repository of Cochin University of Science & Technology	http://dspace.cusat.ac.in/jspui/
8	DigitalLibrary@CUSAT	http://dspace.cusat.ac.in/jspui/
9	DRS at National Institute of Oceanography	http://drs.nio.org/
10	DSpace @ GGSIPU	http://14.139.60.216:8080/xmlui/
11	dspace @ sdmcet	http://210.212.198.149:8080/jspui
12	DSpace at IBS Ahmedabad	http://202.131.96.59:8080/dspace
13	Dspace at IIT Bombay	http://dspace.library.iitb.ac.in/jspui/
14	DSpace at Indian Institute of Management Kozhikode	http://dspace.iimk.ac.in/
15	DSpace at IUCAA	http://www.iucaa.ernet.in:8080/jspui/
16	DSpace at NCRA	
17	DSpace at Vidyanidhi	http://dspace.vidyanidhi.org.in:8080/dspace/
18	DSpace@IMSC	http://www.imsc.res.in/xmlui

19	DSpace@INFLIBNET	http://ir.inflibnet.ac.in/
20	Dspace@NITR	http://dspace.nitrkl.ac.in/dspace/
21	DSpace@PDPU	http://library.pdpu.ac.in:8080/xmlui
22	DSpace@TU	http://dspace.thapar.edu:8080/dspace/
23	DU Eprint Archive	http://eprints.du.ac.in/
24	eGyankosh	http://www.egyankosh.ac.in/
25	Electronic Theses and Dissertations at Indian Institute of Science	http://etd.ncsi.iisc.ernet.in/
26	Eprint@NML	http://eprints.nmlindia.org/
27	Eprints@IARI	http://eprints.iari.res.in/
28	EPrints@IITD	http://eprint.iitd.ac.in/dspace/
29	ePrints@NII	http://eprints.nii.res.in/
30	Eprints@SBT MKU	http://eprints.bicmku.in/
31	Etheses - A Saurashtra University Library Service	http://etheses.saurashtrauniversity.edu/
32	ICRISAT Open Access Repository	http://oar.icrisat.org/
33	IIT Roorkee Repository	http://bhagirathi.iitr.ac.in/dspace/
34	Indian Academy of Sciences: Publications of Fellows	http://repository.ias.ac.in/
35	Indian Institute of Astrophysics Repository	http://prints.iiap.res.in/
36	Indian Institute of Management Kozhikode Digital Library	http://www.iimk.ac.in/gsdl/cgi-bin/library
37	Indian Institute of Petroleum Institutional Repository	http://library.iip.res.in:8080/dspace
38	Institutional Repository of Intectual Contributions of Delhi Technological University	http://www.dspace.dce.edu/
39	Kautilya Digital Repository at IGIDR	http://oii.igidr.ac.in:8080/dspace/index.jsp
40	Knowledge Repository of Indian Institute of Horticultural Research	http://www.erepo.iihr.ernet.in/
41	Knowledge Repository Open Network	http://dspaces.uok.edu.in:8080/jspui/
42	Librarians' Digital Library	https://drtc.isibang.ac.in/
43	Mahatma Gandhi University Theses Online	http://www.mgutheses.org/
44	Management Development Institute - Open Access Repository	http://dspace.mdi.ac.in/dspace
45	National Aerospace Laboratories Institutional Repository	http://nal-ir.nal.res.in/
46	National Science Digital Library	http://nsdl.niscair.res.in/
47	NISCAIR Online Periodical Repository	http://nopr.niscair.res.in/
48	Open Access Agricultural Research Repository	http://eprints.iari.res.in/
49	Open Access Repository of IISc Research Publications	http://eprints.iisc.ernet.in/
50	OpenMED@NIC	http://openmed.nic.in/

51	Raman Research Institute Digital Repository	http://dspace.rri.res.in/
52	Sardar Vallabhbai National Institute of Technology EPrints	http://eprints.svnit.ac.in/
53	ShodhGanga: A resevior of Indian Theses	http://shodhganga.inflibnet.ac.in/
54	Vidya Prasarak Mandal - Thane	http://dspace.vpmthane.org:8080/jspui/index.jsp

Table-2: Software's and no. of items included in Indian IR on DOAR

S.N.	Repository name	Software	Num. Recs.
1	Catalysis Database	EPrints	2327
2	CMFRI Digital Repository	EPrints	8796
3	Delhi College of Engineering Repository	DSpace	326
4	Dhananjayarao Gadigil Library	DSpace	1539
5	Digital Knowledge Repository of Central Drug Research Institute	DSpace	630
6	Digital Library at Indian Statistical Institute, Bangalore	DSpace	191
7	Digital repository of Cochin University of Science & Technology	DSpace	2295
8	DigitalLibrary@CUSAT	DSpace	5290
9	DRS at National Institute Of Oceanography	DSpace	4166
10	DSpace @ GGSIPU	DSpace	131
11	dspace @ sdmcet	DSpace	60
12	DSpace at IBS Ahmedabad	DSpace	171
13	Dspace at IIT Bombay	DSpace	14096
14	DSpace at Indian Institute of Management Kozhikode	DSpace	512
15	DSpace at IUCAA	DSpace	2516
16	DSpace at NCRA	DSpace	84
17	DSpace at Vidyanidhi	DSpace	5482
18	DSpace@IMSC	DSpace	278
19	DSpace@INFLIBNET	DSpace	1274
20	Dspace@NITR	DSpace	1706
21	DSpace@PDPU	DSpace	99
22	DSpace@TU	DSpace	2060
23	DU Eprint Archive	EPrints	170
24	eGyankosh	DSpace	23794
25	Electronic Theses and Dissertations at Indian Institute of Science	DSpace	1746
26	Eprint@NML	EPrints	5302
27	Eprints@IARI	EPrints	230
28	EPrints@IITD	DSpace	2141

29	ePrints@NII	EPrints	10
30	Eprints@SBT MKU	EPrints	89
31	Etheses - A Saurashtra University Library Service	EPrints	985
32	ICRISAT Open Access Repository	[Unknown]	5800
33	IIT Roorkee Repository	DSpace	1007
34	Indian Academy of Sciences: Publications of Fellows	EPrints	89726
35	Indian Institute of Astrophysics Repository	DSpace	5685
36	Indian Institute of Management Kozhikode Digital Library	Greenstone	
37	Indian Institute of Petroleum Institutional Repository	DSpace	454
38	Institutional Repository of Intectual Contributions of Delhi Technological University	DSpace	841
39	Kautilya Digital Repository at IGIDR	DSpace	204
40	Knowledge Repository of Indian Institute of Horticultural Research	DSpace	382
41	Knowledge Repository Open Network	DSpace	625
42	Librarians' Digital Library	DSpace	464
43	Mahatma Gandhi University Theses Online	Nitya	1116
44	Management Development Institute - Open Access Repository	DSpace	325
45	National Aerospace Laboratories Institutional Repository	EPrints	5250
46	National Science Digital Library	DSpace	573
47	NISCAIR Online Periodical Repository	DSpace	13444
48	Open Access Agricultural Research Repository	[Unknown]	
49	Open Access Repository of IISc Research Publications	EPrints	34094
50	OpenMED@NIC	EPrints	2866
51	Raman Research Institute Digital Repository	DSpace	5039
52	Sardar Vallabhbai National Institute of Technology EPrints	EPrints	14
53	ShodhGanga: A resevior of Indian Theses	DSpace	3385
54	Vidya Prasarak Mandal - Thane	DSpace	1108

Table-2a: Analysis of Software used for Indian IR on DOAR

S.N.	Name of Software	No. of organization
1	DSpace	37
2	EPrints	13
3	Greenstone	1
4	Nitya-	1
5	Unknown	2
Total No. of Indian IR		54

Table 2a shows the software used for Indian IR (IIR) on DOAR. Dspace software used by 37 IIR followed by Eprints software of 13 IIR. Greenstone and Nitya software used by only one IIR respectively .There are two IIR who have not specified its software used .It is observed that Dspace and Eprints are most common software used for IRR .

Table-2b: Analysis of records (items) included in IIR on DOAR

S.N.	Range of Items	No. of IIR
1	1-1000	24
2	1001-2000	7
3	2001-3000	6
4	3001-4000	1
5	4001-5000	1
6	5001-6000	7
7	6001-8000	0
8	8001-9000	1
9	9001-10000	0
10	10001-20000	2
11	20001-30000	1
12	30001-40000	1
13	40001-90000	1
14	Items Not shown	2
Total No. of IIR		54

No. of items included in IIR is shown in Table 2b. Most of IIR contains item in the range of 1 - 1000, their count is 24 followed by 7 IIR contains its range in 1001-2000 item. Maximun items found are 89726 by Indian Academy of Sciences: publication of fellows and minimum by Eprint@NII i.e. 10 item .Two IIR not shown any item.

Table-3: Contents of IIR on DOAR

S.N.	Repository name	Pubs	Confs	Theses	Unpub	Others	Base URL
1	Catalysis Database		+	+			OAI
2	CMFRI Digital Repository	+	+	+	+	+	
3	Delhi College of Engineering Repository				+	+	
4	Dhananjayarao Gadigil Library	+			+	+	
5	Digital Knowledge Repository of Central Drug Research Institute				+		OAI
6	Digital Library at Indian Statistical Institute, Bangalore						
7	Digital repository of Cochin University of Science & Technology			+		+	OAI
8	DigitalLibrary@CUSAT	+	+	+		+	
9	DRS at National Institute Of Oceanography		+	+			OAI
10	DSpace @ GGSIPU			+		+	OAI
11	dspace @ sdmcet	+		+	+	+	OAI
12	DSpace at IBS Ahmedabad	+	+		+	+	OAI

13	Dspace at IIT Bombay		+				OAI
14	DSpace at Indian Institute of Management Kozhikode		+	+	+		OAI
15	DSpace at IUCAA		+				OAI
16	DSpace at NCRA			+	+	+	
17	DSpace at Vidyanidhi			+			OAI
18	DSpace@IMSC		+			+	
19	DSpace@INFLIBNET		+			+	
20	Dspace@NITR	+	+	+			OAI
21	DSpace@PDPU				+		OAI
22	DSpace@TU		+	+			
23	DU Eprint Archive	+	+	+		+	OAI
24	eGyankosh					+	
25	Electronic Theses and Dissertations at Indian Institute of Science			+			OAI
26	Eprint@NML	+	+	+		+	
27	Eprints@IARI		+	+	+		
28	EPrints@IITD			+			OAI
29	ePrints@NII				+		OAI
30	Eprints@SBT MKU						OAI
31	Etheses - A Saurashtra University Library Service			+		+	OAI
32	ICRISAT Open Access Repository		+			+	
33	IIT Roorkee Repository		+			+	
34	Indian Academy of Sciences: Publications of Fellows						
35	Indian Institute of Astrophysics Repository			+		+	OAI
36	Indian Institute of Management Kozhikode Digital Library	+				+	
37	Indian Institute of Petroleum Institutional Repository						
38	Institutional Repository of Intectual Contributions of Delhi Technological University			+		+	OAI
39	Kautilya Digital Repository at IGIDR		+	+	+		OAI
40	Knowledge Repository of Indian Institute of Horticultural Research				+	+	
41	Knowledge Repository Open Network		+	+			OAI
42	Librarians' Digital Library		+	+		+	OAI
43	Mahatma Gandhi University Theses Online			+			
44	Management Development Institute - Open Access Repository	+	+			+	OAI

45	National Aerospace Laboratories Institutional Repository		+	+	+	+	OAI
46	National Science Digital Library	+					OAI
47	NISCAIR Online Periodical Repository					+	
48	Open Access Agricultural Research Repository	+	+				
49	Open Access Repository of IISc Research Publications	+	+		+	+	OAI
50	OpenMED@NIC						OAI
51	Raman Research Institute Digital Repository				+	+	OAI
52	Sardar Vallabhbai National Institute of Technology EPrints		+				OAI
53	ShodhGanga: A resevior of Indian Theses			+			
54	Vidya Prasarak Mandal - Thane		+			+	

Note - sign + in shows respective contents is present and blank cell denotes absence

Table 3 reveals contents of Information sources and base URL. There are 31 IIR provides OAI based service. In this service, OAI-PMH compliant software (PKP harvester) harvest metadata from registered open access repositories.

Table-3a: Analysis of contents of IIR on DOAR

S.N.	Contents	No. of IR
1	Publication	13
2	Conferences	26
3	Theses	26
4	Unpublished	16
5	Other	28

Table 3a narrates the analysis of contents included in IIR on DOAR. It is concluded from table that contents of publication type are 13, conference – 26, theses – 26, unpublished – 16 and others – 28. Research organizations in India have been giving online open access to theses due to UGC guidelines hence more no. of IIR i.e. 26 found on DOAR.

Table 4: Analysis of types of IIR on OAIR

S.N.	Repository type	No. of Repositories
1	Institutional	48
2	Aggregating	3
3	Disciplinary	3
	Total No. of IIR	54

Table 6 describes the analysis of types of repositories on DOAR. Where, Institutional means an institutional or departmental repository, aggregating means an archive aggregating data from

several subsidiary repositories and Disciplinary means a cross-institutional subject repository. There are 48 Institutional repositories getting rank 1 on DOAR.

Table 5: Analysis of current operational status (28th Nov. 2012) of IIR

S.N.	Current Status of IR	No. of IR
1	Operational	42
2	Broken	9
3	Trial	3
	Total IR	**54**

Table 5 shows the analysis of current operational status of IIR. There are 42 Operational (Full functioning) IIR on DOAR. Also broken repositories due to technical malfunctioning are 9 followed by 3 trials IIR.

Table 6 : Analysis of subject listed in IIR on DOAR

S.N.	Subjects	Total No. of IR
1	Multidisciplinary	**23**
2	Science General	**6**
3	Agriculture, Food and Veterinary	**4**
4	Biology and Biochemistry	**5**
5	Chemistry and Chemical Technology	**8**
6	Earth and Planetary Sciences	**1**
7	Ecology and Environment	**2**
8	Mathematics and Statistics	**6**
9	Physics and Astronomy	**6**
10	Health and Medicine	**5**
11	Technology General	**10**
12	Civil Engineering	**3**
13	Computers and IT	**4**
14	Electrical and Electronic Engineering	**3**
15	Mechanical Engineering and Materials	**5**
16	Arts and Humanities	**1**
17	General Social Sciences	**1**
18	Business and Economics	**3**
19	Library and Information Science	**4**
20	Management and Planning	**2**
21	Psychology	**1**

Table 6 describes the analysis of subjects listed in IIR on DOAR. Most large institutions effectively hold all subjects in their repositories. They are therefore categorized as 'Multidisciplinary' in DOAR. There are 23 IIR which occupies multidisciplinary subjects. It has been

concluded from table that there are few IIR concerned on one subject for ex- Only 4 IIR are found on Library & Information Science subject.

Table-7: Analysis of Policies included in IIR on DOAR

S.N	Policies Used	Unstated	Undefined	Not Profit	Defined	Unclear	No right	No robots	Variable	Total
1	Recorded metadata Re-use Policies	6	41	7	-	-	-	-	-	54
2	Recorded content Policies	6	43		5	-	-	-	-	54
3	Recorded submission Policies	6	38		10	-	-	-	-	54
4	Recorded preservation Policies	18	34		2	-	-	-	-	54
5	Recorded (Full text) data reuse Policies	6	41	3	-	-	-	2	2	54

***Note : Unstated** – Metadata policies not stated, **Undefined** - Metadata re-use policy explicitly undefined ,**Not Profit** - Metadata re-use permitted for not-for-profit purposes, **Defined** - Metadata re-use policy explicitly, Undefined, **Unclear** - Metadata re-use policy unclearly stated, **No right** - All metadata re-use prohibited, **No robots** - Harvesting full data items by robots prohibited, **Variable** - Rights vary for the re-use of full data items*

Table 7 shows the analysis of policies included in IIR on DOAR. Recorded metadata reuse policies undefined by 41 IIR followed by unstated 6 and 7 Non Profit. 43 IIR undefined their recorded content policies followed by unstated 6 and 5 defined. Recorded submission policies are undefined by 38 IIR followed by defined 10 IIR and unstated 6 IIR .34 IIR recorded preservation policies as compared to 18 unstated IIR and 2 defined IIR. Recorded (Full – text) data reuse policies are given by 41 IIR followed by unstated 6 IIR, 3 Not Profit, 2 No robots and 2 Variable IIR.

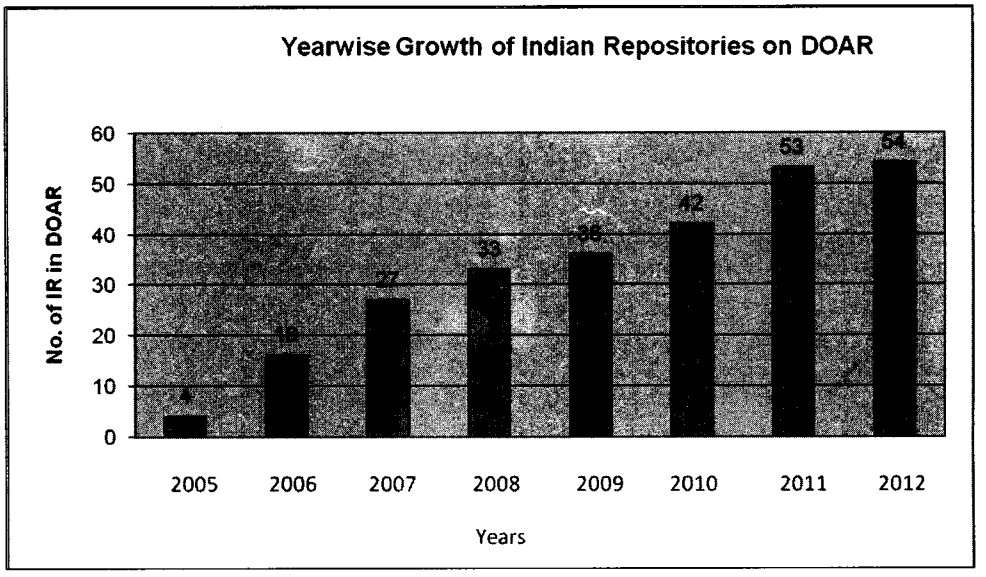
If policy information of respective IR was not given to DOAR at all, the status is set to 'Unknown'. If there is information on policies, but the particular policy is not covered, the status is set to 'Unstated'. In some cases, there may be a slot for the relevant policy, but all it says is 'not yet defined'. In these cases status set as 'Undefined' by DOAR.

Table-8: Analysis of Languages included in IIR on DOAR

S.N.	Language Included	No. of IIR
1	English	53
2	Hindi	7
3	Malayalam	2
4	Kannnada	2
5	Persion	1
6	Marathi	1
7	Gujrathi	1
8	Sanskrit	1

Table 7 shows analysis of languages included in IIR on DOAR. Highest no. of language used in IIR is English. There are 53 IIR using English language followed by Hindi i.e 7 IIR.

Fig-1: Growth of the IIR on DOAR



This graph shows the changing size of Indian Repositories on DOAR Database over time. In year 2005 only four IIR enrolled thereby every year IIR increases and today total 54 IIR present on DOAR.

6. Major Findings

- Dspace and Eprints are most commonly used software for IIR.
- Maximum no. of items (89726) are uploaded by Indian Academy of Sciences: Publication of fellows followed by Open Access repository of IISC Research publication (34094).
- Most of IIR are undefined their policies.
- Increasing growth of IIR on DOAR found during year 2005 to 2012.
- Metadata reuse is permitted for Non Profit purpose by 7 IIR.
- Multidisciplinary subject are found on most IIR.
- Theses and conference contents are major information sources on IIR.
- English is the most common language used in items of IIR.

7. Conclusion

Libraries should take the lead in setting up IR and OA publishing platforms. They should also educate the researchers about the benefit of facilitation of OA to their publication and clarify the misconception about metadata harvesting service provider like DOAR. There are large numbers of organization in India who have setup their IR but at present few organization ex. 54 were given open access to their IR on DOAR. Many organizations in India keeping their IR on LAN only, because of copyright policies and restrictions by authors. The study concludes with a positive note as open access will picking result in setting up of good no. of IR in India on DOAR.

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Advantages and Disadvantages of Cloud Computing in Library Settings

Vandana Sengar **Kanchan Kishor Shegokar**

Abstract

Cloud computing is not a completely new concept in the library and information field. Cloud computing has become a current topic of discussion within many library organizations and associations. Libraries need to consider what cloud computing might mean to libraries and information services and where cloud computing could play a vital role. Like any other technology cloud computing do also have its advantages and disadvantages, which needs to be taken into consideration before implementing this new technology.

Keywords : Cloud Computing, Library setting, Advantages, and Disadvantages

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Awareness of ICT and Access to E-resources under N-LIST Programme: *A Case Study of College Library Users of Barak Valley, South Assam*

Manoj Kumar Sinha **Sucheta Bhattacharjee** **Sudip Bhattacharjee**

Abstract

The present study has been undertaken with a view to know the scenario of N-LIST Programme implementation and status of the ICT awareness for usage of e-resources amongst the College Library Users who have been mainly drawn from the ten selected college libraries of Barak Valley of South Assam to access E- Resources available under N-LIST Resources. For that purpose, survey method has been adopted, which comprises of administration of questionnaire, observation of the participants, and interview of some of the participants for knowing the opinion of the respondents in respect of usage of e-resources of the college library users from the N-LIST Programme/ services for their academic and research activities. The paper highlights the important survey findings in respect of demographic profiles of college library users, their library visit pattern, e-resources use pattern and expectations of college library users from the N-LIST Programme through which the scholarly contents are made available to the library users. Besides this, some suggestions and recommendations to solve the impediments for non-implementation of N-LIST Programme and underutilization of e-resources have also been enumerated in brief.

Keywords : ICT Awareness, N-LIST Programme, E- Resources, INFLIBNET, College Library.

1. Introduction

Assam University, Silchar (AUS) is one of the central universities situated in Southern part of Assam in North Eastern India. The main reason behind the establishment of this university was primarily to attract the students in five districts which are under the jurisdictions of Assam University. It has as many as 57 undergraduate affiliated colleges, which have been trying to meet the intellectual and education interests in the region. The college libraries in this part of Northeast India try to cope up with the information explosion as more and more publications are coming up in electronic form. Most of these libraries have changed the traditional methods of providing information service with the application of ICT. Information Communication Technology (ICT) is one of the important buzzwords of today's IT world. It has changed the society into information society and our way of life. It has been integrated in every walk of our life and its impact has been evident in railway, air reservations, banking and insurance sectors, postal services, biotechnology, bioinformatics. biomedical sciences, health care sector, telemedicine, media and communications teaching learning, library and information services, printing technology, e-resources, digitization of documents, digital library, library networking, e-commerce,& trade, entertainment, etc. etc. It has penetrated in everywhere and its make our life comfortable and easy (Sinha 2011).

2. N-LIST Programme: A Brief Overview

The Project entitled "*National Library and Information Services Infrastructure for Scholarly Content (N-LIST)*", being jointly executed by the UGC-INFONET Digital Library Consortium, INFLIBNET Centre and the INDEST-AICTE Consortium, IIT Delhi provides for i) cross-subscription to e-resources subscribed by the two Consortia, i.e. subscription to INDEST-AICTE resources for universities and UGCINFONET resources for technical institutions; and ii) access to selected e-resources to colleges. The N-LIST project provides access to e-resources to students, researchers

and faculty from colleges and other beneficiary institutions through server(s) installed at the INFLIBNET Centre. The authorized users from colleges can now access e-resources and download articles required by them directly from the publisher's website once they are duly authenticated as authorized users through servers deployed at the INFLIBNET Centre. This is meant for extending e-resources/ e-content to college libraries across India.

N-LIST give full text access to scholarly publications to its end users. Further subscribing to printed costly journals in different disciplines by individual college libraries has become neither possible nor feasible. Ever-increasing prices of journals accompanied with the shrinking budget of libraries, the college authority/parent bodies are forced to resort to the best alternatives (Sinha 2011). In order to achieve best performance in service, enable flexibility of access, and also to meet the requirements arising out of convergence of technologies, regular technological inputs are necessary to upgrade the network infrastructure and to ensure delivery of upcoming applications and content to the education. The UGC and INFLIBNET have joined hands with ISPs to meet these challenges. The N-LIST provides Internet bandwidth, a pre-requisite for delivery of scholarly content subscribed through the N-LIST Digital Library Consortium (www.inflibnet.ac.in).

3. Objectives of the Study

- To examine awareness of ICT to access E-Resources/E-Journals available under N-LIST programme;
- To understand the use pattern and impact of N-LIST consortium;
- To ascertain the need for user orientation programme;
- To measure the frequency of access to the consortium;
- To know the level of satisfaction among the users;
- To draw opinions from the users towards N-LIST service;
- To examine the preference of N-LIST Services and preference of e-journals, e-books publishers;
- To examine the various suggestions put forward by the library Users for the improvement of Internet Services being provided by the college libraries of Barak Valley to access e-resources available under N-LIST Program/Consortium.

4. Review of Literature

For the present study the primary as well as the secondary source of literatures has been consulted. Some journal articles and theses have also been consulted. Previously many studies have been carried out in recent years on use of Internet in university library (Mishra and Satyanarayana, 2001) Internet for Libraries. (Kamlavijayan, 2001) ; Internet and its use in SJCE (Kumbar and Shirun , 2003); Internet usage by students and faculty members of Kuvempu University (Birader, Rajashekhar, and Sampat Kumar , 2004); Use of Internet by teachers and students in Shaheed Bhagat Singh College of Engineering and Technology (Rajiv Kumar and Amritpal Kaur 2004); Internet use by the researchers in Punjab University, Chandigarh (Mahajan 2005); Internet use by the Research Scholars in University of Delhi (Madhusudan , 2007); Use of Internet in Engineering College of thee Districts of Karnataka State (Kumbhar and Vasunatha 2007); Sharma, Singh and Mishra, 2008 has also studied the usage pattern of Internet by the teachers and research scholars of Kurushetra University; Use of Internet by the Students of Bidhan Chandra Krishi Viswavidyalaya (West Bengal) (Das and Basu (2009); and Use of Internet among the Research Scholars of the Faculty of Science, University of Allahabad (Devender Kumar and Shukla, 2009). Sinha (2009) has

also carried out a survey on specialized group of samples who belongs to scientific disciplines (Participants of Workshop on Basic Science Research) in terms of ICT and Internet awareness and observed the similar trends of finding towards awareness of ICT and Internet and utilization of E-Resources available under UGC-INFONET Programme. Rao (2010) in his study of Internet Use in Academic Library discusses the advantages of the Internet and its impact upon academic libraries. The practical application of email, Internet and other electronic media has been also described in brief and need of more application of ICT / computers in libraries has been emphasized. Rahman and Ali (2010) conducted a study on the access and utilisation of the Internet based library services available to the faculty members of Z.H. College of Engineering and Technology, Aligarh Muslim University. A number of studies have been conducted on Information Resources on the Internet for Higher Education and Research (Parekh, Harsha. 1999); Use of E-Resources by IT Professionals (Gireesh and Rajashekara, 2009) ; Use of Information Resources by the Researchers in the University Libraries in Karnataka (Gowda and Shivalingaiah,2009); Use and Impact of Digital Resources (Mendhe ,Taksande, and Taksande 2009; Use and Usage Statistics of Electronic Resources at Central Library , Tezpur University (Mishra and Gohain, 2010).

From the review of literature on the use of Internet, awareness of ICT and Internet, Usage of off-line and on-line e-resources (CD-ROM Databases and E-Journals) , it has been found that most of the study have been carried out in Northern India (Rajiv Kumar and Amritpal Kaur 2004; Singh, Bhupesh Kumar and Kulvir Kaur , 2006; Mahajan, 2005; Madhusudan , 2007 ; Sharma , Singh and Mishra, 2008 ; Rahman and Ali , 2010; and Southern India (Birader, Rajashekhar, and Sampat Kumar , 2004; Khumbar and Vasuntha Raju (2007) Rao, 2010 and Singson and Leeladharan 2010). Except few study conducted by Sinha, 2004 on Internet Use pattern of the academic community and local population of Barak Valley and another study on Information Communication Technology (ICT) and Internet Awareness Amongst the College and University Teachers (Sinha 2008) ; participants of Workshop on Basic Science Research (Sinha 2009) and Borthakur, Das and Gohain , 2010), ICT and Internet Literacy for accessing to E-Resources available under UGCINFONET Digital Library Consortium in North Eastern Region of India (Sinha 2012) and status of N-LIST Programme in South Assam (Bhattacharjee, Bhattacharjee and Sharma , 2011) no comprehensive and substantial studies have been carried out on the status of usage of e-resources available under N-LIST Programme by the college library users of Barak Valley.

5. Methodology

For the present study the sample were drawn from the undergraduate students, faculty and staff from the selected college libraries of Barak Valley of South Assam. This study covers the nine selected college libraries of Barak Valley which have been included under N-LIST Programme of INFLIBNET. These colleges have been scattered in the three distracts of Barak Valley. In this study an attempt has been made to get the feedback from all the colleges of the three district of Barak valley which provide N-LIST services. The colleges covered under the present study are from the three districts of Barak valley. Cachar district is having four colleges, viz. Cachar college, Gurucharan College, Woman College,and Radhamadhab College. Haliakandi district is having two colleges, viz.Srikishan Sarda College and Lala Rural College whereas three colleges viz., Nabin Chandra College, Karimganj College and Rabindra Sadan Girls' College are located at Karimganj district. The study is mainly based on the survey of the college library users.

The samples comprise of faculty members, Under-Graduate and Staff members of selected college library. Altogether 200 number of library users were selected for the present study. The close-ended questionnaire was distributed amongst them and response was collected. In some cases Interview and Observation of respondents was also carried out to know the status of ICT

awareness to use Internet and access E-Resources available under N-LIST Programme. The self – designed questionnaire comprises of 19 questions has been distributed among the selected library users .The questionnaire, was designed keeping in view to evaluate the status of usage of N-LIST programme services for accessing to E-Resources and library Usage Pattern of the college library . The filled up questionnaires have been collected from the respondents for the data analysis and interpretations. On the basis of filled up questionnaire the data has been analysed and tabulated using SPSS .For data analysis only frequency/ percentage technique, has been adopted.

6. Hypothesis

1. Library users may not be fully aware of N-LIST services given by INFLIBNET.

7. Delimitation of Study

The present study was delimited to 09 college library users of Barak Valley. Comprising of Cachar college; Gurucharan College; Woman College; Radhamadhab College;Srikishan Sarda College;Lala Rural College; Nabin Chandra College;Karimganj College; and Rabindra Sadan Girls' College.Survey has not been made in Gurucharan College as the researcher was informed by the higher authority of the college that N-LIST has not been implemented in this college but they are in the process of acquiring the required ICT infrastructure for providing these services.

8. Data Analysis and Interpretations

8.1. Distribution of Questionnaire and Responses Received from the Respondents

The questionnaire has been distributed to the selected respondents (library users) of eight colleges which are affiliated to Assam University, Silchar and responses have been collected personally. There are total 200 sample of questionnaire has been distributed among eight different colleges under Assam University, Silchar. The study shows that out of 200 questionnaires distributed, 153 questionnaires have been received whereas 47 (23.5%) respondents did not respond. Therefore, the response rate is 76.5%.

College Wise Distribution of Respondents

Out of 200 samples, altogether 153 respondents have responded and 23 (15%) respondents are from Srikishan Sarda College which is followed by 22 (14.4%) respondents are from Rabindra Sashan Girls College. Further 21 (13.7%) respondents are also from Cachar College and Lala Rural College each, whereas 20 (13.1%) respondents are from Nabinchandra College, 16 (10.5%) respondents are from Women College and 15 (9.8%) respondents are from Radhamadhab College and Karimganj College each which indicates that the maximum number of responses have been received from Srikishan Sarda College in comparison to Radhamadhab College and Karimganj College.

Personal Background of the Respondents

Sex-Wise Distribution of Library Users

Gender analysis shows that out of 153 respondents, 81 (52.9 %) respondents belong to male category whereas 72 (47.3 %) respondents are from the female category a participant (Graph and Table-3) which indicates that the awareness of N-LIST services and access to E-resources is comparatively lesser in female participants.

Age Wise Distribution of Respondents

Group wise analysis shows that maximum of 98 (60.3 %) respondents belongs to 16 to 25 Years age group which is followed by 24 (15.7 %) respondents for 26-35 Years and 19 (12.4 %) respondents fall under the age group of 36-50 years whereas 17 (11.1%) belongs to age group of 51 and above which shows that majority of respondents belong to younger generation.76% respondent belongs to age group of 16-25 whereas 28% respondents are above 36 years. The finding indicates that usage of E-journals/ E-resources are more popular amongst the younger generation people and inclination of elderly people is comparatively lower for Internet access.

Category Wise Distribution of Respondents

From the survey findings as shown in Table-5, it is clear that, out of 153 respondents, 110 (71.9%) belongs to students followed by 34 (22.2%) belongs to faculty members whereas 8(5.2%) belongs to staff and 1(0.7%) research scholar. Students (110=71.9%) are maximum in number which is followed by faculty members (34=22.2%), staff (8=5.2%) whereas only one (0.7%) respondent is research scholar who may be faculty members and who might be pursuing research.

Status of ICT Infrastructure at College Libraries

Availability of Computers for Accessing N-LIST Services

Table -1 shows that maximum number of computers i.e.11-20 (78=50.9%) are available in college libraries which is followed by 52 (33.9%) colleges having computer in between 6-10 whereas 23(15.8%) colleges are having 21-30 numbers of computer which indicates that 23(15.8%) computers are available in Lala Rural College which is significant.

Table -1: Availability of Computers in College Libraries (N=8)

Name of College	Total no of Computers
Srikishan Sarda College	16
Rabindrasashan Girls,	21
Cachar College	15
Lala Rural College	23
Nabin Chandra College	22
Women College	15
Radha Madhab College	20
Karimganj College	21

(Source: Primary data)

Availability of Internet Connectivity / Facility in College Libraries

To access the N-LIST services, Internet facility must be there. The survey finding shows that out of 153 respondents, all have informed that Internet facility is available in their colleges to access e-resources which have been made available under N-LIST Programme which indicates that all colleges of Barak Valley except Gurucharan College, Internet facility has been made available for college library users.

Table-2: Status of INTERNET Facility available in College Libraries (N=153)

Frequency	No. of Respondents	Percentage (%)
Yes	**153**	**100.0**
No	0	0
Total	153	153

(Source: Primary data)

Table -2 shows that all College Libraries are having Internet facility to access e-resources and Internet services which is very encouraging to know that library users from this remote area is no longer lagging behind the rest of the country in respect of Internet services and accessing facility of N=LIST Services.

Internet Literacy Skills amongst College Library Users

Internet Literacy amongst College Library Users

N-LIST services can only be access through Internet. So user awareness towards Internet is very important. Therefore, question was asked to the respondents and the responses received is shown in Table -3

Table-3: Internet Literacy in College Libraries (N=153)

Category of Internet Users	No. of Respondents	Percentage (%)
Novice	**71**	**46.5**
Intermediate	56	36.6
Expert	26	16.9
Total	153	100

(Source: Primary data)

Table -3 shows that all the respondents are (100%) aware of Internet. Out of 153 respondents, 71(46.5%) respondents are novice and 56 (36.6%) are having good knowledge of Internet (Intermediate) whereas only 26 (16.9%) are expert in using Internet. The study reveals that Internet awareness/Training Program should be organised by the college libraries to enhance Internet Literacy.

Frequency of Using Internet

The frequency of visiting library and using Internet by the library users are shown in the Table -4 which reveals that most of the respondents 77 (50 %) access Internet on daily basis whereas 44 (28.8 %) respondents access Internet on at least once in a week, 23 (15 %) respondents access Internet on bi-week basis. Moreover, 4 (2.6%) respondents access Internet on fortnightly basis which is followed by 2 (1.3%) on monthly basis and 3 (2%) did not access Internet regularly.

Table -4: Frequency of Using Internet Facility by Library Users (N=153)

Frequency of Using Internet	No. of Respondents	Percentage (%)
Daily	**77**	**50.3**
Weekly	44	28.8
Bi-weekly	23	15.0
Fortnightly	4	2.6
Monthly	2	1.3
Not Regularly	3	2.0
Total	153	100.0

(Source: Primary data)

Purpose of Accessing Internet

Table -5 shows that the library users have ranked various Internet Services on the basis of their requirements. Primarily Internet is being used by the college library users for upgrading their knowledge (73=47.7%) which ranks at first place which is followed by email facility (82=53.6%)

and social networking sites (57=37.3%) on second and third place respectively whereas Internet is used for entertainment by 26 (17.0%) respondents which ranks at 4th position and only few respondents used Internet as Luxury item (Rank-5) to show in the society.

Table-5: Purpose of Using Internet by the Respondents (N=153 each)

Frequency	Rank 1	Rank 2	Rank 3	Rank4	Rank 5	NR	Total
Upgrade Knowledge	**73 (47.7%)**	39 (25.5%)	23 (15.0%)	0 (0%)	0 (0%)	18 (11.8%)	153 (100%)
Email Service	29 (19.0%)	**82 (53.6%)**	33 (21.6%)	0 (0%)	0 (0%)	9 (5.9%)	153 (100%)
Access to Social Network Site	50 (32.7%)	20 (13.1%)	**57 (37.3%)**	0 (0%)	0 (0%)	26 (17.0%)	153 (100%)
Entertainment	0 (0%)	0 (0%)	0 (0%)	**26 (17.0%)**	3 (2%)	124 (81%)	153 (100%)
Luxury	0 (0%)	0 (0%)	0 (0%)	4 (2.6%)	**1 (0.7%)**	148 (96.7%)	153 (100%)

(Source: Primary data)

Usefulness of e-Resource available under N-LIST

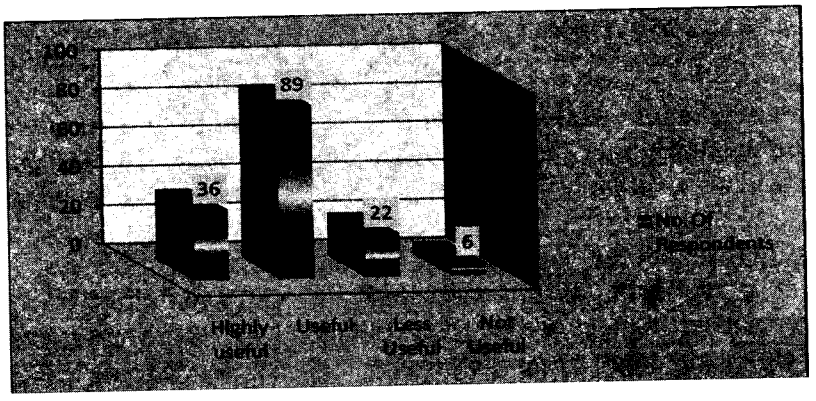


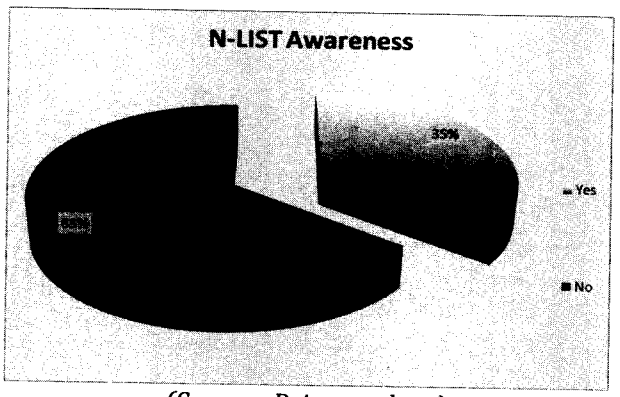
Figure -6: Usefulness of E-Resource

In this information age e-resource plays an importance role for academic and research. The survey findings reveals that out of 153 respondents, 89 (58.2 %) library users feel e-resource are useful which is followed by 36 (23.5%) respondents who have rated the e-resource as highly useful whereas 22 (14.4%) respondents say that e-resource are less useful and very few (6=3.9%) library users feels e-resource are not useful to meet their purpose which might be due to their ignorance and lack of awareness and training for accessing to e-resources and Internet (Figure -6).

Awareness of N-LIST Programme and Services

Awareness of N-LIST Awareness

From the Figure-7 it is evident that out of 153 respondents, 54 (35.3%) of respondents are well aware of N-LIST Programme and service offered by the INFLIBNET for college library users whereas maximum number (99= 64.7%) are not aware of N-LIST service, which shows that the awareness level for N-LIST Programme and Services is very much less amongst the college library users which needs proper attention by the college librarians and INFLIBNET to take necessary measures to enhance the awareness level of college library users for make maximum utilization of N-LIST programme and services



(Source: Primary data)

Figure-7: Awareness of N-LIST Awareness (N=153)

Usefulness of N-LIST

From the survey finding it is found that 54(35.5%) respondents are aware of N-LIST and the out of which the services of N-LIST is found useful by the maximum number of respondents (32=59.3 %) and highly useful by 7 (12.9 %) respondents whereas only 1 (1.8 %) have rated as less useful. A good number of respondents (14 = 25.9%) have not responded (Figure -8).

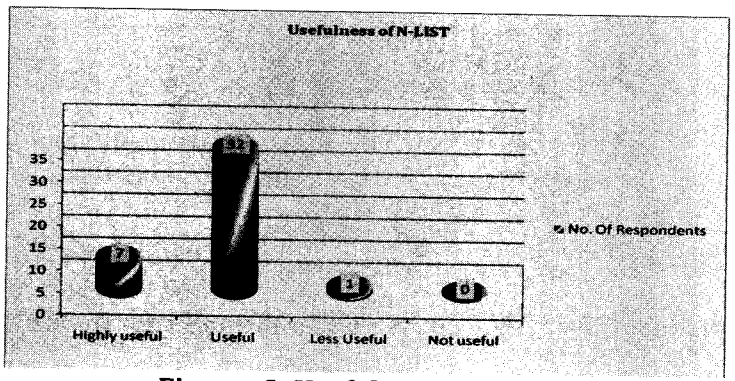


Figure- 8: Usefulness of N-LIST

Frequency of Accessing N-LIST Services

From the Figure-9, it is evident that out of 54 respondents, 28 (51.8%) respondents use N-LIST service for less than 5hrs a week whereas 9 (16.6%) respondents use N-LIST service from 6 to 10 hrs a week while only 3(5.5%) respondents use N-LIST service rarely and 14 (25.9%) respondents did not provide response.

N-LIST Orientation Program

Orientation program is necessary to impart training for searching skills and accessing to e-resources available under N-LIST Programme and services. It may be utilize to highlight the importance of information to develop knowledge for better use of any new program or services. N-LIST orientation program also provide the overall knowledge of these services (Figure-10).

The survey findings shows that out of 153 respondents, only 6 (3.9%) respondents attended N-LIST orientation program whereas 34 (22.2%) respondents have not got an opportunity to attend N-LIST orientation program and 113 (73.9%) respondents did not provide response which needs immediate attention of the college authority and INFLIBNET to organize User Awareness Programme/ Orientation program to access N-LIST services by the college library users (Figure-10).

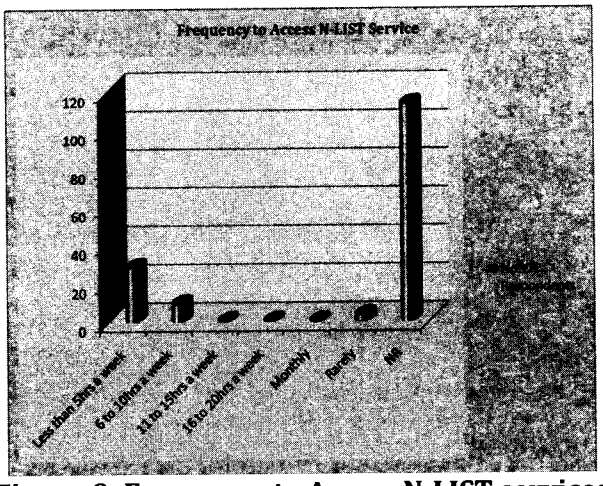


Figure-9: Frequency to Access N-LIST services

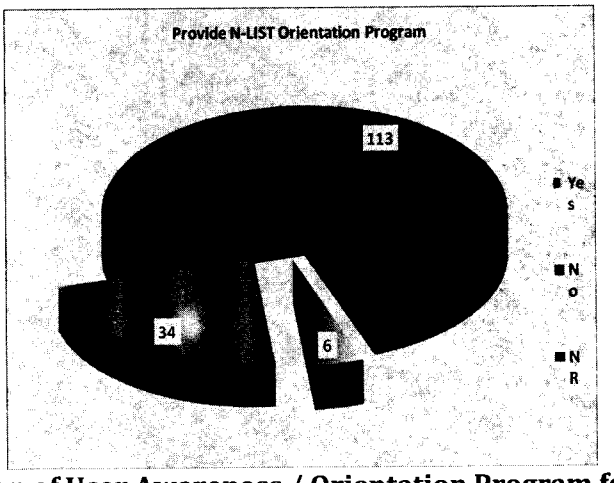


Figure-10: Provision of User Awareness / Orientation Program for N-LIST Services

Provision of User Awareness / Orientation Programme for N-LIST Services

From the Figure-11, it is clear that out of 40 respondents, all 40 (100%) respondents feels that there is a need to organized N-LIST training program for the college library users. This may be due to that all library users feel that N-LIST is very useful for the academic purpose and for its proper utilization, users awareness training is necessary to conduct at regular intervals.

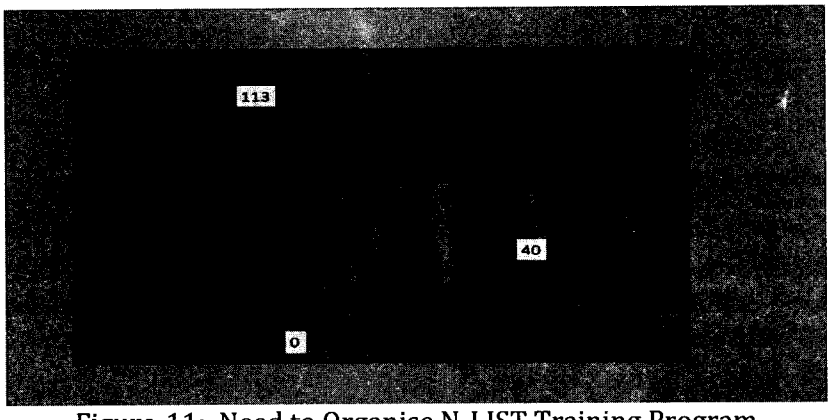


Figure-11: Need to Organise N-LIST Training Program

Preference of e-Journal Publisher under N-LIST

Under N-LIST consortium services various E-journal publisher provides services for various subject related journal, which can be freely access.

Table- 6: Preference of E-Journal Publishers (N=54)

Publishers	No. of Colleges Using N-LIST Resources	Rank
Oxford University press	15 (27.8%)	1
Mylibrary Mc Graw Hill	8 (14.8%)	2
Cambridge University Press	14 (25.5%)	3
Bibliographic Database	6 (11.1%)	4
Annual Reviews	5 (9.2%)	5
American Institute Of Physics	3 (5.6%)	6
H.W Wilson	3 (5.6%)	7
Institute of physics	3 (5.6%)	8
Oxford Scholarship	3 (5.6%)	9
Net Library	3 (5.6%)	10
Economic and Political Weekly	2 (3.8%)	11
MathSciNet	2 (3.8%)	12
Business Full text	2 (3.8%)	13
e-bray	1 (1.8%)	14
Royal Society of Chemistry	1 (1.8%)	15

The survey result as shown in Table- 6 reveals the ranking of e-resource publishers. Oxford University Press, MyLibrary Mc Grow Hill Publisher and Cambridge University Press are more popular amongst the other publishers.

Problems faced by the Respondents to Access Internet Facility

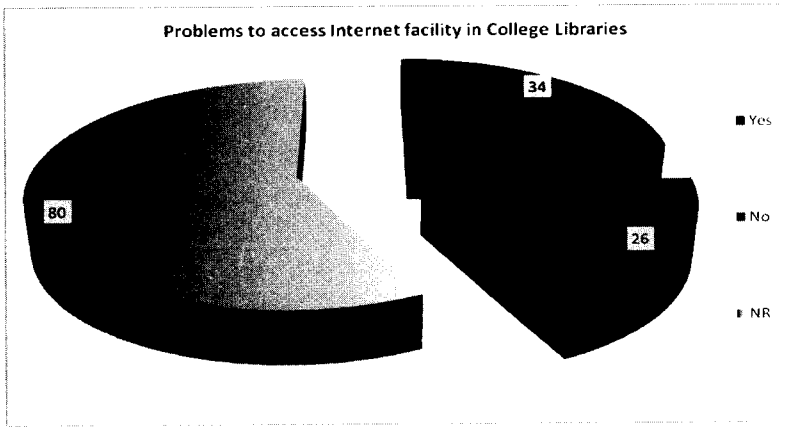


Figure-12: Problems faced by the Respondents to Access Internet Facility in College Libraries

Figure -12 reveals that 34 (22.8%) respondents experienced difficulty to access Internet facility while 26 (17%) users do not face any problem in accessing to Internet. But majority of the respondent 80 (52.2%) have not responded.

Problems faced by Respondents to Access Internet Facility in College Libraries

Figure-13 shows that majority of respondents face problems due to slow speed of Internet which is followed by problem in Internet connectivity, lack of printing facility and privacy problem in accessing N-LIST Services.

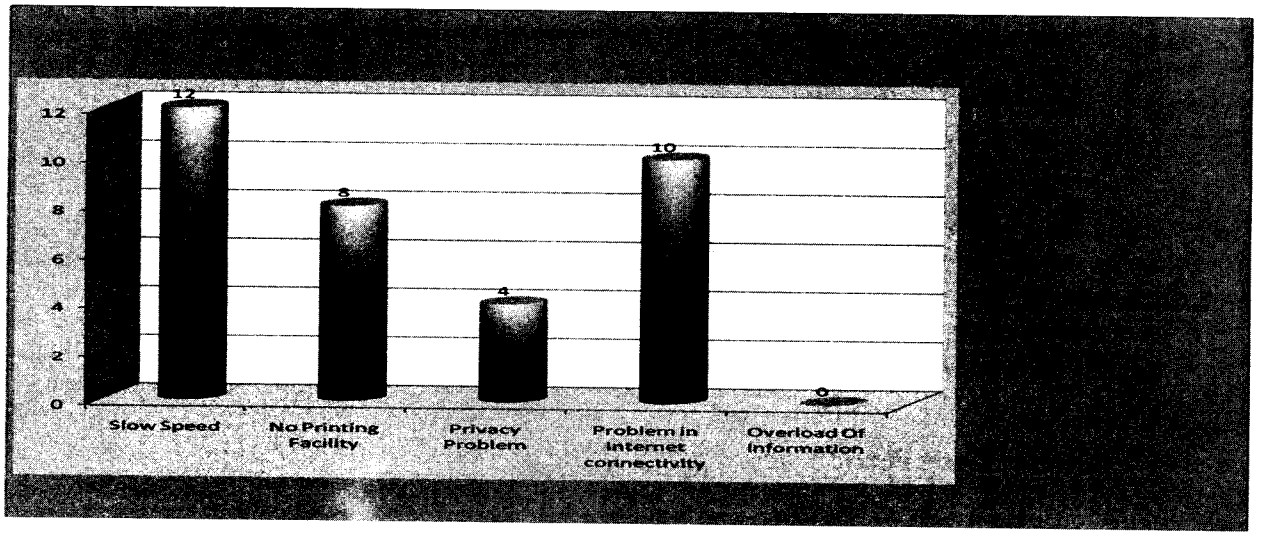


Figure-13: Details of problem to access Internet Facility in College Libraries

Suggestions to Improve N-LIST services / Internet Services

Table -7, shows that majority of the respondents (34 =62.9%) have suggested to organise more N-LIST Awareness Training Program which is followed by 27(50%) advocated for Internet connectivity to the departments whereas 22 (40.7%) feels that regular power supply may be the solution for uninterrupted access to Internet or N-LIST Services.

Table-7: Suggestions to Improve N-LIST Services / Access to Internet (N= 54)

Frequency	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	NR	Total
Need of more N-LIST Awareness Training	**34 (62.9%)**	13 (14%)	1 (1.8%)	0 (0%)	0 (0%)	0 (0%)	6 (11.1%)	54 (100%)
Internet Connectivity to Department	19 (35.1%)	**27 (50%)**	3 (5.5%)	0 (0%)	0 (0%)	0 (0%)	5 (9.2%)	54 (100%)
Regular Power Supply	1 (1.8%)	6 (11.1%)	**22 (40.7%)**	4 (7.4%)	0 (0%)	0 (0%)	21 (38.8%)	54 (100%)
More number of terminals	0 (0%)	4 (7.4%)	0 (0%)	**8 (14.8%)**	0 (0%)	0 (0%)	42 (77.8%)	54 (100%)
Provide separate hall	0 (0%)	0 (0%)	0 (0%)	0 (0%)	**1 (1.8%)**	0 (0%)	49 (98.2%)	54 (100%)

9. Important Findings, Suggestions and Recommendations

The present study was delimited to affiliated colleges of Assam University in Barak Valley where N-LIST service is available. Hence there is need to know in detail the problems which is related with the retrieval of N-LIST E-journals, E-books and E-databases and offer some suggestions

for effective and efficient utilisation of e-resources available under N-LIST programme of INFLIBNET.

Followings are some of the major findings of the study:

- The finding shows that out of 153 respondents, 52.9 % respondents are male whereas 47.3% respondents are female which shows that in comparison to female, male respondents are more aware of N-LIST Services provided by INFLIBNET.
- From the study it is found that N-LIST service has been used mostly by the younger generation. Survey finding reveals that 60.8% respondents fall under the age group of "16-25" which is followed by 15.7% respondents who is between the age group of "26-35", whereas 12.4% of respondents are at the age of "36-50", 11.1% of respondents belong to age group of "51-Above"which shows that majority of respondents belong to younger generation.76% respondent belongs to age group of 16-25 whereas 28% respondents are above 36 years.
- The survey result represents that all Colleges under study and which is affiliated to Assam University, Silchar are having Computer labs. Result shows that maximum number of computers (50.9%) are available in college libraries which is followed by (33.9%) colleges having computer.
- All College libraries which are affiliated to Assam University, Silchar are having Internet facility which is very encouraging.
- It is found from the study that all respondents are well aware of Internet. Table -9 shows all respondents are (100%) aware of Internet. (46.5%) respondents are novice, (36.6%) are having good knowledge of internet (Intermediate) whereas only (16.9%) are expert in using Internet. The study reveals that Internet Awareness Training Program should be organised to enhance Internet Literacy.
- The survey result represents that most of the respondents (50 %) access Internet on the daily basis whereas (28.8 %) respondents access Internet on at least once in a week, (15 %) respondents access Internet on bi-week basis. Moreover, (2.6%) respondents access Internet on fortnightly basis which is followed by (1.3%) on monthly basis and (2%) did not access Internet regularly.
- The study found that Internet is used for upgrading knowledge which ranks at first place which is followed by email and social networking sites whereas Internet is used for entertainment also and only few respondent uses Internet for Luxury. Finding shows that the library users have ranked various Internet Services. Internet is used for upgrading knowledge (47.7%) which ranks at first place which is followed by email (53.6%) and social networking sites (37.3%) whereas Internet is used for entertainment (17.0%) which ranks at 4th position and only few used Internet for Luxury (Rank-5).
- The survey result represents that most of the library users feel e-resource are highly useful. Again some respondents say that e-resource is less useful and very few library users' feels e-resource is not useful to meet their purpose. The survey result shows that (58.2 %) library users feel e-resource are useful which is followed by (23.5%) respondents, according to whom e-resource are highly useful. Again (14.4%) respondents say that e-resources are less useful and (3.9%) library users feels e-resource are not useful to meet their purpose.
- The study found that very less number of respondents is aware of N-LIST service whereas majority respondents are not aware of N-LIST service, which shows very less number of N-

LIST awareness by the college library users. From the Table -13, it is clear that (35.3%) of respondents are aware of N-LIST service whereas (64.7%) respondents are not aware of N-LIST service, which shows very less number of N-LIST awareness by the college library users.

- The study reveals that maximum number of respondents feel that N-LIST service is useful to some extent whereas only few respondents feels that N-LIST service is highly useful . It was found that (59.3%) of respondents feel that N-LIST service is useful whereas (12.9%) respondents feel that N-LIST service is highly useful.
- It is found from the study that maximum number of respondents use N-LIST service for less than 5hrs a week whereas some respondents use N-LIST service 6 to 10hrs a week while very few respondents use N-LIST service rarely. It is found that (51.8%) respondents use N-LIST service for less than 5hrs a week whereas (16.6%) respondents use N-LIST service 6 to 10hrs a week while only (5.5%) respondents use N-LIST service rarely.
- The study reveals that only a few respondents attended N-LIST orientation program and majority of the respondents did not get N-LIST orientation program.. It was observed that only 3.9% respondents attended N-LIST orientation program whereas 22.2% respondents did not attend N-LIST orientation program and (73.9%) respondents did not provide any response which needs immediate arrangement of Orientation program to access N-LIST services by the college library users.
- The study found that, all respondents feels there is a need of N-LIST training program. It was observed that all (100%) respondents feels there is a need of N-LIST training program. This may be due to that all library users feel that N-LIST is very useful for the academic purpose.
- From the study it is found that Oxford University press is given first rank, 2nd rank is given to Mylibrary Mc Graw Hill, 3rd to Cambridge University press.
- The study reveals that most of the users face difficulty in accessing Internet facility in college libraries. The finding reveals that 22.8% of the users experienced difficulty in access Internet while 17% users do not face difficulty in accessing to Internet.
- The study represents that majority of responded face problem due to slow speed on Internet, lack of printing facility and privacy problem in accessing N-LIST Services. It was found that majority of responded face problem due to slow speed of Internet which is followed by problem in Internet connectivity, lack of printing facility and privacy problem in accessing N-LIST Services.
- It is found from the study that the respondents are suggesting organising N-LIST Awareness Training Program, providing Internet connectivity to the departments, and providing regular power supply may be for the solution for uninterrupted access to internet or N-LIST Services. It was observed that majority of the respondents (62.9%) suggest to organise more N-LIST awareness training which is followed by (50%) advocated for Internet connectivity to the departments whereas (40.7%) feels that regular power supply may be the solution for uninterrupted access to Internet or N-LIST Services.

10. Suggestions and Recommendations

On the basis of the present study and previous study following suggestions & recommendations are given for the improvements of the N-LIST Services provided to the college libraries to access scholarly e-resources (e-journals, e-books, and On-line databases) (Sinha 2012):

- To Provide Internet Connectivity to all the Departments/ Centres/ Offices;
- In order to increase the speed, more bandwidth should be provided to the colleges covered under the N-LIST programme;
- Un-interrupted power line should be made available for optimum utilisation of the e-resources which are available to the colleges;
- Include the Science Direct of Elsevier Science publications especially for Bio-Medical Sciences / Life Sciences / Physical Science;
- Appropriate ICT Infrastructure with Internet Connectivity should be provided to the colleges which are not yet implemented the programme;
- Increase in number of Internet Access Points/ Terminals;
- Printing facilities should be made available to library users'
- It should be made mandatory for all the college libraries to avail of the facility of N-LISt Services
- Besides Teachers/ Research Scholars, UG/ PG Students should also encouraged to access Internet
- Provision of separate Internet Access Points for Teachers/ Research Scholars;
- There must be provision of regular User Awareness Programme/ Orientation Programme to be organised by the respective College Libraries, INFLIBNET Centre, University Library and the Department of Library and Information Science located in the region; and
- The LIS professionals and Users should be encouraged to participate in such training programme.

11. Conclusion

The present study highlights the ICT awareness for accessing to E-resources available under N-LIST services by the college library users in network and digital environment . The information presented in this survey has provided a preliminary findings pertaining to the usage pattern of N-LIST services by the college library users which have been made available in the college library of Barak Valley affiliated to Assam University, Silchar.

From the study it is clear that very less number of respondents is aware of N-LIST service whereas majority respondents are not aware of N-LIST service, which shows that very less number of respondents is aware of N-LIST Services provided by the INFLIBNET for the College Library users.

The study also reveals that maximum number of respondents feel that N-LIST service is useful to some extent whereas only few library users feel that N-LIST service is highly useful and this might happen due to lack of N-LIST orientation program. N-LIST training program should be given to the college library users for the proper utilisation of E-resources/N-LIST Service.

It is found that most of the users face difficulty in accessing Internet facility in college libraries due to slow speed on Internet, lack of printing facility, privacy problem in accessing N-LIST Services and so on. So, these problems should be noted down by the College Library authority and the library staff should provide all the facility to the library users for the best utilisation of library E-resources/ N-LIST Service.

The present study reveals that the users are less aware of N-LIST Service so User's study

should be conducted from time to time by the library staff so that the problems encountered could be resolved according to user's requirements. The infrastructure facilities should be enhanced for the better utilisation of N-LIST E-Journals. The College library can enhance its reputation by providing access to e-resources and services to a great extent. The College libraries in Barak valley must seek for N-LIST membership from INFLIBNET and make a wide publicity among the users for the optimum utilisation of the service.

12. Acknowledgements

The authors extend their sincere thanks to Prof. Somnath Dasgupta, Hon'ble Vice-Chancellor, Assam University, Silchar for his encouragement and support. Thanks are also due to Prof. Sajal Nag, Dean, Swami Vivekananda School of Library Sciences for his continuous encouragement and critical suggestions time to time during the period of investigation. The authors are also thankful to the college librarians and all college library users who have responded well in time without whose support this work would not have been completed in time.

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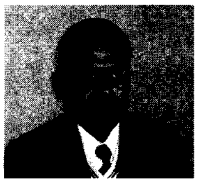
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Awareness of Librarians about IT Applications: *A User Survey*

Bodkurwar, S.R.

Abstract

Information technology has profound effect on the progress and development of human civilization. The advances in science and technology has made a tremendous improvement and changed all activities of present society. Due to revolution of information technology, increased tremendously demand, consumption, and importance of information in present society. The librarians are faced challenges to managing massive volume of information for storage, process, retrieve, and disseminate in libraries. This paper discusses the librarian's awareness about application of IT in college libraries of Yavatmal district (Maharashtra). The author conducted a questionnaire survey of college libraries to find out the proportion of librarian's computer awareness and use of IT application in college libraries. The results of this study suggest that UGC should provide financial help for the automation of college libraries of higher education and the librarians must get ready by keeping abreast of latest Information Technology in order to face the new challenge in information field.

Keywords : IT, Computer awareness

1. Information

The word 'information' is derived from Latin word "Info mare" which connotes meaning, to give shape or form to the mind. Information is a fact told, heard or discovered about factual practices. It is a piece of knowledge that can be received, collected, provided and transferred for making its use. Information is a product of human brain in action. It may be abstract or concrete. Information is logically arranged data, which convey the meaningful knowledge to use in practical life. Information is sometime considered to be a step in the process of conversion of data into knowledge. Data are the accumulation of unrefined facts or results. Clearing and organizing of data is the change of it into "information. (1)

2. Information Technology (IT)

IT is a generic term that covers the acquisition, processing, storage and dissemination of information. It covers the application of computers, communication technology, and telecommunications in the tasks of information handling and information flow from the generation to the utilization levels. It is restricted to systems dependent on microelectronic-based combination of computers and telecommunication. (2)

During the last few decades, there has been enormous rise in the flow of information on the one hand and greater demands for information due to accelerated research and development activities on the other. IT through the convergence of computer with communications, digital imaging and full motion video and sound has become a powerful tool for information communication. The IT offers unparallel opportunity for instantaneous information communication through a number of services such as E-mail, online database search, CD-search, OPAC, Resource Sharing through Networking, Videotext, Tele-facsimile, Computer Conferencing, Electronic Document and Delivery etc. These advances have contributed to the development of a new electronic information society. (3)

These IT devices are widely used in developed countries and developing countries are also on the way to enjoy the similar benefits. The IT had influenced almost every human being in their

endeavors either directly or indirectly and they are compelled to use it in their daily life and the libraries are of no exception.

3. Higher Education System of India

India has one of the largest higher education systems in the world. The growth rate of educational institutions in India was slow before independence in 1947, but now there are 543 universities, including 18 central universities, 275 state universities, 96 deemed universities, 13 national importance institutions, 136 research institutes, 5 institutions established under states Legislature Act, along with 16,885 colleges that provide education in all disciplines. The number of teachers is nearly half a million, with about one hundred thousand students enrolled in higher education. (4)

4. Need for IT

Twentieth century has been the century of explosions. It has witnessed the population explosion, socio-cultural explosion, and nuclear explosion. The information explosion is due to the fact that information generation is a continuous process. The interdisciplinary research and multidisciplinary research has led to the creation of new ideas, new knowledge and unprecedented growth in information particularly in science and technology. In this era of information explosion, in which large amount of information needs to be processed, application and use of new technology i.e. information technology is essential.

5. Computer Awareness

Nowhere has the impact of the computer been felt greater than in the field of library and information services. Already most of the libraries are flooded with documents and records that they simply cannot handle efficiently without computers. Computers are changing the way in which libraries collect, store, retrieve and disseminate information. The libraries that cannot adjust to these trends will not survive. So computers will come and stay forever in all the library and information centers that wish to function Librarian's Computer Awareness and Use of it efficiently here after.

6. Role of College Librarian in IT Era

The problem we face today is not of dearth of information, but of excessive information. The developing countries are making an earnest effort to concentrate more on developing and using new electronic gadgets to provide better access to information. With the use of new information technology, the libraries can provide nascent information quickly in great volume. Today, the librarian plays a significant role in information handling and information transfer. He is rightly known as the information officer and is supposed to provide an active service for maximum use of information with minimum cost and time. Information technology demands trained personnel to handle information storage and retrieval in libraries. A modern librarian has to play a very important role in the process of communication in the contemporary time, for which he must be well educated, highly qualified and professionally competent. (5)

7. Need and Objectives of the study

The prime goal of the study is to understand the awareness of librarians about IT application in libraries. In order to understand this study is aimed at the following:

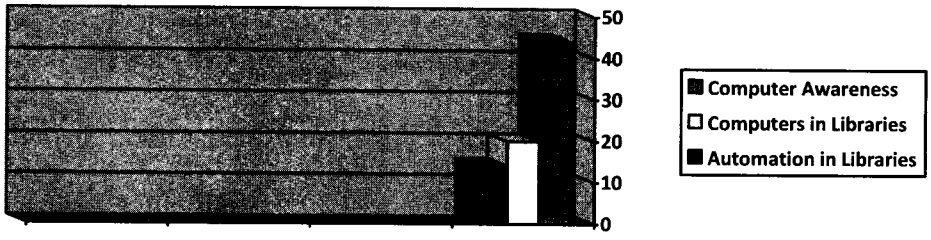
- To find out the proportion of the users awareness of IT application.
- To find out the proportion of the application of IT in Libraries

8. Method of the study

The author adopted the survey method.80 questionnaires were circulated among the librarians of senior colleges of Yavatmal district out of which 54 (67.5%) responded.

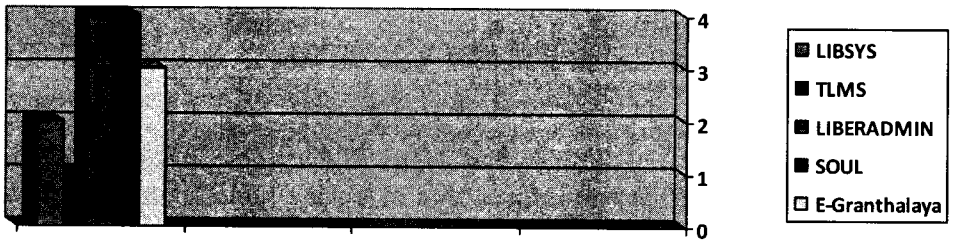
9. Analysis of Data

9.1. Computer Awareness & Use of IT application



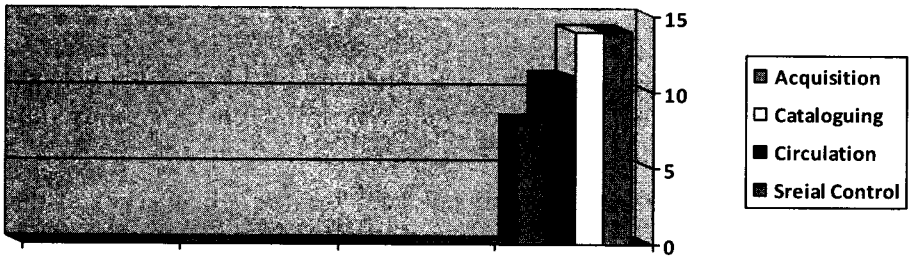
Out of 54 respondents it is found that 44 (81.5%) librarians are computer literate and aware of IT, 20 (37%) college libraries are having computers and only 14 (25.9%) libraries are automated

9.2. Libraries using Automation Software



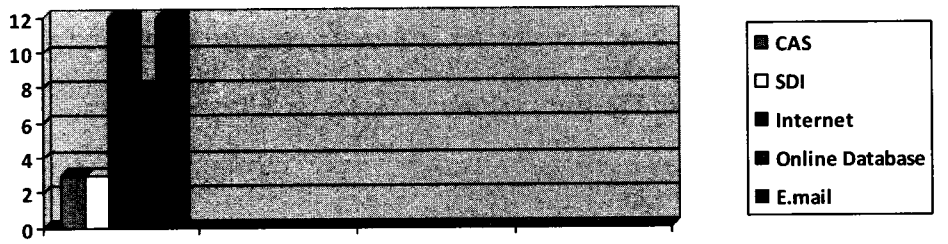
The above data shows that out of 54 colleges, 2 (3.70%) college libraries use LIBSYS library software, 1 (1.85%) college library use TLMS software, 4 (7.40%) LIBERADMIN, 4 (7.40%) SOUL and 3(5.55%) libraries having E-Granthalaya library software respectively

9.3. Library activities covered under library automation



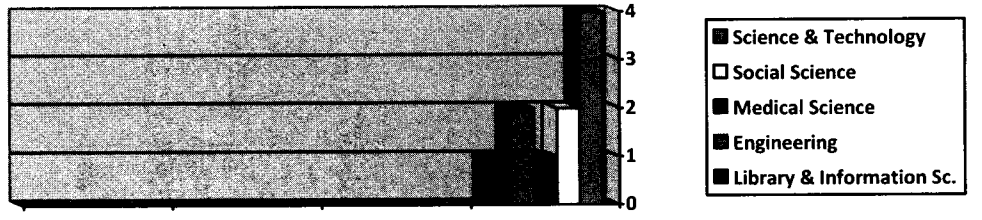
The data indicates that out of 54 college libraries, only 14 (25.92%) libraries use the library software for performing housekeeping operation i.e. 14 (25.92%) libraries perform acquisition activity, 14 (25.92%) libraries use it for cataloguing, 11(20.37%) perform circulation and 8 (14.81%) libraries perform serial control activity.

9.4. Service provided in libraries



The data shows that out of 54 college libraries, 3 (5.55%) provides CAS (Current Awareness Service), 3(5.55%) provides SDI (Selective Dissemination Service), 12 (22.22%) provide Internet service, 8 (14.81%) provide Online Database service and 12(22.22) provide E-mail service to the users of the college library.

9.5. Coverage of Online Databases of different subjects



The data shows that, 4(7.40%) library has Science & Technology, 2 (3.70%)Social science,1 (1.85%) Medical science and Library & information science Online Databases respectively and there are 2 (3.70%) Engineering online databases in the college libraries.

10. Discussion and Conclusion

From the above data it is observed that 81.5% librarians are computer literate and aware of the information technology. Only 37 % colleges have computers in the library. 25.9 % libraries are automated and providing automated services to the users of the libraries. Automated libraries use different library software to perform housekeeping functions and online databases of various subjects. This is indeed a very low percentage of application of IT, but computer awareness is very good in college libraries of Yavatmal District.

Majority of the librarians in college libraries, except few are not aware and not yet started utilizing application of Information Technology even in the house keeping functions of the library due to inadequate finance and man power.

But now UGC is planning for extending the financial help for the automation of all the academic libraries in India in the 12th five-year plan. There are different types of software available for library housekeeping functions. So all the librarians must get ready by keeping abreast of latest

Information Technology in order to face the new challenge in information field. While concluding, it is strongly felt that our academic libraries have to adopt the tools of Information Technology in order to provide improved access to library & information services. The audio-visuals have to be provided; use of computers for resource sharing and networking has to be accelerated to face the challenges posed by the developments in information technologies taking place in India.

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Building an Academic Information Centre Using Online Databases: *A Modular Approach to University Libraries*

Sanjay B **Ramesh R. Naik**

Abstract

This paper defines the role of online databases in building academic information Centre (library) to create, organize and disseminate the information for the benefit of the learner community. It also enumerates the entities contributing in acquiring, organizing and serving the online database. It also explores the opportunities to develop the traditional university libraries into information Centre. This paper also defines the structure of information Centre.

Keywords : Online database, Information center, e-resources, Information literacy

1. Introduction

Information is the one word which used heavily these days. Today all the walks of life need the information. But, still many people mess up without knowing what to do with the excess information. Though there are many ways to filter the information. There is no effective methodology to classify the wanted and unwanted information.

In the academic scenario the universities are investing huge amount to access the research information. Universities also spending on patents and other related research information. Many times, different units in the same universities working with same subject area with different perspectives. Since these units working in isolation, universities will be wasting its manpower, time and the money on this information. There is also the situation that the neighboring universities also will be acquiring the same information resources and will be working on the same platform. The expected result will almost resembles. Hence there is a need for the universities to define their information usage and should acquire the online databases as per their need.

In the traditional setup, the libraries and information centers limited themselves to just cater the information requirement through conventional print information resources. Hence librarians were not in a position to segregate the information and they were not in a position to control the usage of the information. Many times the same information provided to the student is been provided to the senior scientists without any alteration.

Media is one of the deciding factors which influence the usage of information. The knowledge may be transferred in any of the forms. Libraries cannot ignore the information or knowledge exchanged in informal meetings or gatherings. The biggest challenge for academic information Centre is collecting and organizing the information or knowledge available in different forms. The Geography and bandwidth are the challenges in servicing such demand. This paper tries to address some of the prevailing problems in developing the academic information center.

2. Online Database Defined

The database is nothing but the collection of set of data. In library terminology the online database is defined as the collection of online information artifacts like books, periodicals, conference papers, patents, reports, etc. These databases may come with full text information which is called Full text database or might cover only bibliographical information which is termed

as bibliographic database. The full text online databases may include e-books, e-journals, statistics, reports, conference papers or multimedia contents like charts, graphics, maps, audios and videos. We may get single publisher's contents in one online database or multiple publishers' contents consolidated by a consolidator.

These online databases created by diversified source and media have one common goal to achieve i.e. providing the information to the needed in a quick, easy and approachable manner. Librarians especially who is working in the academic environment cannot ignore the value added to his service by these online databases.

3. Building Academic Information Center Using Online Database

Many of the institutes wrongly term the library as an information center. Though the library provides information, its core area is the published or structured information. In the information center we see all kinds of information without any boundaries. The question is how to make these information centers strong enough to cater to the needs of university community. By adding and utilizing the features of online database these information centers can be strengthened.

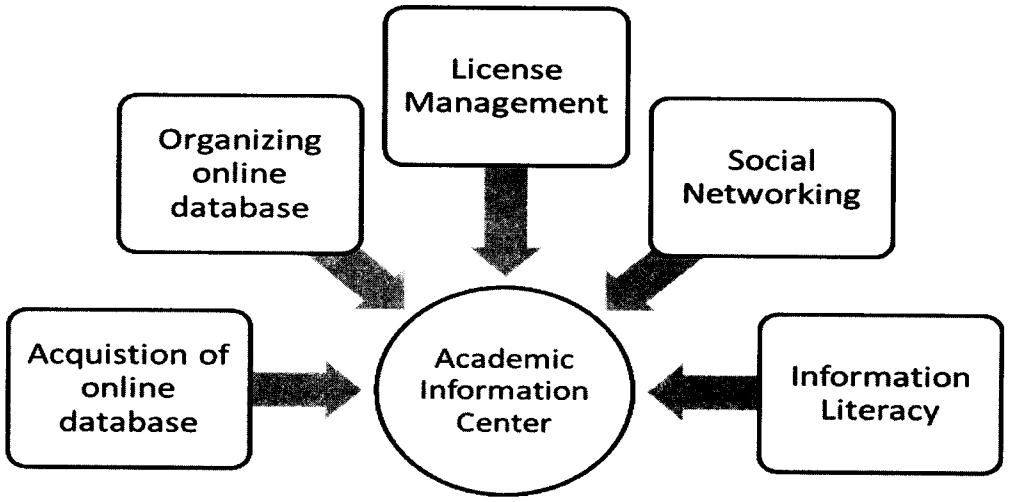


FIG 1: Building academic information center using online database

- **Acquisition of Online Database**

The difference between the libraries and information center is the information centers are more oriented towards the digital contents. Most of the users visit the information center with narrowed requirement. Unlike the library readers, these users are not casual readers. Hence, the chief of information center should be very choosy on the contents. The information should be acquired from the various reliable sources, so that users will make their own choice. The information centers also should add the contents from their own institutional repositories. There should be provision for the users to upload their contents into the database. The online database also should include all possible items into it. The users may prefer different media to access their contents; also some of the information will be available in only one format. The academic institutes while adding contents should check the possibilities of adding from different languages, disciplines across the geographical locations.

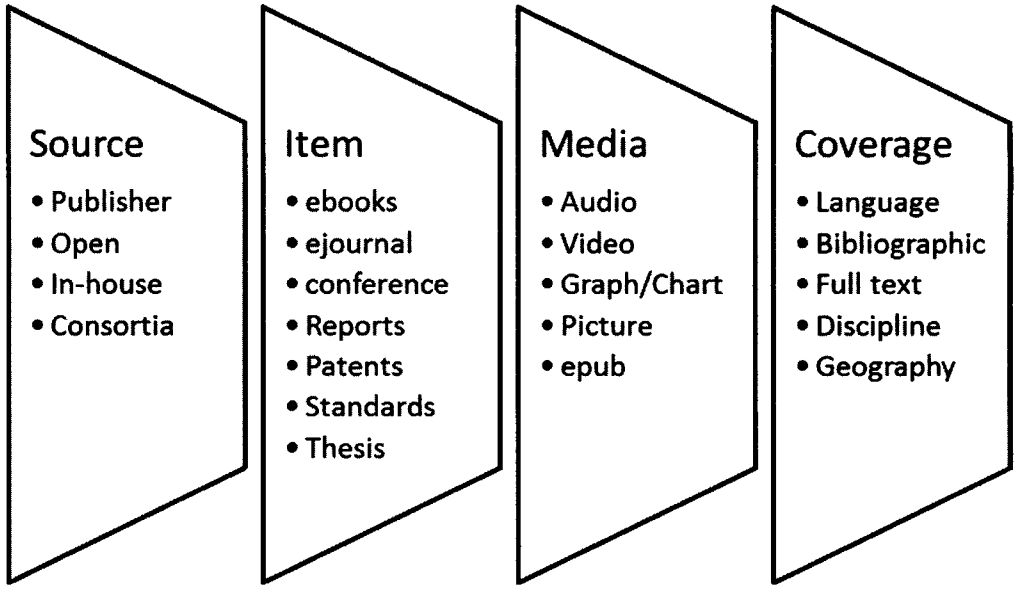


FIG 2: acquisition model for information center

- **Organizing and Indexing of Online Database**

In normal library structure if the bibliographic contents are made available to the users would be good enough to search the relevant document. But, the responsibilities of information centers are much more than that of providing bibliographic information; the search should run through the full text contents of the document. The information center may comprise several such full text databases. Searching each online database is painful to the users. These information centers should develop federated search facilities. When users search for any relevant information they should get the comprehensive view of their search. Later they should get the filtering option depending on their need.

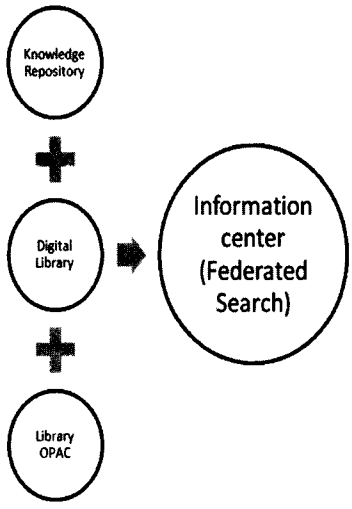


FIG 3: Organizing the information within the Institute

4. License Management

Many of the organizations fail to identify the level of information need. They procure the license which makes the product available to entire population. In most of the cases these information products are used only to limited group. The social science faculty may never use the information resources on science subject. Also, the need of UG and PG student is different from the research scholars. The senior faculty may be more interested in advanced technology and managerial products. Hence, the Chief information manager should be in a position to identify the different level of information needs and accordingly negotiate with the service provider on the license requirement. This will not only make the right information available to right people also save lots of money to the organization.

5. Social Networking

The important aspect of academic information center is to engage the users in exchanging the information. In recent years some of the online database consolidators realized the need of social networking and created the facility within their database. Some databases provide the option to create their own user group and share the notes, highlighted texts or any reference texts within their user groups. The user rating, comments are shared to facilitate to understand the effectiveness of the database. This features also helps the authors to pilot their writing before go for formal publishing. Author 2.0 is one such phenomenon where it allows authors to communicate to their readers instantly and incorporate the new texts in their publication. This social networking keeps the information echo system live and active.

6. Information Literacy

In the information literacy, the librarians are expected play a greater role rather than limiting themselves to assist the user in accessing online resources. They should collaborate with faculty, students and management which demand greater skills and qualifications. They should learn how to be patient and listen to the user's requirement. They should never give up if they do not get response in their first or subsequent attempts. Librarian should be smart enough to organize a user's meeting and gather enough number of participants to attend information literacy programs. In the below survey most of the patrons depending on library staff or library guides to access the information resources. Hence, the chief of information center having greater role in information literacy.

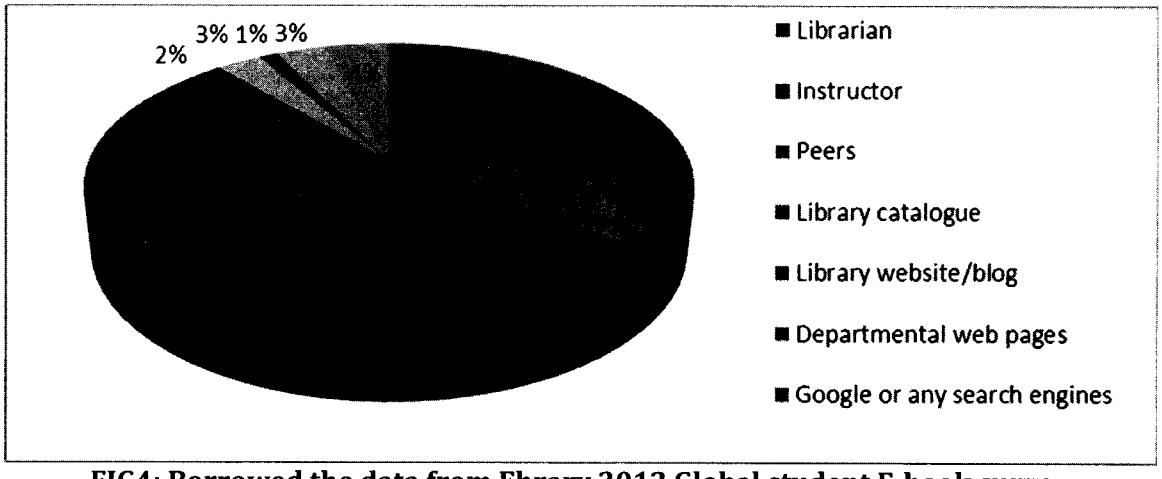


FIG4: Borrowed the data from Ebrary 2012 Global student E-book survey

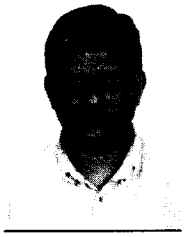
7. Conclusion

The changing scenario supporting more online publications rather than print. Though the digital contents bring advantages in many ways, we should not forget the mannerisms of print publication. Many of the information centers are centric towards the paid contents which create monopoly of some dominating publishers over some time. Information centers should learn to negotiate with the service providers on getting only the required contents and avoid junk. The information centers should create platform to exchange information and prefer more open archives. The effective use of online database create strong information center and help institutes to come up from information deficiency.

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C-CADLS: *Cloud Computing Architecture for Digital Library System*

Nagalingam, U **Palanivel, K** **Ramesha**

Abstract

Cloud computing offers information retrieval systems, particularly digital libraries and search engines, a wide variety of options for growth and reduction of maintenance needs and encourages efficient resource use. These features are particularly attractive for digital libraries, repositories, and search engines. The dynamic and elastic provisioning features of a cloud infrastructure allow rapid growth in collection size and support a larger user base, while reducing management issues. Hence, the objective of this paper is to investigate and design reference architecture to Digital Library Systems with scalability using cloud computing. The proposed reference architecture is called as C-CADLS. This architecture accelerates the library users can get easy, efficient, faster and reliable services in the digital environment. Here, the end user does not have to worry about the resource or disk space in cloud computing.

Keywords : Cloud Computing, Reference Architecture, Service-Oriented, Digital Library System

1. Introduction

Digital Library automation solutions [Pradeep Teregowda, et.al. (2010)] provide timely, efficient and effective enterprise library management services, complete with easy-to-use library and knowledge management functionality. These transformative library services remove information access barriers, such as proprietary information silos, to seamlessly make information access equitable. The end result is open access throughout the organization to information services and resources such as: electronic journals, lab notes, databases or other knowledge assets. The Digital Library software solutions transform delivery of core library services, user satisfaction, library operations and the library's ability to provide for future growth and changing information demands.

Digital library provides a convenient, along with the increasing knowledge level, the requirement of digital library and growing various colleges and universities have established a digital library to purchase its own database resources. Data resources between various universities are relatively independent, building redundant projects possibility was high, has created the manpower, the financial resource and the resources waste, or some colleges and universities to use only part of database resources, inadequate use of resources. [G. Athanasopoulos, et.al. (2010)]. With the rapid development of various IT technologies, Library users' information requirements are increasingly personalized. And now more and more libraries advocated user-centered services. Library can develop itself according to such information and improve users' satisfaction. The Library Administrator can keep using new technology to develop library and optimize library service. With the expansion of Cloud Computing application, it is proposed to apply Cloud Computing in libraries. [Matt Goldner, (2011)].

2. Cloud Computing

Digital library representative one kind of new infrastructure and the environment, through the cloud computing, it may use resources more effective, and can solve the defects of digital library. Using cloud computing users can share the server in many application procedures, realizes the resource sharing, thus also reduced server's quantity, achieves the effect of reducing the cost,

therefore utilizes cloud computing in the Digital library. The reference architecture [Paul R. Reed, Jr., (2004)] implements the concepts and relationships identified in the reference model. There may be more than one reference architecture that addresses how to design digital library systems built on the reference model. Reference architecture for the Digital Library System offers ammunition in addressing both of these issues effectively.

3. Motivation Example

Figure 1 shows the motivation behind to propose a Reference Architecture to Digital Library using Cloud Computing. Here the concept is to decentralize the resources over Internet. Various servers like Digital Library Web Portal Server (DLWPS), Identity server, Notification Server, Query Server, Cache Server, Remote Connection Establishment (VPN) Server, etc. are connected to the cloud or Internet.

4. Problem Statement

The architecture concept refers to the Digital Library System (DLS) entity and represents a mapping of the functionality and content offered by a Digital Library on to hardware and software components. As Cloud Computing has become more and more popular, various Cloud Computing architectures have been defined for Digital Library Applications. However, to effectively achieve the potential of cloud computing, there is need for the definition of system architecture of the Digital Library systems involved in the delivery of cloud computing, so that it can be used as a reference for the architects [Jing Liu, et.al. (2012)].

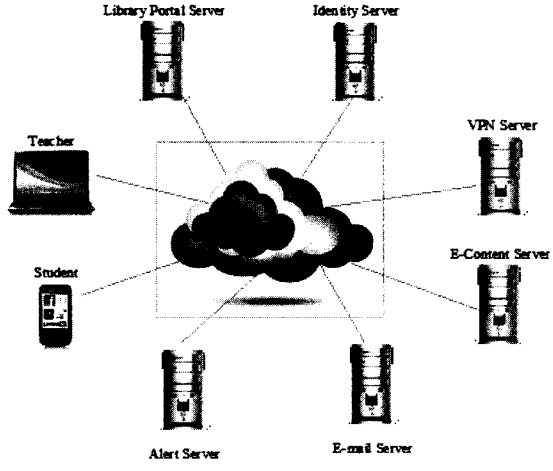


Figure 1: Motivation of Example of Digital Library

Reference model, reference architecture and concrete architecture are the elements constituting the DL framework more specifically. There is no reference architecture available to design Digital Library Systems with scalability. Hence, the problem statement is to have one reference architecture for DLSs supporting DLs constructed by federating local resources and multiple organizations, and another one for personal DLs or for specialized applications.

5. Solution to the Problem

The Solution to the problem is to provide a scalable reference architecture for DLSs using Cloud Computing called C-CADLS. C-CADLS is layered architecture and it consists of demand layer,

supply layer and delivery layers. This architecture provides several benefits because it includes SaaS, PaaSand IaaS. The architecture is designed to support maximum scalability and high service levels through virtualization and an optimized management environment. It enables new levels of scalability while providing a very cost-effective modular solution. Some of the critical design factors [GVB Subramanyam, (2012)] are flexible infrastructure, building services, scalability of users and contents, and caching the data. Here, we take the design considerations based on functionality and they are user performance, security, scaling of library user systems, common infrastructure, collaboration services and load balancing.

This research paper is organized as follows: Section 2 stated the background information needed to write this paper. Necessary architecture and models have been surveyed and presented in Section 3. Section 4 presented the proposed reference architecture and finally section 5 concluded this paper.

6. Background Technology

The following paragraphs provides the necessary background on commonly used technology in Cloud environment. This chapter gives a brief overview of the Digital Library, Cloud Computing and Reference Architecture.

7. Digital Library

Monali G Shrawankar Sandhya Dhage. (2011). Digital Library range from digital object and metadata repositories, reference-linking systems, archives, and content administration systems to complex systems that integrate advanced digital library services. Digital Library functionality is supposed to be, and integrating solutions from each separate field into systems to support such functionality, sometimes the solutions being induced by novel requirements of Digital Libraries. Despite the great variety and diversity of existing digital libraries, in reality only a limited range of concepts are defined by all systems as core functionalities. The concepts provide a foundation for Digital Libraries and they are content, user, functionality, quality, policy and architecture [OASIS (2012)]. The Library users interact with a Digital Library through the corresponding Digital Library Software. The DLP provides the users a branded knowledge portal with access to custom links, RSS feeds, blogs, Wikis, along with an OPAC that provides access to your resources in text, audio and video formats.

8. Cloud Computing

The Digital Library has brought new opportunities for the advancement of digital library. Cloud computing can take the library facility at the most convenient state to its users than other technical approaches. Cloud computing can provide the optimum library services to the people by centralizing the resources and disk spaces of any digital library. Cloud computing can provide an uninterrupted service to its stakeholders.

The three typical kinds of cloud computing services are processing clouds, storage clouds and application clouds [Michael Behrendt, Bernard Glasner, (2011)]. Processing Clouds that provide scalable [Henri Avancini, et.al. (2006)]and mostly affordable computing resources that run enterprise programs, which is also sometimes known as Infrastructure as a service (IaaS), Storage Clouds that offer an alternative to local file systems also known as a Platform as a Service (PaaS), and Application Clouds also called Software as a Service (SaaS), that allow a thin client to interact with services that are completely hosted on an external infrastructure. While libraries can use cloud computing applications to create personalized portals for users, the Library could use cloud

computing as their back up methodology. Libraries have already begun to adopt cloud services to alleviate their IT departments and increase efficiency.

In cloud computing, scalable and elastic IT-enabled capabilities [Federal Cloud Compliance Committee, (2012)] are delivered as a service to customers using the network. The most important capabilities are a self-service portal; a pool of shared resources; and release of resources; and ubiquitous access. Cloud System provides the above capabilities using the three-layer architecture shown in Figure 2.

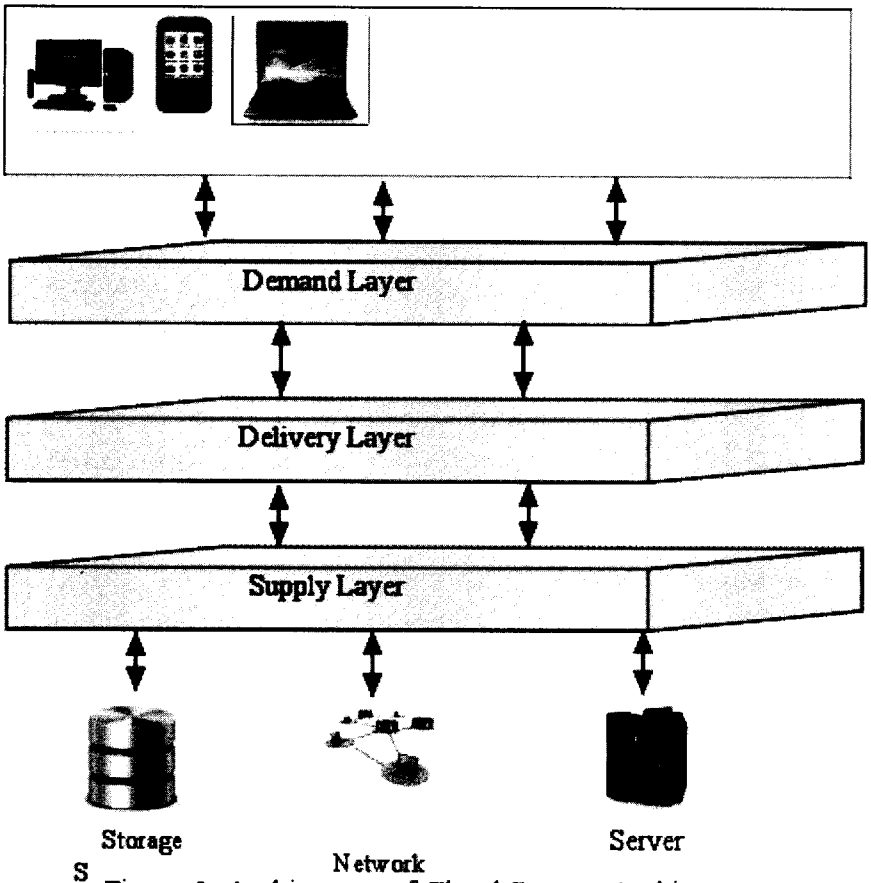


Figure 2: Architecture of Cloud System Architecture

The Cloud system is based on the converged infrastructure. Employing a shared services model, with pools of compute, storage, and network resources, the converged infrastructure is an ideal foundation for cloud computing. Cloud system provides a complete management environment to help ensure the cloud service meets the needs of the end user. Cloud system offer added features as governance, application readiness, service monitoring, and enhanced security.

9. Cloud Computing Reference Architecture (CCRA)

Cloud Computing Reference Architecture (CCRA) [Michael Behrendt, et.al., (2011)] enables cloud-scale economics in delivering cloud services while optimizing resource and labor utilization and delivering a design blueprint for Cloud services, which are offered to customers. Cloud computing can provide the optimum library services to the people by centralizing the resources and disk spaces of any digital library. Here, the objective this paper is to design of CCRA for DLS using the existing reference models discussed in section 3.

10. Review of Literature

This section presents the literature review on various cloud computing models and available.

11. Models of Cloud Computing

Various models of cloud computing [Rupesh Sanchati, Gaurav Kulkarni, (2011)] are Unified search service, Integrating consulting service, Real-time access service, Knowledge service and All-oriented service and they are discussed below

12. **Unified Search Service Model** - With the adoption of Cloud Computing in Digital Library, the integrated library resources support distributed uniform access interface. The uniform access platform can promote library resources, guide and answer users' questions by using high-quality navigation. As a result, users can grip more information retrieval methods and make better use of library resources

13. **Integrated Consulting Services Model** – The integrated digital reference service can realize the sharing of technology, resources, experts and services of Digital Libraries. This will bring great conveniences for library users.

14. **Real-time Access Services Model** - By introducing Cloud Computing, Digital Libraries can establish a shared public cloud. As shared cloud can have infinite storage capacity and computing power theoretically. It can bring obvious benefits to libraries.

15. **Knowledge Service Model** - Digital Libraries are of storing, processing and spreading knowledge. The establishment of shared public cloud can save manpower and material resources greatly among university libraries..

16. **All-oriented Service Model** – Digital Libraries provide services for all the people like the professors, teachers or students can access to the library resources. They permit users access to many libraries' resources by handling related certificate of that library.

17. DL Architectures

There are number of research regarding Cloud Computing architectures on Digital Library systems. A broad collection of reference architectures and reference models were considered. The existing architecture/models systems are revisited and analyzed in terms of the above quality attributes. These reference architecture / model identifies the main components of the reference architecture and indicates inter-relationships between the components. For brevity's sake only those relevant architectures/models are described and compared below; Suresh Chandra Padhy and RK Mahapatra(2012), proposed to improve current user service model with Cloud Computing. They explored the application of cloud computing in academic library in Orissa. Pradeep Teregowda, et.al. (2010), discussed constraints and choices faced by information retrieval systems like CiteSeerx by exploring in detail aspects of placing Cite Seerx into current cloud infrastructure offerings. They implement an ad-hoc virtualized storage system for experimenting with adoption of cloud infrastructure services. Matt Goldner (2011)] defined cloud computing and shows how it is different from other types of computing. It also discusses how cloud computing solutions could be beneficial to libraries in three basic areas: technology, data and community.

Lee Badger, et.al. (2011) introduced a conceptual model, the NIST Cloud Computing Reference Architecture and Taxonomy. It presented USG target business use cases and technical use cases in the cloud. It identified existing interoperability, portability, and security standards that are applicable to the cloud computing model and specifies high-priority gaps for which new or revised

standards, guidance, and technology need to be developed. It discussed security challenges in the context of cloud computing adoption, high-priority security requirements, and current and future risk mitigation measures requirements. G. Athanasopoulos (2010) represents the first release of the Digital Library Reference Model produced by the DL.org project. It has been produced by using the DELOS Digital Library Reference Model released by the DELOS Network of Excellence as firm starting point. This release maintains, consolidates and enhances the previous one by applying a number of revisions and extensions. Reference Architectures for SOA based Enterprise applications have been presented in the paper [Paul R. Reed, Jr., (2004)] and discussed the best practices. The use of SOA would reduce the time-to-integrate any new application. Further, the use of techniques and tools discussed in the paper would reduce the time to arrive at the architecture and design of the SOA based solution [David Sprott, Lawrence Wilkis, (2004)].

In cloud computing, scalable and elastic IT-enabled capabilities are delivered as a service to customers using the Internet. The most important capabilities are a self-service portal; a pool of shared resources; automated provisioning, flexing, and release of those resources; a facility to meter and charge for usage; and ubiquitous access. HP Cloud System [HP, (2011)] provides these capabilities using the three-layer architecture, which enables IT as a service.

18. Proposed Cloud Computing Model

Figure 3 shows the proposed Cloud Computing Model [HP, (2011)] for Digital Library which is derived from the Figure 1. It consists of Subscriber Tier, Service Tier, Application Tier and Storage Tier. All the Library users or subscribers are exists in the Subscriber Tier. Various users of the Library are students, teachers, guests and administrator. The Library users connects to the DLPS via Desktop, Laptop, etc. The Digital Library portal service and Service registry are exists in Service (Demand) tier. All the services discovered in the above section should be registered in the Service Registry. The registered Library users demand the necessary content to the DL Applications.

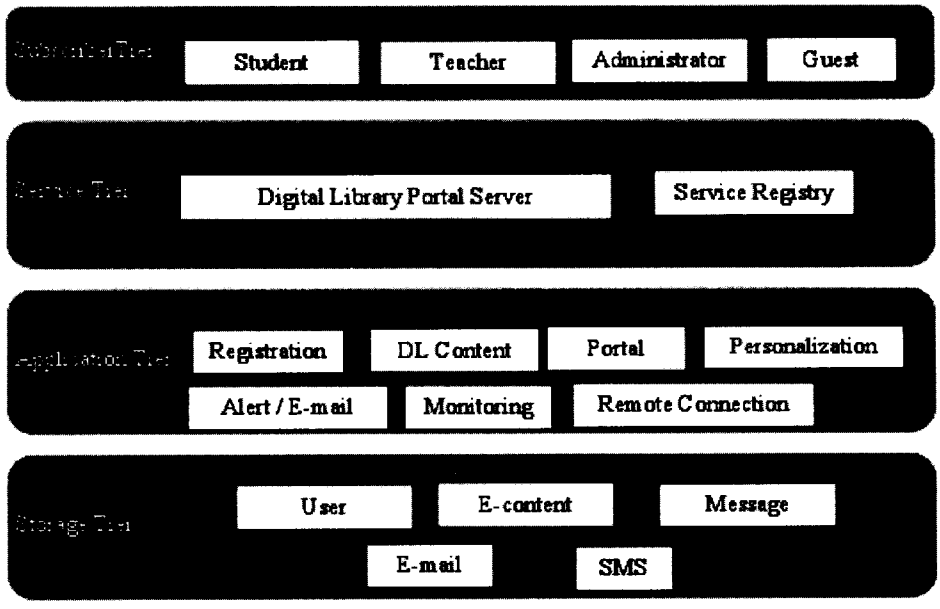


Figure 3: Proposed Cloud Computing Model for Digital Library

Various applications related to the DL are placed in Application (Delivery) layer. These applications perform registration, user identity, search or query, send alerts/ notifications, monitoring, remote connection management, etc. All the data or content are available in Storage tier. They supply necessary data/ information to the registered users or subscribers. The data are available in the form of databases like user database, e-content database, e-mail database, message database, etc.[T. Raghunadha Reddy, (2012)]

19. Reference Architecture: C-CADLS

This section describes the proposed reference architecture called a C-CADLS. This includes the identification of Digital Library services, proposed model / architecture and evaluating the proposed architecture.

20. Requirements

Digital library represents one kind of new infrastructure and the environment; through cloud computing technology since it uses resources more effectively and can solve the constraints in digital library. Cloud providers should provide mechanisms to support *data portability & system portability, service interoperability, security* and *privacy* [Lee Badger,et.al. (2011]. The services identified during design of C-CADLS are registration, DL portal service, Alert/Notification service, Library service, Monitoring service, Remote Connection service, etc. The services can be specified as a set of messages of a XML.

21. Proposed Architecture - C-CADLS

Figure 4 shows the proposed Cloud Computing Model for Digital Library which is derived from the Figure 3.The design uses layered web application architecture [K. Palanivel, S. Kuppuswami, (2011)]. C-CADLS consists of various layers like supply layer, delivery layer and demand layer.

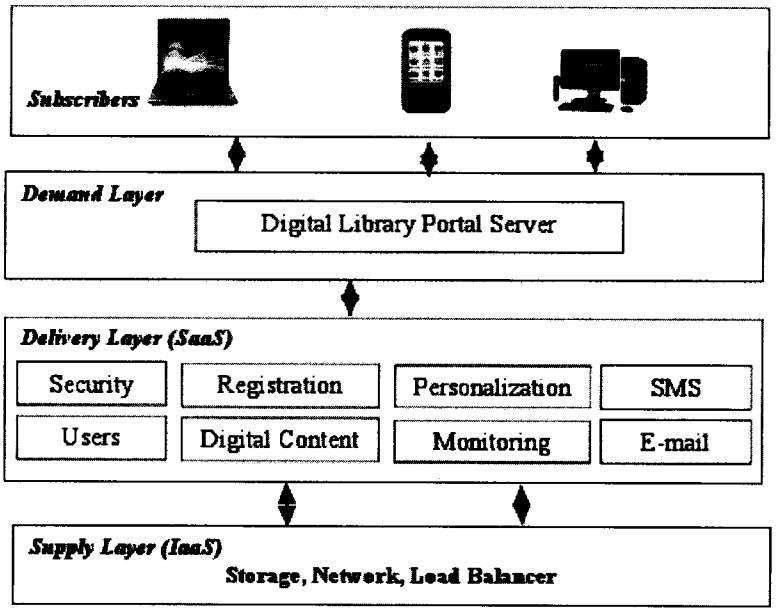


Figure 4: Reference Architecture of C-CADLS

The diagram depicts a generic high-level architecture [Michael Behrendt, Bernard Glasner, (2011)] and is intended to facilitate the understanding of the requirements, uses, characteristics and standards of cloud computing. The cloud computing reference architecture defines the actors: *cloud consumer, cloud provider, cloud carrier,* and *cloud broker.* Each actor is an entity (a person or an organization) that participates in a transaction or process and/or performs tasks in cloud computing.

22. Digital Library Service

C-CADLS provides role-based portals and interfaces. They enhance the user experience for designing, building, and consuming private and public cloud services. The Digital Library has Discovery service, Indexing service, Metadata service and Repository service. The Discovery services [Jason Vaughan, (2011)] are capable of searching quickly and seamlessly across a vast range of local and remote content and providing relevancy-ranked results to the library users. The Indexing service [Rachita Sinha, RatnaSanyal, (2011)] provides the generic functionality of an inverted file, mapping elementary tokens to documents/entities. The Metadata service [CezaryMazurek, et.al.)] associates metadata records to all the objects managed by Digital Library and organized as repository. In the context of Digital Libraries, the Metadata Service becomes equivalent to the service providing the corresponding interface. The Repository service [Rachita Sinha, RatnaSanyal, (2011)] provides the functionality of a content repository which contains all the content that are available in the storage server. It provides an effective solution to concerns such as copyright management or mirroring. Digital Reference Service includes either finding the required information on behalf of users, or assisting users in finding information themselves. Web based reference services [J Pomerantz, (2003)] are also now being provided by academic libraries in the virtual reference environment.

23. Security Service

Security Service [XufeiZheng, Yonghui Fang, (2010),K. Palanivel, U. Nagalingam, (2011)] for the cloud protect Digital Library Web Applications against the most common threats and attacks. It delivers both critical Web protection and cost effective management. A security-as-a-Service solution for the DL includes Information, Data, User Account, Access Rights, Intrusion & Detection, Firewalls, Virtual Private Network, RFID, etc. Security component offers authentication, authentication, access control and confidentiality [IBM, (2002)]. The *security* handles the authentication requests sent to the DLPS. It is passed log-on credentials for a user and returns an authentication certificate. The security service also proved *Single sign-on (SSO)* and p*reservation* functionality. Security technologists will aid in preservation by preventing corruption or destruction of information resources and ensuring their authenticity.

24. Notification Service

This Notification service [J Pomerantz, (2003)] provides capability to send notification like instant /short messaging, and e-mails through multiple channels. The Notification service sends instant/short messages and e-mails to the Library users whenever adding a new contents or updating the existing digital content to the DL Server. Library users receive an e-mail or SMS alerts or notifications whenever adding/updating content to the DL Server. The function of the notification service [Zheng Qiaoying, et.al. (2003)] is to notify the library users with the latest information they are interested in automatically without any users' information retrieval and request. The users only need to do is to register the kind of their subject. The Notification minimizes the knowledge of different notifications produces in order to facilitate a loose coupling of services.

Notification Application Server perform extremely well even if the application must support thousands or millions of subscribers.

25. Query-as-a-Service

DLPS need to present data in a tabular format to the Library users. The functionality provided by the search component [Jason Vaughan, (2011)] are dynamic query generation based on Library user input, sort order, joins, etc. In order to make the changes in the architecture as transparent as possible to the user, C-CADLS provides a list of the services references if such functionality is activated. There are multiple ways to invoke the query service according to users' preferences. For example, the Library users want to search a digital content/ object related to Computer Science, then they have to type 'Computer Science'. By activating the link on the query interface, it can obtain the extra services exposed by other providers.

26. Other Services

The *Registration service* enables an application to register as a participant. The Registration service provides methods for collecting the information required to build the User personal details. The tasks have to be covered by registration are registration process, sending e-mails to the registered users, conform registration and enable/disable of users account. The *personalization services* [Yin Zhang, et.al.(2004)] in a Digital Library environment would help the users to find information resources available in a digitally chaotic world. The reasons of developing a digital library include increasing access to information serving and users' needs and bringing organization to the unstructured universe of electronically available information.

The extensive monitoring (*Monitoring service*), tracking and auditing capabilities of DLAs help administrators identify and react to misuse due to malicious intentions, undetected compromises, policy gaps, errors or oversights. They also provide extensive support for compliance with corporate policies, and with security and privacy regulations. This service monitor and manage the quality of service of the architecture, including its performance, security, and manageability. This service also includes building blocks such as performance managers, security managers, and notification managers. The *Remote Connection Service* offers establishing connection to the DL Server from a remote place. It accepts the requests from the authorized Library users and allow them to access the contents available in the DL server.

Based on cloud computing in the cost calculation, performance, team cooperation and the advantages of the geographic location, because simultaneously the different application procedure has used the different mutually independent platform [Lingling Han, Lijie Wang, (2011)], each application procedure completes on own server.

27. Evaluating C-CADLS

In order to assess the success of Cloud Computing in DL, it is assessed the following central areas. The quality of the Library service has been very positive. Many libraries have become comfortable using SaaS-style services for other solutions and are increasingly reliant on Internet connectivity. So moving the Digital Library application infrastructure outside the campus network proved to be a non-issue. Both SaaS and PaaS solutions are difficult to implement in libraries. The DLAs often require specialized software or configurations which are either localized or simply application specific. By using an infrastructure level service, it is able to bring DLAs online without having to find a service that supported the correct s versions of the underlying technology. The impact of cost comparisons on cloud computing indicate that minimal cost savings may not be a sufficient inducement to change.

28. Conclusion

Libraries have the opportunity to improve their services and relevance in today's information society. Cloud computing can bring several benefits for libraries and give them a different future. Cloud computing which is applied in digital libraries, analyzes current situation and existing problems of the cloud computing in digital library All library resources and service distributed on the Internet can be integrated as a whole, which forms a new type of adaptive control service system supporting interlibrary collaboration and service access, as well sharing resources from different libraries.

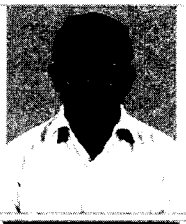
This paper described the issue of scalability in the domain of Digital Library. It also described the proposed reference architecture for Digital Library systems. The main issues of cloud security are all related to architecture are scalability and security which is the basic issue of cloud computing. Cloud computing technology is still relatively young in terms of maturity and adoption. However, there are some issues like caching, routing, etc., to be resolved to build highly scalable reference architectures in Digital Library systems.

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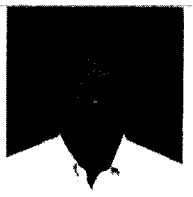
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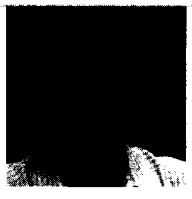
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Cloud Computing: *Advantages for Modern Libraries*

Mamata Mestri

Abstract

Cloud Computing is a new large scale distributed computing paradigm in which dynamically scalable virtualized computing resources and services are provided over the Internet. Users do not need any knowledge of the infrastructure that run their applications somewhere "in the cloud", whether they run on an internal private network or on the Internet. Through cloud computing, modern library offers various types of services without any extra infrastructure. The paper discussed the advantages of cloud computing for modern libraries.

Keywords : Cloud Computing, Modern scenario, Modern library

1. Introduction

Today's library is adopting computing resources and services that it does not own to provide new and innovative services. In the opening remarks to their book on information technology in librarianship, Buschman and Leckie (2009) stated that librarians need to be critical in their use of technology. Cloud computing and Web collaboration are two major concepts that underlie new and innovative developments in library automation. The Web has also expanded the scope of services provided by librarians. The growing Internet usage among library users and potential users, plus the time these users spends on the Internet, has made it imperative that libraries offer their services online. Today's consumers of information have more alternative and attractive ways of finding information than using the traditional library (Sadeh, 2007). Today, the library's users are accessing the information needed in the comfort and security of their homes or in their own personal or customized spaces. To meet their needs, libraries need to adopt the communication and information tools and services that users are accustomed to (Sadeh, 2007). Much of these tools and services will not be owned by the library but are necessary to carry out the enduring work of making library collections and services known and accessible to users.

2. Cloud Computing

The term "cloud computing" has been used in recent years to denote a particular way of providing computer services, made possible by developments in communications technology. Other terms including "grids" and "clusters" have been used to indicate collaborative operation of computers, but cloud computing has the special feature that access is provided as a service, similarly in some respects to the supply of electrical power or piped water. Variations are referred to as: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and application(s) or Software-as-a-Service (SaaS). In each case the client organisation receives service from a powerful combination of processing and storage facilities without needing to know details. Means of communication between client and cloud have been termed "middleware" and depend very much on formation of images of virtual machines. An important aspect is load balancing among the actual machines (Andrew, 2012).

Cloud Computing is a new large scale distributed computing paradigm in which dynamically scalable virtualized computing resources and services are provided over the Internet. Users do not need any knowledge of the infrastructure that run their applications somewhere "in the cloud", whether they run on an internal private network or on the Internet. Cloud Computing is service

oriented paradigm which includes both infrastructure and software as services. This allows user applications to be constructed out of various services, represented by individual independent software components (service providers) which maximize services/software reusability. It is Service Level Agreement driven, where the infrastructure is dynamically managed by service-level agreements that define usage policies at pre-set cost and defined time scale for the delivery of a service (Khaddaj, 2012).

Cloud computing a new model of computing that is widely being utilized in today's industry and society (Hartig, 2008). Cloud Computing concept is derived from the imagery of the "Internet cloud", in which the imagery of a cloud is traditionally "used to represent the Internet or some large networked environment". The idea depicted in the imagery is that client data and applications are stored and accessed "somewhere out there" (Hosch, 2009). Hartig defined it as "virtualization of resources that maintains and manages itself (Hartig, 2008). In simple words, cloud computing can be defined as simply the sharing and use of applications and resources of a network environment to get work done without concern about ownership and management of the network's resources and applications. With cloud computing, computer resources for getting work done and their data are no longer stored on one's personal computer, but are hosted elsewhere to be made accessible in any location and at any time.

Cloud Computing, also known as "The Cloud", is a highly scalable platform promising quick access to hardware and software over the internet, in addition to easy management and access by non-expert users. There are various types of "clouds".

- Cloud Computing may be public, in the event that the owner is a provider maintaining the cloud for the entities that own the data: In this case, entities pay for the use and enjoyment of the resource on the internet.
- It may also be private in the event that the platform is maintained by the institution itself, within its facilities. However, the term Cloud Computing is most commonly associated with the public cloud.
- Cloud Computing relies on technologies such as virtualization, programming techniques such as multi-tenancy and/or scalability, load balancing and optimal performance, to ensure that resources are offered quickly and easily. Furthermore, in the case of public clouds, these techniques generate economies of scale arising from the efficient use of hardware and human resources. These economies of scale, in turn, have an effect on the price the customer pays, which is of great interest to any institution in current times (Romero, 2012).

3. Advantages of Cloud Computing

- **Cost reduction:** Ability to increase or decrease the consumption of hardware or software resources immediately and in some cases automatically.
- **Scalability:** "Pay as you go" allowing a more efficient control of expenditures.
- **Lower investment, reduced risk:** Immediate access to the improvements in the resource proposed (hardware and software) and debugging.
- **Support included**: Enjoyment of the most advanced security procedures, availability and performance of providers with experience and knowledge in this type of service.
- **Greater security and accessibility:** Access to resources from any geographical point and the ability to test and evaluate resources at no cost.

Modern library automation has now moved beyond this to the point where access to information now means that clients "obtain resources and information in all formats wherever it was located, from anywhere, at any time, day or night". Currently, library automation assumes "a wider scope of definition", referring now to the library user accessing not only the local library collection, but also the global and networked "information and knowledge base" (Cohn et al., 2002).

Today a great number of the library's population of users and prospective users are actively accessing and creating online, digital, and networked information. Evidence of the library's active online or digital clients can be observed in the growing online social networks. In addition, the forming of communities of interest among Web users indicates a growing movement toward Web collaboration. Web collaboration allows users without knowledge of the underlying Internet's infrastructure, to create content and have a contribution to what is being communicated and published daily. Companies and organizations have now been catching on to the trend using a variety of free Web services such as social networking sites and wikis to create an inexpensive Web presence to market services, expertise, and resources to the growing digital population. Not only is it easy to create a Web presence for companies and individuals, but these current technologies also makes it easier for their customers to give feedback, edit, or contribute to the Web presence of the institution (Wagner and Majchrzak, 2007). This latest development in companies and customers collaborating on the Web has currently started a spate of research, publications and experiments from business researchers and practitioners.

Web collaboration is only partially enabled by the underlying concept of cloud computing. Collaboration, the process whereby "individuals and/or groups work together on a practical endeavor", has always been "a fundamental feature" of every organization. Modern information and communication technology (ICT) enables collaboration to take place "on a virtual dimension, regardless of time and location" thereby creating the "'virtual organization" – in which a group of persons are able to share and access available resources regardless of location (Fong, 2005).

4. Cloud Computing and Library Automation

In the field of library automation there are several commercial suppliers already offering various adaptations of their products which make the use of the cloud possible to a lesser or greater extent. The problem is that many of these solutions are not really systems designed by and for Cloud Computing, but rather adjustments of, and patches for their commercial developments that enable them to continue selling their traditional products while claiming to offer reductions in cost and more modern management. The report drawn up by Breeding, Marshall "Automation Marketplace 2012: Agents of Change" in April 2012, is an in-depth study on the status of the different versions of commercial software, i.e. owner, open source etc. and among those products, it highlights those that already offer the "open cloud" service. This article does not aim to compare these products, but rather to focus on what items should be studied for the purpose of deciding whether to use an open source application, and determining how to purchase or contract this type of solution:

- The first and foremost priority is an in-depth study of all applications currently being used in the institution. It is necessary to know which type of data is being considered and which kind of applications are already available in the institution as well as the applications which are least user data sensitive. It should be clear that it is important to start off with those applications that affect our users and their personal data the least and especially, the indiscriminate use of such information.

- Even when purchasing so called "classic" software caution is required about the type of contract being entered into, and in the case of cloud computing even more caution is needed. It is important to have a clear understanding of the risks entailed and to enter into a contract in which these risks are fully covered.
- The possibility of backing out of the services should be ensured. Libraries need to be able to retrieve their information and contract a new "cloud computing" as necessary.
- The internet provider must be very reliable because if libraries do not have access, all their work could be lost. Clearly, a portion of the amount saved on cloud computing should be spent on fiber optic solutions, the improvement of bandwidth, server security, the expansion of backup services etc. If solutions for these services are not found in advance the transfer to cloud-computing services could be suicidal for both employees and users.
- Before deciding on a payment method, each institution has to undertake an in-depth analysis to determine which is most suitable. There are different payment methods for the use of cloud computing services, and the one to be used will depend on the services to be contracted by the institution. Most common are the following payment methods:
- "Pay-as-you-go" is the standard· payment method for Cloud Computing hardware and software services. In this case you only pay for what you use, CPU usage, megas used, the use of a SW, etc., or for potential use, e.g. in the case of payments made by users accessing the hardware or software platform.
- "Subscription" or payment for potential use of software or hardware, is another payment method, i.e. the payment of a fixed price over a certain period-of-time (month, quarter or year). You can use the service as often as you want without limitations. There are different possibilities: User – The amount payable depends on the number of users who use the tool, and user names are not typically not transferable; Functionality – Payment for the use of one feature in particular; Flat rate – Payment of a fixed amount and no limitation on the number of users or use of resources.

Any of these payment methods must be studied, taking into account the total number of users in the institution. It is even of interest to request a preliminary study from the various providers that have been contacted, comprising different estimates, depending on the payment method chosen, so as to determine which is of most interest to use. In many cases the choice of one or another payment method itself can lead to significant cost savings, extending beyond which "cloud computing" providers or services are chosen.

- The cost of increasing scalable storage options should be known in advance. Many providers offer very competitive prices at first, but then successively increase their rates to a much higher amount. A provider which at first seems less economical future might actually turn out to be cheaper if the initial cost is compensated in the future. As previously discussed, if the pay as you go method is chosen. it is better to choose a provider whose future rate increases are lower than to choose one whose original rate is very low.
- It is essential to verify which future software and hardware updates are and are not covered. Since updates are automatic, it might be assumed that they are covered, but it is important to read the small print to determine the extent to which they are actually covered and for how many years. It must be borne in mind that unlike when purchasing commercial products for use, in the case of cloud computing "you are buying a service rather than a product". This is not a product that can be inventoried and used although it is obsolete, and consequently, if the institution stops paying or terminates its contract, it could be left

without all of its work. Therefore, this is something that must be understood from the beginning when taking a decision on this item.

- The remote access policies must be very clear and employees should be able to use the services from anywhere, which can make the time they have to be physically located in the center etc. much more flexible. For this reason, the access levels assigned to each user must be clearly defined so good access policies can be created.
- Energy savings are key in the use of "cloud computing" since much less energy is used than in traditional data centers, meaning that costs on other items in the institutions can be reduced.

5. Conclusion

The new trends in the automation spawned by recent Web development are causing libraries to be more reliant on software and computing resources provided by outside companies in service delivery to users. This indicates that libraries are operating under a new mode of library automation than existed at the turn of the 20th century. Prior to the 1990s, libraries sought to own their systems, data and resources. Today, some libraries are trusting the "cloud" and are creating services dependent on outside providers of computing software and services. In addition, many of the new services that libraries are implementing using Web services are significantly social allowing for external collaboration and for user generated content, feedback, and contributions. There is the collaboration that allows users to participate in developing the Web product or service, giving unique contributions that can make the library's Web presence, service, or product even more useful to other users. For those still cautious about who collaborates in shaping intellectual content, there is the option of selecting other librarians which are not a part of one's organization or institution to expand the scope and use of one's Web presence, service, or resource.

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Cloud Computing and College Libraries

Sau.Aboli A.Chandratre

Abstract

In 21st century IT environment library managing their own data centers. Digital library face the several challenges. In this paper description about the basic could computing, some of the data issues and recent challenge to use the cloud computing. Cloud computing is fundamental altering the expectation for how and when computing storage and networking recourses should be allocated, managed and consumed. The paper described the present status of user service models in college library. It proposed to improve current user service model with cloud computing.

Keywords : current user service, FTP and Tribal area. ASCII CDRS, Saas, laas, CAGR Middle are SDK

1. Introduction

Cloud computing is internet computing where virtual shared servers provide software, infrastructure, platform, devices and other recourses and hosting to customers on pay-as-you-use basis. All information that a service in the cloud computing model. Readers or users can access these services available on the internet cloud (information explosion) without any previous know-how on managing the recourses involve. Thus users can concentrate move on their care study/learning/research process rather than spending time and gaining knowledge on recourses needed to manage their learning process. The idea of cloud computing is based on a very fundamental principal of reusability of information technology and knowledge capabilities.

The difference that cloud computing brings capered to traditional concepts as follows:

CLOUD COMPUTING



Grid Computing | Distributed computing | Utility/ Automatic computing

The basic concept of cloud computing is making tasks distributed in large numbers of distributes computers but not in local / remote servers. The collecting large quantities of information resources and information stored in personal computers. Mobile phones and other equipment. Cloud computing is capable of integrating them and putting them on the public cloud for serving users.

Digital Library is a development oriented software integration platform. Through to technical and the information integration each kind of carrier digitization carried on the effective Deposit and the organization provides the network effective service. After DL technology popularization provided the high grade information. Service but simultaneously also to expose all sorts of problems unceasingly, because the economic condition, regional resources sharing difficult. So that the resources created the waste satisfied the aggregate demand with difficult. The Cloud Computing possibly provides a good solution plan day for this kind of phenomenon.

2. Module in college library of current user's services

College Library is heart of the institution say's Dr.Ranganathan because of College library as a most important role academic and scientific study. Charges for providing so many information services for its users. Today's librarian role is changing in new electronic era, librarian as an information manager and information manger us an information officer usually needs to collect advance information as they can accord user's expectation. Then they will provide then for users in some certain methods. In modern libraries will increasingly focus on users demanding and requirement in future (Bowden-expectation users- 14 points). BOWDEN-1Compehensivness, Accessibility, .Ease of use, multiple formats& media, Access to universal resources, accurate & speedily information, on the topic of interest etc.

3. Cloud computing in digital and college libraries:

The modem academic library objective is to offer multi-level services for its users. At current user services models are mainly

- world wide web service
- File Transfer Protocol
- Bulletin Board Service
- E-mail service model
- Mobile base service model (Hu Guangxia: research on information service model of university library in digital era, Tianjin polytechnic university 2007)

4. World Wide Web Service

www provides all kinds of information and services seamlessly and provide users with vivid graphical users interface. www is searching and sharing information for people around the world. www is based on client-sever model presents all kinds of information browsing systems with the bases of HTML knowledge and HTTP protocol. The specific division is www servers are in charge of linking web pages by hypertext links and www clients are responsible for displaying information and sending requests to servers.

www service is most important point its high degree of integration. So that it gradually becomes the best information services tool means of dynamic multimedia interactive for all over people.

4.1. File Transfer Protocol

It's a widely used CM protocol. File Transfer Protocol is based on client server model. It's easy to lean to use FTP service. The procedure

- I step is need to star the File Transfer Protocol client program to connect with remote host.
- II step - issue file transfer command to remote host
    - After remote host received the command
    - It will give respond and implement.

The college library network syllabus is good type which brings great convenience for users and library as well; by using file transfer protocol service. Users or researchers or students can make their own password, (N-List) using their E-mail Ids and this can let libraries obtain users

visiting records easily. The user's recording information officer can offer corresponding services for them and improved user's satisfaction.

5. Bulletin Board Service:

Bulletin board service is a kind of electronic information service syllabus on the internet. All users can write their thoughts or release information on this Bulletin Board. Bulletin Boards through user's can ask and consult information officer librarian at any time. Generally they can get their response in a very short period of time. Bulleting Boards one feature is very useful to librarian's communicate with more user's at a time through Bulletin Boards. College libraries can open lectures (Library Orientation, release announcements (New plan's library services, etc) provide online help for student and researchers by Bulletin Boards syllabus.

Bulletin Board based generally text based early Bulletin Boards convinced using the simple ASCII characters set. Now some home computer manufactures extended the ASCII character set to take advantage of the advanced graphics and colorful capabilities in their syllabus.

6. E-mail service model

E-mail provides a very quick simple short words and economical way of communication for the interact users in the whole world. E-mail syllabus user's needed information resources more quickly and economically and net need to visit library personally.

7. Mobile base service model

It is use on internet. Mobile base service model is a very quick simple economical way of communication and any ware anytime use to user's. In a cyber era IT new development day to day so current user service models are out of dated, the useful and convenient services for students and researchers serve the time. The college libraries facing the problems for limited funds, skillful manpower basic infrastructure, reading materials etc.

At present user need fulfill net library services or information services and value added qualities services. Development of user service model in college libraries. K-society is mainly being created by the ICT revaluation fulfilled a huge driving force called internet. Librarians to make a proactive move to acquire those information communication technology skills that are necessary in providing qualitative and value added services.

K-society requires constantly track new ideas; keep in touch with latest happening the profession. At present day libraries advanced user-oriented service. So that library develops itself according to such information and improves user's satisfaction. Academic college library information technology has been the driving force of library development with the expansion of digital and cloud computing application because of Digital Library limitation to apply Cloud Computing in libraries by establishing a public cloud among many college libraries.

Application of Cloud Computing in college library

8. User's service models :

Unified search service model a) OPAC b) ILL

CDRS

Real time access service model

Knowledge service model

All -oriented service model

8.1. **Unified search service model**

a. OPAC - online public access catalogue

b. ILL - information library loan

Library users still cannot access to the shared resources through a uniform access platform. However with the adoption of cloud computing in college library the integrated library recourses support distributed uniform access interface. (2009, fan Bingsi). At the same time. The uniform access platform can promote college library resources. Guide and answer user's questions by using high quality navigation. As a result user's can grip more information retrieval methods and make better use of library recourses.

CDRS : co-operative digital reference service. The college library can provide. Its user with network references by bulletin board service or E-mail or mobile service. But with constant improvement of user's demand various types of information demanding integrated digital reference service came in to being and givien by cloud computing. Sharing new technology, recourses, experts and services college libraries fulfill the user's satisfaction.(Qianwenging, 2009)

Real time access service model : In the era of Digital Libraries, user's paid more attention to e-databases, e-journals, e-book etc. this is really a big challenge for college libraries but by introducing Cloud Computing. College libraries can establish a shared public cloud jointly.

Knowledge service model: in the context of k-economy, k-recourses have become the main recourses affecting productivity development. College libraries provide users with efficient transmission of information. And knowledge-services become urgent task for libraries today. The emergency of cloud computing accelerated libraries development. The establishment of shared public cloud can save manpower and material recourses greatly among college libraries. Librarians have to maintain their own equipment or deal with consultations personally and libraries will have more time and energy to offer users with their needed knowledge-based services. (2011, Sanchati and Kulkarni)

All -oriented service model : an ancient India or Vedic day's in Indian universities like Takshila,Nalana, Vallbhi libraries good collection and very well universal Dnyanaganga to worldwide. At present comparing with foreign university libraries we can find that foreign libraries are intended to provide service for all the people. Besides the professors, teachers or students. All the people of that country can access to the library recourses. In addition they also permit users access to many libraries recourses by handling related certificate of the library and fortunately domestic libraries can also do this in the cloud environment. Anybody who can through the legal network identity authentication has the right to visit the joint recourses of College libraries on the internet.

College libraries will offer services for all the people with the help of Cloud Computing and public special and Academic library services consotia base use to Cloud Computing

9. Conclusion

Knowledge-environment has passed several challenges which are no doubt staggering. While the great core of principles, practices & values they espouse remains, relevant, the skills & knowledge require toper form their jobs are constantly changing. These developments require

increased Technological skills to ensure appropriate & effective action on the part of information mangers. College library aim is to provide satisfactory services for all the users. So In an electronic era, library should improve itself constantly adopting many new IT Techniques, like cloud computing. In this paper focus to the improve current user service model in college library by use cloud computing. The cloud computing methods improve the utilization score of resources for educational development. & also use to our daily life. Development all aspects the self & society, national development, especially remote area like adiwasi pada, tribal area.

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Cloud Computing and Libraries: *An Overview*

Tharun, M

Abstract

This paper mainly focused on the Cloud computing in libraries which is recent one used in libraries. Cloud computing provides significant cost effective IT resources as cost on demand. Due to rapid growth, many companies are unable to handle their IT requirement even after having an in-house datacenter. Cloud services helps to improve IT capabilities without investing large amounts in new datacenters. This technology helps companies/ libraries with much more efficient computing by centralizing storage, memory, processing and bandwidth. The users of the services being offered often have very little knowledge of the technology being used. This paper explains meaning, definition, concept, characteristics, advantages, disadvantages, types of services used in libraries and at the end, conclusions and suggestions.

Keywords : ICT, Cloud Computing, Virtualization, Communication as a Service.

1. Introduction:

The accelerated adoption and use of Information and Communication Technology (ICT) has resulted in the globalization of information and knowledge resources. Bibliographic databases, full-text documents, and digital library collections are always available to users. Cloud Computing is a technology that uses the internet and central remote servers to maintain data and applications. This technology allows for much more efficient computing by centralizing data storage, processing and bandwidth. Cloud computing is a type of computing that relies on sharing computing resources rather than having local servers or personal devices to handle applications. Cloud computing allows consumers and businesses to use applications without installation and access their personal files at any computer with internet access. Cloud computing is comparable to grid computing, a type of computing where unused processing cycles of all computers in a network are harnesses to solve problems too intensive for any stand-alone machine.

2. Characteristics Cloud computing

- **Cost:** Cost is claimed to be reduced and in a public cloud delivery model capital expenditure is converted to operational expenditure.
- **Reliability** is improved if multiple redundant sites are used, which makes well-designed cloud computing suitable for business continuity and disaster recovery.
- **Performance** is monitored and consistent and loosely coupled architectures are constructed using web services as the system interface.
- **Security** could improve due to centralization of data, increased security-focused resources, etc., but concerns can persist about loss of control over certain sensitive data, and the lack of security for stored kernels.
- **Self Healing:** Any application or any service running in a cloud computing environment has the property of self healing. In case of failure of the application, there is always a hot backup of the application ready to take over without disruption.
- **Multi-tenancy:** With cloud computing, any application supports multi-tenancy - that is

multiple tenants at the same instant of time. The system allows several customers to share the infrastructure allotted to them without any of them being aware of the sharing.

- **Linearly Scalable:** Cloud computing services are linearly scalable. The system is able to break down the workloads into pieces and services it across the infrastructure. An exact idea of linear scalability can be obtained from the fact that if one Server is able to process say 1000 transactions per second, then two servers can process 2000 transactions per second.
- **Service-Oriented:** Cloud computing systems are all service oriented - i.e. the systems are such that they are created out of other discrete services. Many such discrete services which are independent of each other are combined together to form this service.
- **Virtualization :** The applications in cloud computing are fully decoupled from the underlying hardware. The cloud computing environment is a fully virtualized environment. This technology allows servers and storage devices to be shared and utilization be increased. Applications can be easily migrated from one physical server to another.
- **Flexible:** The last feature of the cloud computing services is that they are flexible. They can be used to serve a large variety of workload types - varying from small loads of a small consumer application to very heavy loads of a commercial application.

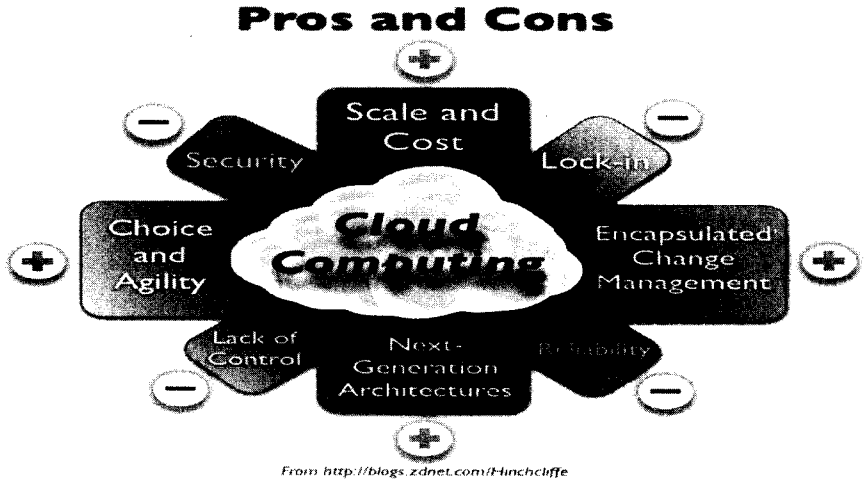


Figure 1 Cloud Computing-Pros & Cons

3. Types of Cloud Computing Library Services

By using the new technology, i.e. Cloud computing providing the following to its users services of a library.

- **Software as s Service** (SaaS): provides the user with access to already created applications that are operating in the cloud. Software package such as CRM or CAD/CAM can be accessed under cloud computing scheme. The users upon registration are allowed to use software accessible through net and use as per His/Her need. The related data and work may be stored on local machines or with the service providers. SaaS services may be available on rental basis or on per use basis. This service also allows for certain messages, tools, voice over IP (VOIP), Instant Messages (IM) and Video Conferencing.
- **Platform as a Service** (PaaS): Provides the user with development environment services where the user can create and run home-grown applications. Cloud vendors are companies

that offer cloud computing services and products. One of the services that they provide is called PaaS. Under this, a computing platform such as operating system is provided to a customer or end user on a monthly rental basis. Some of the major cloud computing vendor is Amazon, Microsoft, and Google etc.

- **Infrastructure as a service** (IaaS): provides the user with virtual infrastructure, such as servers and data storage space. The cloud computing vendors offer infrastructure as a service. One may avail hardware services such as processors, memory, networks etc on agreed basis for specific duration and price.

4. Advantages

- **Easy Access to Information:** Once you register yourself in the cloud, you can access the information from anywhere, where there is an Internet connection. This convenient feature lets you move beyond time zone and geographic location issues.
- **Cost Efficient:** Cloud computing is probably the most cost efficient method to use, maintain and upgrade. Adding up the licensing fees for multiple users can prove to be very expensive for the establishment concerned. The cloud, on the other hand, is available at much cheaper rates and hence, can significantly lower the company's IT expenses. Besides, there are many ***one-time-payments,*** pay-as-you-go and other scalable options available, which make it very reasonable for the company in question.
- **Almost Unlimited Storage:** Storing information in the cloud gives you almost unlimited storage capacity. Hence, you no more need to worry about running out of storage space or increasing your current storage space availability.
- **Backup and Recovery**: Since all your data is stored in the cloud, backing it up and restoring the same is relatively much easier than storing the same on a physical device. Furthermore, most cloud service providers are usually competent enough to handle recovery of information. Hence, this makes the entire process of backup and recovery much simpler than other traditional methods of data storage.
- **Automatic Software:** Integration In the cloud, software integration is usually something that occurs automatically. This means that you do not need to take additional efforts to customize and integrate your applications as per your preferences.

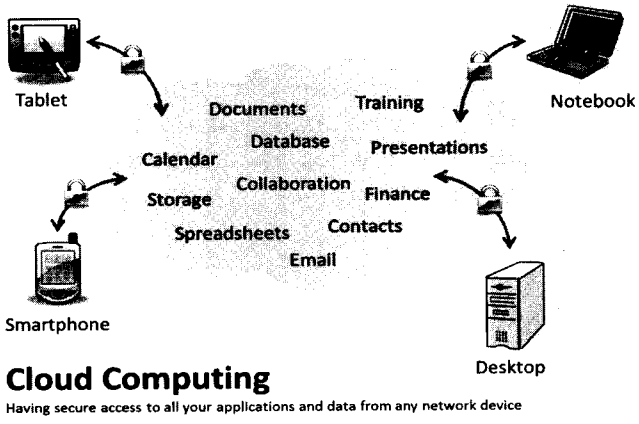


Figure 2: Cloud Computing-Library Resources& Services

5. Disadvantages of Cloud Computing

In spite of its many benefits, as mentioned above, cloud computing also has its disadvantages which are discussed below:

- **Technical Issues**: Though it is true that information and data on the cloud can be accessed anytime and from anywhere at all, there are times when this system can have some serious dysfunction. You should be aware of the fact that this technology is always prone to outages and other technical issues. Even the best cloud service providers run into this kind of trouble, in spite of keeping up high standards of maintenance. Besides, you will need a very good Internet connection to be logged onto the server at all times. You will invariably be stuck in case of network and connectivity problems.
- **Security in the Cloud**: The other major issue while in the cloud is that of security issues. Before adopting this technology, you should know that you will be surrendering all your company's sensitive information to a third-party cloud service provider. This could potentially put your company to great risk. Hence, you need to make absolutely sure that you choose the most reliable service provider, who will keep your information totally secure.
- **Possible downtime.** Cloud computing makes your small business dependent on the reliability of your Internet connection. When it's offline, you're offline. And even the most reliable cloud computing service providers suffer server outages now and again.
- **Security issues.** The security in Cloud computing means security in Internet computing. So we should not be using cloud computing applications that involve using or storing data that you are not comfortable having on the Internet. That being said, established, reliable cloud computing vendors will have the latest, most sophisticated data security systems possible as they want your business and realize that data security is a big concern.
- **Cost.** At first glance, a cloud computing application may appear to be a lot cheaper than a particular software solution installed and run in-house, but you need to be sure you're comparing apples and apples. Does the cloud application have all the features that the software does and if not, are the missing features important to you?
- **Inflexibility.** Be careful when you're choosing a cloud computing vendor that you're not locking your business into using their proprietary applications or formats. You can't insert a document created in another application into a Google Docs spreadsheet, for instance. Also make sure that you can add and subtract cloud computing users as necessary as your business grows or contracts.
- **Lack of support.** In These Issues Need to be Resolved before Cloud Computing Becomes Ubiquitous, (OPEN Forum) Anita Campbell writes, "Customer service for Web apps leaves a lot to be desired -- All too many cloud-based apps make it difficult to get customer service promptly – or at all. Sending an email and hoping for a response within 48 hours is not an acceptable way for most of us to run a business".

6. Conclusion and Suggestions

Cloud computing is a disruptive technology with profound implications not only for Internet services but also for the IT sector as a whole. Its emergence promises to streamline the on-demand provisioning of software, hardware, and data as a service, achieving economies of scale in IT solutions' deployment and operation. The accelerated adoption and use of Information and Communication Technology (ICT) has resulted in the globalization of information and knowledge

resources. Cloud Computing is a completely new Information Technology and it is known as the third revolution after PC and Internet in IT. Cloud Computing is a technology that uses the internet and central remote servers to maintain data and applications. Cloud computing increases profitability by improving resource utilization.

ICT is changing the work of libraries and information centers. An increased number of users, a greater demand for library materials, an increase in the amount of material being published, new electronic formats and sources, and the development of new and cheaper computers are some of the reasons for the growing need for ICT in libraries not only in India also at the global level. Librarians, library patrons and supporters, and, above all, the government, must help develop ICT-based libraries to meet the changing demands of the users. At the Higher Education level, In India, especially the university authorities should be taken major role to develop and implement the cloud computing services to the teaching and research community for the development of a Nation...As our father of nation's (Mahatma Gandhiji`s) Dreams.. ***All Villages must be develop through ICT.***

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Cloud Computing and their Architecture: *Basics*

Kumud Prabha

Abstract

Cloud computing is basically an Internet-based network made up of large numbers of servers - mostly based on open standards, modular and inexpensive. Clouds contain vast amounts of information and provide a variety of services to large numbers of people. The benefits of cloud computing are Reduced Data Leakage, Decrease evidence acquisition time, they eliminate or reduce service downtime, they Forensic readiness, they Decrease evidence transfer time. The main factor to be discussed is security of cloud computing, which is a risk factor involved in major computing fields.

Keywords : ICT Cloud computing, basics, cloud computing architecture

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Cloud Computing: *Types, Services and Its Application to Academic Libraries*

Namita Khot

Abstract

From the last few years, the value of cloud computing is increasing because it is major technology solution for business & organizations around the world. Cloud computing is a recent concept that gives new technology model for IT services which save time & money also. In this paper the author discuss the concept, types and various of cloud computing and how these services having impact on academic libraries.

Keywords : Cloud computing, Types, services, Cloud computing & academic libraries.

1. Introduction

The information and communication technology is a vital part of Library services. In teaching learning evaluation process ICT is performing leading role. Thrust of human being for update technology is going on increasing, we look after for more & more, for better & we are always on the watch for the next best thing when it comes to technology & the internet. Cloud computing is a recent new technology & it is known as the third revolution after PC and internet in IT. It is a recent concept that is still evolving across the IT industry & academia. Cloud computing is the environment that enables customers to use application on the Internet such as storing and protecting data. While providing a service. Over the past few years the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavor within business and governance. By collecting large quantities of data bases & information resources stored in personal computers, mobile phones and other equipment, cloud computing is capable of integrating them & putting them on public cloud for serving users.

2. Cloud Computing: Concept, Meaning and Definitions

The basic idea of the cloud is always the same. It is a form of technology that allows enterprises and small business alike to run applications that are houses away from the enterprises itself. Anyone connected to the Internet is probably using some type of cloud computing on a regular basis. Whether they are using Google's G-mail, organizing photos on Flicker or searching the Web with Bing they are engaged in cloud computing.

"Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management efforts or services provider interaction. This cloud model is composed of five essential characteristics, three service models and four deployment models.[1] [NIST, special publication 800-145.]

The Gartner Grouped defines cloud computing as "a style of computing in which massively scalable and elastic IT-enables capabilities are delivered as a service to external customers using internet technologies.[2]

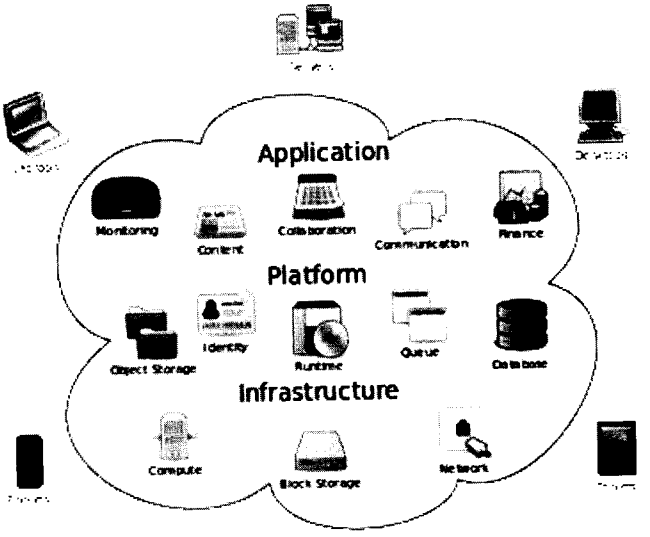
3. Types of cloud

There are four different types of cloud computing. Infrastructure, platform, application and services.

- **Infrastructure:** In this type space or time is purchased on external servers. For example Amazon A3 or Bungee.
- **Platform:** In this type existing software platform is used to build your own applications on it. For example face book.
- **Application:** In this type software applications accessed with a web browser. For example Google docs provide both infrastructure as well as application. Jeff Bezos of Amazon has repeatedly spoken of the 70/30 rule. He states that it can be demonstrated that businesses which run applications spend 70% of their time and money supporting the infrastructure required to keep their business going.[3]

3.1. Services

In this type ready to use services are accessed with a web browser. For example on line search engines (Take, cloud computing logical diagram from Wikipedia).



Cloud Computing

Difference between traditional computing and cloud computing

Need of big infrastructure which results more cost.	Centralization of infrastructure in location with lower cost.
Need of human resource with high qualification	Human resource with high qualification can be reduced.
Security cost is high	Because of centralization on network this cost is low.
Maintenance of computers is very difficult & costly.	Maintenance is easier because less number of computers can be accessed from network.
Because of changing technology reliability is less.	Reliability is improved because of centralized networking.
Traditional computing	Cloud computing
Software development & system engineering has centered on the personal computers.	Hardware & functionality traditionally installed can be used for development of softwares through networks in the internet cloud.
For development of softwares it takes long time.	Programmers can get developed softwares from internet so for development of new softwares time span is limited.
Design of software is focused on single application.	Because of this programmers can use constantly updated software components that can be embedded with other web applications.
For this we spend lot of money for limited application.	For this we spend limited money for huge application.

4. Types of cloud computing services

Cloud computing offers three different kinds of services. Depending on clients necessities, each form of cloud service is used either independently or in briefly described as follows:

4.1. Software as a service (SaaS)

The concept of cloud computing was developed as SaaS and its primitive state. It provides a single application over internet to all its users, giving a strong advantage to both the sides. In the client side, it ensures no investment in servers for running that application on the server side, it ensures lesser maintenance cost. Some of these web based applications are free for e.g. Hotmail, Google Apps, Skype and many 2.0 applications. SaaS allows people to access the functionality of a particular software without worrying about storage or other issues.

4.2. Infrastructure as a service (IaaS)

With IaaS organizations have access to the unlimited storage potential of the cloud. They can grow and shirk their storage space as needed. This means that they do not have to worry about having dedicated servers on site. It also means that they can weather increased use of their sites or applications as needed.

4.3. Platform as a Service(PaaS):

It creates the connection between the SaaS and IaaS services of cloud computing .Paas helps to provide computer platform which suplies tools and a development environment to help companies build ,test and deploy Web-based applications. It offers computing stages to the clients of cloud. A typical computer needs a computing stage that contains hardware architecture with a structure of software. And the platform consists of the computer's working system, design and languages. Therefore, When it proceeds to cloud, in the nonappearance of a genuine PC, it is a service to provide with everything that is need to create a platform. Examples of this service are Windows Azure, Google AppEngine, Force.com

5. Implementation of Cloud computing in Academic libraries

Now a day's academic libraries charge for providing information services for its users. In early period there is not any question of charging for providing information, because libraries use their own resources for dissemination of information. But now in this IT era libraries have to change their viewpoint. Because libraries have to collect information from so many sources & then by analyzing & sorting they will provide SDI service. So ultimate goal of modern libraries is to offer appropriate, comprehensive & multi level services for its users. Modern academic library has to develop itself according to such information and improve users satisfaction. With the expansion of cloud computing application modern academic libraries can master the basic demands of their users.

6. Application of cloud computing in academic library

Currently there are some service models which are in use [4]

6.1. www service model

World Wide Web is based on client server model. It presently all kinds of information browsing systems with the bases of HTML language and HTTP protocol. The specific division is

www servers are in charge of linking web pages by hypertext links and www clients are responsible for displaying information and sending requests to servers. And the most significant feature of www service is its high degree of integration.

6.2. BBS and E-mail service model

BBS (Bulletin Board Service) is a kind of electronic information service system on the internet. It is just like a public blank board on the internet, all user can write their thoughts or release information on this board. And E-mail is just another kind of information service on the internet. In a word, E-mail provides a very quick, simple and economical way of communication for 'internet users in a whole world university libraries can open lectures release announcement and provide online help for users by BBS system and though E-mail system, users can obtain their needed information and knowledge resources more quickly and economically as they don't need to visit libraries personally.'

6.3. File transfer protocol service model (FTP)

FTP is a widely used communication protocol. And it is comprised of various rules that support file transfer on the internet. As such rules can permit online users copy files from one host to another, it bring great convenience and benefits to users. Just as other internet service, FTP is also based on client server model. By using FTP service in academic library, users can make their own password such as using their own password such as using their E-mail address, and this can let librarians obtain users visiting, records earily. Furthermore, according to users visiting records, librarians can offer corresponding services for them and improved users satisfaction.

7. User service models for Academic Libraries

Academic libraries as we all know are famous for its teaching influences. And IT Technology has been the driving force of library development. With the expansion of cloud computing application in these libraries librarians can conserve library resources & also can improve user satisfaction.Following are some famous cloud computing service models used in Academic libraries.

7.1. Unified search service model

Library users cannot access to the shared resources through an uniform access platform though there is facility of OPAC or Ihh. But with the help of cloud computing in academic library, the integrated library resources support distributed uniform access interface. This platform can promote library resources, guide and answer user's questions by using high-quality navigation. This results in better use of library resources.

7.2. Integrated consulting service model

BBS or E mail facilities are provided in every academic libraries. But now a days because of increase in users demand integrated digital reference service came into being. With help of cloud computing co-operative digital reference service can realize the sharing of technology, resources, experts & services of these libraries.

7.3. Real-time access service model

With providing facility of cloud computing academic libraries can establish a shared public

cloud jointly purchasing of electronic journals, electronic databases is very costly. This model can save hardware cost as well as cost of e-databases & e-resources. Users can visit the shared resources by any terminal equipment such as PC, Mobile etc.

7.4. Knowledge service model

Academic libraries are the main department of storing, processing and spreading knowledge. So how to provide users with efficient transmission of information and knowledge services became urgent task for librarians today. Cloud computing is the better solution for this. The establishment of shared public cloud can save manpower and material resources. Libraries won't have to maintain their own equipments or deal with consultations personally. Also librarians will have more time and energy to offer users with their needed knowledge based services but not only information.

7.5. All - oriented service model

This type of service model through cloud computing is helpful to all type of reader. Not only the academicians but also all the people of country can access to the library resources. All the readers are permitted to access many libraries' resources by handling related certificate of that library. Also domestic libraries can also do this in the cloud environment. Anybody who can through the legal network identity authentification has the right to visit the joint resources of any academic libraries on the internet.

8. How cloud services are useful to university libraries

Cloud computing resources can help universities on many different level. Here are some ways because of them universities will benefit operationally and financially from a cloud based solution -

- Reduce software licensing expenses - North Carolina state university is an example of an educational institution that has decreased software licensing fees substantially, while at the same time decreasing campus IT staff headcount.
- Local support for collaborative learning cloud solutions can also be used to support project based learning. Collaboration instructional methods can be easily used as well Pixel-online net recommends cloud computing be used as an "infrastructure that enables universities to share their resources with business and industries for technological advancement."
- Universities can focus more on cars instructional functions - with outsourced cloud computing. More university resources can increase focus on cores university functions, such as teaching and research while investment in configuring complex IT infrastructure and software systems can be reduced, according to the communication of the IBIMA.
- Save students and teachers time and money - cloud computing allows students and teachers to access applications remotely and also allows access to saved files from different locations. Students can save both time and money when they no longer need to install applications on their personal computers in order to work at home.
- Ideal infrastructure for e-learning - cloud computing can offer the ideal infrastructure for e-learning solutions by facilitating educational services through cloud providers. E-learning is a growing area for universities; many state universities currently have online courses together with both graduate and undergraduate online degree programs.

- Flexible access from virtually anywhere-data, software applications and IT services can be accessed from any location.
- Reduce financial costs - JISC reports on how universities find cloud computing increasingly appearing when certain IT functions are only needed for short periods of time.
- Make experiments more standardized and easier to replicate - documentation of experiments performed on cloud virtual machines can reference cloud applications, making the experiment more repeatable.
- Access specialized software unavailable at your university - researchers may need to use specialized software which in-house systems cannot support. Specialized software can be accessed from cloud hosts as needed.

9. Conclusion

All the academic libraries are facing challenges of tremendous growth of information resources in this IT era. With help of cloud computing, libraries have the opportunity to improve their services & relevance in today's information society. It can bring several benefits for libraries and give them a different future. With the introduction of cloud computing to academic libraries, services of libraries will have a new leap in the near future. Services provided by libraries will become more user-centric, more professional & more effective. Cloud environment is a highly developed network environment; it appears to the users of high-quality service & high security. The cloud computing model will encourage libraries and their users to participate in a network & community of libraries by enabling them to reuse information & socialize around information. It can also create a powerful, unified presence for libraries on the Web and give users a local, group and global reach.

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Impact of Cloud Computing on Libraries: *An Overview*

Ramesh, M.R.

Abstract

Cloud computing can transform the way systems are built and services delivered, providing libraries with an opportunity to extend their impact Cloud computing has become a major topic of discussion and debate for any business or organization which relies on technology. Anyone connected to the Internet is probably using some type of cloud computing on a regular basis. Whether they are using Google's, Gmail, organizing photos on Flickr or searching the Web with Bing they are engaged in cloud computing.

Keywords : Cloud computing, Web scale management, Digital library

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Information Security for Cloud Computing in Libraries

Praveen Kumar Kumbargoudar

Abstract

Cloud storage is suggested and adopted in many of the libraries and information centres today. But, it is noted that the data stored in clouds is not free from problems and concerns. Hence, there are concerns of privacy of the data stored, data security, etc. The present paper analyzed the universal data storage, which to a greater extent reduces the problems and weaknesses of the cloud storages generally adopted by many of the organisations.

Keywords : Cloud computing, Information security and Libraries

1. Introduction

Libraries are using computers for running services such as Integrated Library Management Software (ILMS), website or portal, digital library or institutional repository, etc. These are either maintained by parent organisation's computer staff or library staff. It involves investment on hardware, software and staff to maintain these services and undertake backup and upgrade as and when new version of the software gets released (Bansode and Pujar, 2012). Library professionals in most cases not being trained in maintaining servers find it difficult to undertake some of these activities without the support of IT staff from within or outside the organization. Now cloud computing has become a new buzzword in the field of libraries, which is blessing in disguise to run different ICT services without much of a problem as third-party services will manage servers and undertake upgrades and take backup of data.

2. Cloud Computing

The term cloud means "Universal Data Storage". The term "cloud computing" has been used in recent years to denote a particular way of providing computer services, made possible by developments in communications technology. Other terms including "grids" and "clusters" have been used to indicate collaborative operation of computers, but cloud computing has the special feature that access is provided as a service, similarly in some respects to the supply of electrical power or piped water. Variations are referred to as: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and application(s) or Software-as-a-Service (SaaS). In each case the client organisation receives service from a powerful combination of processing and storage facilities without needing to know details. Means of communication between client and cloud have been termed "middleware" and depend very much on formation of images of virtual machines. An important aspect is load balancing among the actual machines (Andrew, 2012).

Cloud Computing is a new large scale distributed computing paradigm in which dynamically scalable virtualized computing resources and services are provided over the Internet. Users do not need any knowledge of the infrastructure that run their applications somewhere "in the cloud", whether they run on an internal private network or on the Internet. Cloud Computing is service oriented paradigm which includes both infrastructure and software as services. This allows user applications to be constructed out of various services, represented by individual independent software components (service providers) which maximize services/software reusability. It is

Service Level Agreement driven, where the infrastructure is dynamically managed by service-level agreements that define usage policies at pre-set cost and defined time scale for the delivery of a service (Khaddaj, 2012).

Cloud Computing a new model of computing that is widely being utilized in today's industry and society (Hartig, 2008). Cloud Computing concept is derived from the imagery of the "Internet cloud", in which the imagery of a cloud is traditionally "used to represent the Internet or some large networked environment". The idea depicted in the imagery is that client data and applications are stored and accessed "somewhere out there" (Hosch, 2009). Hartig defined it as "virtualization of resources that maintains and manages itself (Hartig, 2008). In simple words, cloud computing can be defined as simply the sharing and use of applications and resources of a network environment to get work done without concern about ownership and management of the network's resources and applications. With cloud computing, computer resources for getting work done and their data are no longer stored on one's personal computer, but are hosted elsewhere to be made accessible in any location and at any time.

Cloud Computing, also known as "The Cloud", is a highly scalable platform promising quick access to hardware and software over the internet, in addition to easy management and access by non-expert users. There are various types of "clouds".

- Cloud Computing may be public, in the event that the owner is a provider maintaining the cloud for the entities that own the data: In this case, entities pay for the use and enjoyment of the resource on the internet.
- It may also be private in the event that the platform is maintained by the institution itself, within its facilities. However, the term Cloud Computing is most commonly associated with the public cloud.
- Cloud Computing relies on technologies such as virtualization, programming techniques such as multi-tenancy and/or scalability, load balancing and optimal performance, to ensure that resources are offered quickly and easily. Furthermore, in the case of public clouds, these techniques generate economies of scale arising from the efficient use of hardware and human resources. These economies of scale, in turn, have an effect on the price the customer pays, which is of great interest to any institution in current times (Romero, 2012).

3. Problems and Challenges in Cloud Computing

There are many problems and challenges in cloud computing applications. There are problems and concerns in using cloud services such as privacy, security, etc., some of the libraries have already embraced this new technology to run some of their services. Following are the problems and concerns in cloud computing:

3.1. Security and Privacy:

The major concern about cloud computing is security and privacy, especially the organizations are dealing with private information related to the customers or users. The data stored in clouds is vulnerable to viruses, hacking, theft, etc. Hence, there is always fear of loss of data stored in clouds.

3.2. Network Connectivity and Bandwidth:

Since the cloud computing is offered over the internet, if the connection goes down due to any reason then the organizations suffer from loss of data connectivity till the time it is set. Also the

service requires more bandwidth, as it may not work on low-speed internet connections (Miller, 2009).

3.3. Dependence on Outside Agencies:

The cloud services being offered by third party services over the Internet, it is virtually difficult to have any control on the maintenance levels and the frequency. Also it is tough to assess the contingency procedures of the service provider in regard to backup, updates, restore and disaster recovery. Migration to other service provider is also an issue, if the uniform standards are not followed by the host (Bansode and Pujar, 2012).

3.4. Integration of Knowledge:

It is also difficult to integrate the knowledge and data that is stored in clouds.

3.5. Cost:

Depending on the number of users, the cost may high or low. If there are more users and less data, the cost may down, but on the other hand, if there are lesser users and large amount of data, then the cost may be higher.

To cope with these concerns related to cloud computing, many of the organizations and individuals are developing secured models for cloud computing. It is essential for the libraries to go for their own clouds. For this purpose, there is need to design and develop an independent and secured model of cloud computing.

- **Semantic data:** The data provided by the user semantically organised in such way that only the trusted parties can access and expose the data, it is often done upon request by the owner of the data.
- **Internet resources:** Internet resources can be defined as anything which is available on the internet.
- **Service users:** An entity which uses the service of this technology, who is able to store data on the cloud, this could be individual users or public users such as enterprises.
- **Semantic link:** This is the link formed between the end-user, service provider and the semantic data. This is nothing but semantic data.

In universal data storage, (provided by various service providers) a user stores his/her data. The owner of the data is also the owner of the information wanted his/her information to be stored and protected from external threats. The universal data storage also contains data from various other users. The stored data is accessed by each owner through search. In cloud computing as users no longer stores the data in his/her server or data storage, it is of very important that user's data are intelligently stored, maintained and protected. In many cases the users appoint third party to monitor their data, because the users have very little or no resources to do so. Sometimes to appoint such a third party is not that secure because of the fear of information manipulation and leakage. In this proposed approach that the semantic link between the service providers, users and semantic data can overcome these above mentioned problems and it is reliable and semantic. Gradually the universal data storage is able to learn, infer and forms searchable semantic links and index.

The aims of new system should be data protection, semantic information indexing, semantic check for interlopers, etc. These features should be adopted so as to authenticate only genuine

users to gain information from knowledge database. The indexing and query method should be based on hash tree access using per node or per document identifiers, descendent/ ancestor search element search by suing keyword, incremental update and looking after the size of indexing such as entry number and entry size. The hash tree is suitable since cross searching as well as parent to children based search is needed. In this approach every path and entity and its relationships are selected for indexing, so that the data guide has to be done with same sequence of labels. Every path in the data base should have only one corresponding path in the data guide.

For example, Biju John and Khaddaj (2012) given a model as under. The key words are related to its owner or contributor "Fanta" such as "supplier" and "Location". Here supplier and location are also the attributes of "fanta". The number of fanta , supplier or location can be presented as integers 0-n . Supplier and location are names, and all these attributes are nested in each element. The hash function noted here as (0-5).

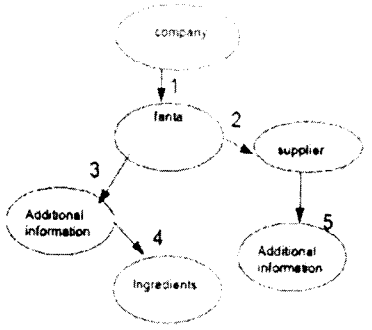


Fig.1. Graphic of Indexing and Search

It is revealed from the above figure that the indexing and search using hash tree access, also shows that each node is identified by an identifying number, and it goes from ancestor to descendant and also allows cross search descendant to ancestor (graphical search). Keyword is also the attribute value and each time the node looks for updates and the insertion is incremental.

In cloud computing the local data becomes universal data by storing the data in the universal data storage (service provider) and therefore each owner's data has three parts. One is the searchable data with keywords, second is the data stored in universal database (probably encrypted) and the third is the semantic data formed by semantic links (connections). Each owner's searchable data eventually becomes semantic data and it forms semantic connections within itself. In order to integrate and establish semantic relationships between entities of an owner or a universal database environment, the first step will be to identify entities and relationships of products services of a particular owner etc. Then, the identified entities and their relationships are classified and labelled. The itemised entities and their relationships can be then stored on a universal database. In order to facilitate the correspondence between entities, tags can be used. The tagging system can notify of the available products and their relationships. Therefore, the non-related products or services of an owner can be easily identified or updated.

4. Conclusion

It is noted that the data stored in universal data storage is valuable and secured. Hence, the data stored in each library and information centre stored in universal data storage and their records are protected along with keyword index to allow semantic searches by users. In order to

make the search more efficient and avoid the gatecrashers the present paper proposed a Semantic check for interlopers where users obtain their search capabilities from universal data storage based on their attributes. It is proposed for novel solution for efficient search and discovery, in order to enhance the search efficiency using semantic search and semantic connections for cloud computing.

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Integrated Library Management Systems within Dental College Libraries in Karnataka: *A Case Study*

Venkatesh **Chandrappa, S**

Abstract

Today libraries are considered as most trusted information centers for education, research and other activities. Without libraries the educational institutions can't achieve the aims and objectives of the parent institutions. In this context libraries plays a pivotal role in identify, locate, access, store, organize, disseminate and preservation of all types of information both present and potential users. Now all most all the educational institutions are established libraries to cater to the needs of students, teachers and administrative staff of the institutions. This paper investigates and presents the state of the facilities, collection services and, infrastructure facilities in dental college libraries in Karnataka State.

Keywords : ICT, Library automation

1. Introduction

Today libraries are considered as most trusted information centers for education, research and other activities. Without libraries the educational institutions can't achieve the aims and objectives of the parent institutions. In this context libraries plays a pivotal role in identify, locate, access, store, organize, disseminate and preservation of all types of information both present and potential users. Now all most all the educational institutions are established libraries to cater to the needs of students, teachers and administrative staff of the institutions. More particularly the professional educational institutions like law, medical and engineering must have well structured, attractive and functional libraries with state of the art facilities to fulfill the over needs of the user community. The medical science is more of practical approach it need value, authentic and reliable information sources for medical library professionals. Due to vast development of inter-disciplinary, multi-disciplinary and intra-disciplinary medical science now become a multi-disciplinary subject of study. The world is transforming from traditional mode of approach to modern approach is because impact and influence of information and community technology (ICT). The ICT having impact on all most all the walks of human life including educational institutions and there is no exception for libraries and information centers. The libraries are for runner of adopting ICT to provide technology based information products and services to the user's community. Now libraries are shifting from stand alone libraries to integrated library system due availability of standard hardware and software both open source sand proprietary integrated library system software.

2. Strategic Role of the ILMS within Libraries

The ILMS is "a key piece of infrastructure of the library" (Tennant 2003, p.28). Its key value to libraries is its ability to offer a catalogue and to manage workflows. The ILMS is still seen as preeminent in offering "intelligent and convenient access to catalogue data i.e. effective access points which translate user needs with great precision and multi-layered end user interfaces which can be adjusted to different levels of user sophistication." (Hofman 1995). It is also seen as the most cost effective way to handle infrastructure tasks such as "acquisitions, cataloguing and circulation" (Tennant 2003, p.28). In fact its most cost effective feature is this integration of "workflows and processes ... closely tied to data flow", even if this "integration of technical services often don't get

equal weight in library decision criteria" (Lugg & Fisher 2003, p.3). Libraries have traditionally performed a role of physical repository, housing print materials, with a catalogue that provides access to these locally held resources. The accessibility of the web has seen this shift, and catalogue records describing local print materials now sit side by side with records providing links to external web resources. While the inclusion of these electronic sources may "enrich" library collections, they are also "inherently problematic" because they do not have the traditional standards base for inclusion that print materials do (Porter and Bayard 1999, p.390, 391). The scope of what a library catalogue system describes has broadened in a way that is only exceeded by the expectations of its digitally-literate end users.

3. Review of Literature

Siddiqui (1997) reports the use of information technology in seven university libraries of Saudi Arabia. Questionnaires to deans of academic libraries and interviews of individual library professionals was used to get information about availability and use of information technology like computers, networks, electronic mail, online information retrieval, CD-ROMs, facsimile transmission, personal computers (PCs) and the Internet in the academic libraries. Tran and Gorman (1999) presents the results of a survey questionnaire survey administered to 36 information professionals in Vietnamese libraries, which explores progress in the implementation of information technology (IT) in the library and information sector. It intends to discover what librarians have been doing with computers and to describe current electronic resources available in libraries. It also identifies knowledge and skills needed for the provision of electronic services. Most librarians indicate that they need to be trained in the use of computers, new IT, CD-ROMs, Internet services, etc. Al-Qallaf and Al-Azmi (2002) in a survey study the availability and use of information technology in public libraries in Kuwait. The study includes hardware/software, patterns of connectivity such as LANs, Internet, etc., training and development activities. The study shows that few libraries have internet connectivity, limited use of ICT applications, and the implementation of an automated library system are very slow. Mugwisi and Ocholla (2003) examine Internet use, trends by academics and librarians at the Universities of Zimbabwe and Zululand, with specific reference to the use of resources for research and teaching. Results of a survey by means of a questionnaire among the study population indicate high computer and Internet skills among librarians from both institutions.

Jeevan and Saji (2004) present the results of a survey conducted among the premier libraries in Thiruvananthapuram, Kerala to assess the Information Technology adoption in these libraries. A survey using questionnaire and interview was used for getting information about the different IT components useful for better library organization and comprehensive as well as swift information services. Eighteen scientific, technical and research libraries both under Central and State Governments based in Thiruvananthapuram participated in the survey. Scherrer(2004) reports a study of the reference librarians from academic health sciences libraries to examine how their roles changed over the past years and what challenge these changes present. A series of eight focus groups selected from reference librarians were studied. The survey results confirm the role changes of librarians as a result of advancements in information technology. Recently Muhammad Ijaz Mairaj (2012) conducted study is the first of its kind to examine the current status of ICT applications in medical libraries in Pakistan. It evaluates the status of automation and the availability of Internet, Higher Education Commission (HEC) Digital Library resources, and websites in medical libraries.

4. Methodology

Data collected through questionnaire from dental College libraries in Karnataka. The questions are consists of open as well closed ended question to know the responses from dental college librarians. The survey was undertaken the colleges affiliated to Rajiv Gandhi University of Health Science in Karnataka State. The questions mainly consists of status of dental colleges and corresponding management institute followed by dental college librarian's qualification, professional qualification, age, gender, library collection(both print and electronic), the services offered, subscription to e-resources, availability of physical and IT infrastructure facilities in Dental college libraries under the study area.

5. Analysis And Interpretation of Data

The data were entered into M.S. Excel and same transferred to SPSS (Statistical package for Social Sciences) for statistical analysis. Further an inferential and graphical data were presented for more clarity of results using graphical and pictorial representation.

6. Distribution of Questionnaire and Rate of Response

The researcher identified 30 dental colleges in Karnataka looking the year of establishment, availability of library collection, users and state of the art infrastructure facilities to study the implementation of integrated library management using standard hardware and software. Out of 30 colleges the 22 dental college librarians' are respondent positively the rate of response is 76.66%. There response rate is encouraging according to the standards response rate in social science research.

Table 1: Distribution of Questionnaire and Rate of Response:

No. of Questionnaire Distributed	No. of Questionnaire Received	Rate of Response
30	23	76.66

7. Classification of Respondents by Gender-wise

Table 2 and figure 1 presents the classification of respondents by gender-wise in dental college libraries in Karnataka. The majority 17(73.91%) of dental college libraries are headed by male librarians and only 6 (26.09%) librarians are headed by female librarians. It can infer that dental college libraries are dominated by male librarians when compare to female librarians.

Table 2: Respondents by Gender-wise

Sl. No.	Gender	Male	Percentage
1	Male	17	73.91
2	Female	6	26.09
Total		23	100%

8. Different Types of Dental Colleges:

The dental college libraries are divided into 3 types to know the type of management governed by the dental college in Karnataka State. It is noticed from the table all most one fourth 21(873.70%) of the dental colleges are runned by private management and only one each governed by Government and Minority institutions. It shows that the dental colleges are under the cloches of private management.

Table 3 : Types of Dental Colleges

Sl. No.	Type of Dental Colleges	Number of Colleges	Percentage
1	Government	1	6.31
2	Private Unaided	21	87.38
3	Minority	1	6.31
Total		23	100.00

9. Age-wise Distribution of Respondents:

The above table 4 depicts that the majority 8 (34.78%) of the respondents are belongs the age between 41 to 50 followed by 20-30 years (30.43%) and Only 3(13.06%) respondents are belong to 50 and above age.

Table 4: Distribution of respondents by age-wise

Sl. No.	Age Group	No. of Respondents	Percentage
1	20-30	7	30.43
2	31-40	5	21.73
3	41-50	8	34.78
4	50 and above	3	13.06
Total		23	100.00

10. Classification of Respondents by year of Experiences:

It is observed from the table 5 the majority 9 (39.13%) of respondents are having up 10 years of experiences followed by 11-20 years i.e., 8 (34.78%) respondents. It is interesting note that none of the respondents are not having 41 and above years of experiences. It can be infer that most of the dental college libraries under the study are headed by young library and information science professionals.

Table 5 : Distribution of Respondents by number of experiences

Sl. No.	Experiences in years	No. of Respondents	Percentage
1	Upto 10 Years	9	39.13
2	11-20	8	34.78
3	21-30	5	21.74
4	31-40	1	04.35
5	41 and Above	0	00.00
Total		23	100.00

Further the researcher cross verified the data using ANOVA test for all the five variables found that the interaction is significant, meaning that all four categories have difference of opinion. Moreover, test of hypothesis using chi-square was also done for each type of "Experience Years" as shown in average response graph- And chi-square test indicates that there is significant difference, that is all five categories significantly differ in their opinion with respect to "up to 10 years and "11-20 years" and there is significant difference with respect to 31-40 years and 41 and above.

11. Different Category of Dental College Library Users:

Table 6 depict that 6,228 (80.65%) under graduate students are perusing dental courses followed by P.G. Students 1416 (18.33%) and only 78 of them are doing research work. It can be draw the inference from the table students are very much attracted by UG and PG students and only few of the dental professionals want to go for doctoral degree programme.

Table 6: Different Category of Library Users

Sl. No.	Category of Users	Total Numbers Users	Percentage
1	UG Graduates	6228	80.65
2	PG Students	1416	18.33
3	Research Scholars	78	01.02
Total		7722	100.00

12. Distribution of Respondents by Different Faculty Members

Table 7 presents the results of different faculty members working in dental college libraries in Karnataka. It is interesting to note that one third of the faculty members i.e., 1015 (70.27%) working on regular basis followed by visiting faculty 281 (19.67%) and only 87 of them is consultant to dental colleges to teaching and demonstrate to the students.

Table 7: Distribution of Respondents by Different Faculty Members

Sl. No.	Category of Users	Total Numbers Users	Percentage
1	Regular Faculty	1015	70.27
2	Visiting Faculty	281	19.67
3	Consultants	87	06.90
4	Others	45	03.16
Total		1428	100.00

13. Respondents by Job Stratification

It is observed from table 8 all the 23 dental college libraries are headed by qualified librarians and only 6(4.02%) dental college are having Deputy Librarian followed by Assistant librarians 20(13.42%), Library assistant 23(15.43%).

Table 8: Number of LIS Professionals and other staff working in Dental College Libraries

Sl. No.	Designation	No. of LIS Professionals	Percentage
1	Chief Librarian	23	14.76%
2	Deputy Librarians	6	4.02%
3	Assistant Librarians	20	13.42%
4	Library Assistants	23	15.43%
5	Office Staff	29	19.46%
6	Cleaners	40	26.84%
7	Others	9	6.04%
Total		149	99.97%

14. Response about the Status of Library Collection:

As it has already been said that large majority of users are highly qualified with rich experience in information handling. Keeping in mind the academic qualification and the nature of work being done by the user community, it was intended to know the availability of different library collection in dental college libraries in Karnataka and same has been presented in table 8. It depicts that majority of colleges having books (59.13%) for reading, borrowing and followed by current journals (1275) are subscribed by dental colleges for teaching, reference and research activities. The reference collection (17.78%) also equally important, therefore this ranks in third

position in dental college libraries. The other sources like rare books, thesis and dissertations, reports, patents, proceedings, atlas and maps. This is clearly indicates that availability of resources in common to all dental college libraries.

Table - 9: Availability and Status of Library Collection

SL No	Name of Books	Number of Copies	Percentage
1	Books	111375	59.13%
2.	Current Journals - Indian and Foreign	1275	75.00%
3	Reference Books	33500	17.78%
4	Sc/St & Obc's Books	6563	3.48%
5	Back Volumes	32489	17.25%
6	Rare Books & Classics	346	0.18%
7	Thesis/Dissertations	2904	1.54%
8	Reports/Patents/Standards/Proceedings	137	0.07%
9	Atlas and Maps	259	0.13%
10	News Paper Clippings	391	0.20%
11	Others	365	0.19%
	TOTAL	188329	100%

15. Response of E-Resource Provided by Library:

Information resource building is the primary function of any library. Particularly, success of a research and teaching establishment totally depends on the adequacy of collection and their efficient servicing. Information collection and organisation in a library have direct impact on the information services. When inquired it was found that there is not much of a difference in their opinion towards the alternatives listed like adequate, moderately adequate and inadequate. However, adequate and moderately adequate responses are positive towards the collection, combined value has shown that majority (about 69%) have positive opinion towards the information collection in their respective libraries.

Table No. 10: Adequacy of E-Resources Provided by Library

SL No	Opinion	Number of Response	Percentage
1	More Adequate	13	61.90%
2	Adequate	8	38.09%
3	Inadequate	0	0%
4	Uncertain	0	0%
Total		21	100%

16. Conclusion

From the foregoing, it is obvious that services of dental college libraries in Karnataka need to do more in order to improve on ICT skills so as to equip them in utilizing the enormous benefits available in electronic format. The high level of usage of library resources even as evident among the user is an indication to the fact that even without the expertise knowledge of manipulating information in electronic environment. Almost all conventional information sources, such as dictionaries, encyclopedias, journals, etc are now available in the net. Librarians cannot ignore this development and must take sufficient efforts to access such as e-resources. This has several advantages in long range. Globalization of information, emergence of ICT has transformed the role

of information organization and management. Keeping in view of the recent development in the information handling and management, the benefits of integrated library management could not be overlooked and augmented effectively in order to manage the information resources.

Dental college librarians have to have very good professional skills and competences for better management of dental college libraries. Since the users are prone to on-line and electronically delivered services, the growing role of the librarians in dental colleges would be in information counseling , training, advising users on services and information products appropriate their needs and how best to use them. This is a time that is innovative ways of thinking about services, collection, information access and also our roles as academic librarians, Being prepared to manage changes can furnish us with the ability to flourish.

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Library: *A Cloud Computing Approach*

Palampalle Akshay, S **Oza K.S** **Kumbhar, V.S**

Abstract

Cloud computing is latest technology in information and communication technology. It helps library and information centers to setup a cloud base server for the libraries. Lots of work is in progress related to library clouds, but still many are not aware of what exactly a cloud is. Proposed work gives brief introduction to cloud and its type. Whenever a new technology emerges it has positive as well as negative effects associated with it, this paper also covers points to be considered while migrating to cloud and pros and cons of cloud.

Keywords : Cloud computing, Types of cloud computing, Cloud migration

1. Introduction

Today the age of Information and Communication Technology world and the Information and Communication plays a main role in the libraries and information centers. There is emergence of the various technologies in the libraries. Cloud computing is the new technologies in the stage of Information Communication Technology. It is improvement of Distributed Computing, Parallel Computing, Grid Computing and Distributed Databases. This technology that uses the web (Internet) and central remote servers to maintain data, software and application. It allows users to use applications without installation in their local machine to access their personal and official files on any computer with internet access. With the advent of Information technology, libraries have become automated which is the basic need towards advancement followed by networks and more effort are towards virtual libraries. In the libraries cloud computing is used for building up the digital library and for housekeeping operations with the help of hardware and software.

2. What is Cloud Computing

Cloud computing is a web based computing where shared resources, applications and information are provided to the set of computers and other devices on demand using web technology. Cloud computing is based on internet; generally the internet is commonly visualized as a cloud. Therefore, the process of cloud computing is being done through set of web enabled applications loaded on the server with proper access rights. Cloud computing is, The Christy & Carina of Gartner Group[1] defined as 'a style of computing in which massively scalable and elastic IT-enabled capabilities are delivered as a service to external customers using Internet technologies'. In the simple way, cloud computing can be defined as 'simply the sharing and use of applications and resources of a network environment to get work done without concern about ownership and management of the network's resources and applications'[2].

3. Types of Cloud Computing:

There are three major types of cloud computing as per there service.

- **Software as a Service (SaaS):-** SaaS is basically depending on the applications and softwares on demand. Applications or software is delivered as a service to the customer who can access the program from any online device.
- **Infrastructure as a Service (IaaS):-** Infrastructure is referred as resource clouds. Resource (Infrastructure) is being provided by third party as service to the users to use them the way they want.

- **Platform as a Service (PaaS):-** Cloud vendors are companies that offer cloud computing services and products. One of the services that they provide is called PaaS. Under this a computing platform such as operating system is provided to a customer or end user on a monthly rental basis.

4. Why Cloud

There are many uses for cloud-based systems in libraries, from discovery layers to citation management to mobile apps, and the future holds even further possibilities. Cloud based offerings such as the HathiTrust digital repository, discovery layers, and library management systems implemented on top of large, shared, community bibliographic databases have the potential to revolutionize library systems. Any size library will be able to implement such cloud solutions. From a technological and access standpoint, a large portion of what a library does could be done in the cloud, freeing librarians time for the other pursuits. Outsourcing mundane operations to the cloud, however, could allow librarians to provide more access to local and unique content.

5. Cloud Migration

There are some points which need to be taken care before migrating libraries over the clouds. Few of them are as follows.

- **Know your cloud provider:** In the deluge of recent-comers to the cloud market, it is important to check the credentials of your chosen provider to know what you are getting and not getting. For instance, does the provider have a long history of solid security, if provider has commitment to security and history of executing security on their more traditional servers, it stands to reason that they will merge that commitment with their Cloud- based offerings as well. It takes work to get security right, and work translates into experts and quality hardware, neither of which is free.
- **Define the library needs:** Make sure the library can clearly articulate a good library fit for the cloud setup. While storing files might work well for the cloud, database queries from the library staff to the cloud can seem like adding light years to your response times. It might be worth a second opinion to see whether the Cloud is right for the library. At least be prepared to bring some optimization expertise to the table when shifting processing to the cloud and consider whether or not you would be better served by a local server dishing up virtual machines.
- **Encrypt your bits and bytes:** Bothe at rest as well as in transit, encrypt as much of your cloud data and traffic as the library can get away with. It adds a layer of complexity and a little processing overhead, but not much and the peace of mind will be worth at the end. There is need to talk to the experts in the cloud for the development and also taking help of the users of the library.
- **Manage your Cloud access:** - Because putting your data or processing in the Cloud means it is step removed from your physical control and because cloud content can often add up lot of valuable intellectual property and sensitive information, the library need to make sure to control who can access it. The Cloud provider may promise to look after the data, but that does not relieve the responsibility for policing the access the library authorize. It's a good idea to limit access to specific individuals that need access, not just leave the connection open for everyone to use. It should consider two factor authentication instead of merely relying on passwords.

- **Backup your Cloud data:** - Depending on the use case, the library may be backing up data to the cloud or using it for any number of other processes. If library take a few minutes and see that the data is duplicated, whether data access daily that is stored in the cloud, or cloud based backups, and one can retrieve it library will be miles ahead in confidence knowing that if something bad really did happen, the library will be protected.
- **Check the fine print for cloud:** The library should get right to access, retain, use and disclose the library cloud account information and files. The cloud provider should also give technical support and address technical issues. The agreement should protect the service and its users (library) from fraud or security threats with applicable law. They should antivirus protection but along with this even the library needs strong end point security on those devices that are permitted to access library cloud.

6. Pros and Cons of Cloud Clouding

Cloud computing gives greater efficiency as servers are shared and can run multiple program instances simultaneously thus optimizing the resources. The main advantage of cloud is flexibility i.e. if we are adding new information resources in the cloud, they can quickly add computing resources if the services become more popular, instead of adding new servers. Virtual servers can also be started in the clouds and operated only as long as needed.

Cloud computing is not always cheaper when all factors related to it are considered such as network bandwidth, transition costs and backup storage costs. Another concern is about security and privacy. It requires proper precautions to minimize the risk.

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Using Cloud Computing for Libraries

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Abstract

In the current economic crisis and being challenged by growing demands of library users, libraries are facing new problems in providing necessary information and communication technology (ICT) support at affordable cost for effective library functioning. The objective of this paper is to find alternatives to the use of ICT, while leading libraries improve agility and obtain savings. The article begins with a brief introduction to Cloud Computing as it is emerging concept applied to the revamping and restructuring the library in general, referring to the various areas of its use and types of cloud computing i.e., infrastructure, platform, applications and services. Further, it is to look specifically at how and what cloud computing is and in what areas it can be employed by libraries and what needs to be considered before moving into cloud computing solution.

Keywords: Cloud Computing, Data Storage Systems, Cloud Infrastructure, Storage Area Network, Web Service Storage, Grid Computing, Globally Access Resources.

1. Introduction

The library is the place where new and emerging technologies can be combined with traditional physical form of knowledge resources in a user-focused, service-rich environment that supports today's social and educational patterns of learning, teaching, and research. These days many IT companies in the market are coming to our libraries with some new technology called cloud computing and its effective use in cutting costs of library technology. The netizens' who browse internet is probably using some type of cloud computing on regular basis. It might be Gmail, Flickr, Twitter, Face book, YouTube or searching the information on the web. The librarians are required to seriously consider the changes that cloud-computing solutions can bring to our community. In simple words, it is a subscription-based or pay-per-use real time service over the internet[1].

In its broadest usage, the term cloud computing refers to the delivery of scalable IT resources over the Internet, as opposed to hosting and operating those resources locally, such as on a library local network and on intranet. Those resources can include applications and services, as well as the infrastructure on which they run. By deploying IT infrastructure and services over the network, the libraries can procure these resources on an as-needed basis and avoid the capital costs of software and hardware. According to Geelan, cloud computing is the user friendly version of grid computing[2].

The Christy & Carina of Gartner Group define cloud computing as 'a style of computing in which massively scalable and elastic IT-enabled capabilities are delivered as a service to external customers using Internet technologies'[3].

Cloud Computing is a commoditization of computing, i.e. a world in which computers may be borrowed on demand for sharing from a resource pool, like resource sharing, loaning a book from the other library, cooperative collection development, union cataloguing and consortia. Simply put, cloud computing means using web-based services for our computing needs in the library with affordable cost. Cloud computing allows us to avoid locally hosting multiple servers and equipment and constantly dealing with hardware failure, software installs, upgrades and

compatibility issues. Cloud computing provides an organization with appreciably more flexibility and scalability to satisfy computing needs[4].

In other words, it refers to "the delivery of computing as a service rather than a product, whereby shared resources, software, and information are provided to computers and other devices as a metered service over a network, typically the internet"[5]. Cloud computing facilitate the user to access the available electronic resources and digital information from anywhere via internet access and further perform all sorts of online activities. To simplify the concept, cloud computing can be defined as 'simply the sharing and use of applications and resources of a network environment to get work done without concern about ownership and management of the network's resources and applications'[6].

Cloud Computing could include using software applications, like delicious, Flickr and YouTube to store photos, videos and save bookmarks, web applications like Google Docs and SharePoint to create and share files online. The storage / back-up also can be done using web services such as box.net, SkyDrive or Dropbox. The library professionals can store and share videos (web courses & documentaries) online through services like Vimeo and YouTube. This is all viable due to accessing information and data across networks that resides in the cloud (or on the internet) through cloud-based applications which are more convenient.

2. Types of Cloud Computing:

Cloud providers offer services that can be grouped into three categories. They are Software as a Service, (SaaS), Platform as a Service, (PaaS), and Infrastructure as a Service, (IaaS). Wheeler & Waggener (2009) use this classification (SaaS, PaaS, and IaaS) as a launching pad to discuss ways in which they can be used to enable collaboration or 'sourcing' between institutions and consortia. Marshall Breeding (2009) places these three types of services within the context of other infrastructure and hosting options such as co-location (the duplication of specific IT resources in multiple places), shared and dedicated hosting (licensing a shared or distinct portion of a server for use), and cloud computing (abstracting the hardware, software, and service layers to provide an extensible computing environment).

2.1. Software as a Service (SaaS):

In this model, a complete application is offered to the customer, as a service on demand. Software as a Service (SaaS) consists of applications which are distributed over the Internet as a service, rather than purchased as a product and then installed locally on a server. There is usually little customisation or control available with these applications. However, subscribers benefit from low initial costs, have access to (usually 24/7) support services, and needn't worry about hosting, installing, upgrading, or maintaining the software[7].

Organizations don't need to install, maintain, and upgrade cloud applications, but can simply open up a web browser to access them. This not only allows for faster startup time, but lowers preliminary costs which are spent on subscription payments (often including 24/7 support services), instead of software purchases; and many consumer-oriented cloud applications like Flickr and YouTube are available in some form for free web based. Today SaaS is offered by many companies such as Google, Sales force, Microsoft, Zoho, NetSuite, Basecamp etc. In India, some of the IT companies offering Saas are TCS, IBM, Wolf Frameworks, Infosys Technologies, Wipro Technologies, and Synage etc.

2.2. Platform as a Service (Paas):

With PaaS, one can focus on innovation instead of complex infrastructure[8]. Here, a layer of software, or development environment is encapsulated & offered as a service, upon which other higher levels of service can be developed. The customer has the freedom to develop, test, and deploy his own web based applications, which run on the provider's infrastructure. To meet manageability and scalability requirements of the applications, PaaS providers offer a predefined combination of OS and application servers, such as LAMP platform (Linux, Apache, MySql & PHP), restricted J2EE, Ruby etc. SalesForce, OrangeScape, Windows Azure, Wolf Paas etc are some of the popular PaaS examples. Windows Azure allows developers to develop and run applications quickly, while leveraging current skills to develop applications with .NET, PHP, or Java[9].

2.3 Infrastructure as a Service (Iaas):

Also known as IaaS, or hardware as a service, because this type of solution is like using a provider's hardware or servers rather than buying them. It provides basic storage and computing capabilities as standardized services over the network. Servers, storage systems, networking equipment, data centre space etc. are pooled and made available to handle workloads. IaaS is priced on a pay-as-you-go model enabling clients to scale up or down the operations depending on their needs at any given time and pay only for what they use[10].

The customer would typically deploy his own software on the infrastructure and pay only for the resources actually consumed (i.e., hourly or monthly or pay per use basis). It saves organizations capital expenditures for spending hardware procurement, but also, labor costs for administration to maintain and update these systems. Amazon Elastic Computing Cloud (EC2) and Simple Storage Service (S3), GoGrid, 3 Tera, Rackspace, RightScale etc are some of the popular IaaS examples.

3. Characteristics of Cloud Computing

- Agility.
- Cost reduction.
- Security.
- Sustainability.
- Pay-per-use utility model.
- Virtualization.
- User friendliness.
- Internet centricity.
- Variety of resources.
- Automatic adaptation.
- Resource optimization.

4. Advantages of the Cloud Solutions: Some of the typical benefits are listed below:

4.1. Reduced Cost

Cloud computing can impart organizations with considerable cost savings and the option of sidestepping major capital investment. Instead of spending on the purchase, maintenance and updation of servers, software and infrastructure, they are rented on a pay-as you go system or a subscription system as with SaaS.

4.2. Scalability & Elasticity

Organizations are able to scale instantly and on-demand, paying only for the processing power, bandwidth, or storage space they use.

4.3. Usability

Users of cloud applications and services need only an open browser to get going. There's no install, upgrade, or maintenance involved. It's a fast and easy setup and 24/7 support services are usually provided.

4.4. Reliability

If using a major provider, there is low risk involved for downtime or data loss as these companies usually have redundancies and backups in place, as well as tested security measures.

4.5. Increased Storage

With the massive infrastructure that is offered by Cloud providers today, storage & maintenance of large volumes of data is a reality. Sudden workload spikes are also managed effectively & efficiently, since the cloud can scale dynamically.

4.6. Security

The Cloud service providers use enhanced and enterprise multi-level security to protect customers' data. Their security measures are often more stringent than those found in most organizations.

4.7. Portability

Users of cloud services can access the required data anywhere they go from any online device including laptops, note books, game systems and mobile phones.

4.8. Collaboration

Because all of the data resides in the cloud, it is easily accessible by everyone, making sharing and collaboration much easier.

4.9. Green technologies

Protection of the environment by using green technologies, because organizations are not building and cooling their own IT infrastructures, cloud computing can greatly reduce organizational energy consumption and minimize a carbon footprint.

5. Cloud Computing risks and challenges

The most important risks regarding security are: loss of governance, lock-in, isolation failure, compliance risks, management interface compromise, data protection, insecure or incomplete data deletion, and malicious insider (Catteddu and Hogben, 2009). Despite its growing influence, concerns regarding cloud computing still remain. Some common challenges are:

5.1. Data Protection and Security

Data Security is a vital component that warrants scrutiny. Libraries are reluctant to obtain

an assurance of data security from vendors. They fear losing data to competition and the data confidentiality of patrons. In many instances, the actual storage location is not disclosed, adding onto the security concerns of organizations. In the existing models, firewalls across data centers (owned by enterprises) safeguard this sensitive information. In the cloud model, Service providers are responsible for maintaining data security and libraries would have to trust on them.

5.2. Data Recovery and Availability

All applications have Service Level Agreements (SLAs) that are strictly followed. Operational teams play a key role in management of service level agreements and runtime governance of applications. In production environments, operational teams support: appropriate clustering and fail over, data replication and disaster recovery, system monitoring (transactions monitoring, logs monitoring and others), maintenance (runtime governance), capacity and performance management. If, any of the above mentioned services is under-served by a cloud provider, the damage & impact could be severe.

5.3. Management Capabilities

Despite there being multiple cloud providers, the management of platform and infrastructure is still in its infancy. There is huge potential to improve on the scalability and load balancing features provided today. And there is also the concern about what would happen to an organization's data if their cloud service provider goes out of business.

5.4. Regulatory and Compliance Restrictions

In some of the countries in its organizations, government regulations do not allow customer's personal information and other sensitive information to be physically located outside their state or country. In order to meet such requirements, cloud providers need to setup a storage location within that country to abide by with regulations. Having such an infrastructure may not always be feasible and is a big challenge for cloud providers. Integration and compatibility of existing software set up is to be measured for migrating towards clouds.

5.5. Enormous complexity

With cloud computing, the action moves to the interface - that is, to the interface between service suppliers and multiple groups of service consumers. Cloud services will demand expertise in distributed services, procurement, risk assessment and service negotiation - areas that many enterprises are only modestly equipped to handle bandwidth speed and costs, immaturity of cloud services, enormous complexity, lack of consistent service level and legal agreements, maintaining identity and credentials. Vendor lock-in is a distinct concern for skeptics of cloud computing. This is something that needs to be addressed in the Service Level Agreement.

6. Cloud Computing for Libraries:

For application of cloud technology, librarians need to know the use of cloud infrastructure, cloud applications and developing and deploying applications into a cloud environment. Libraries are in a unique position to experiment with cloud computing given their service-oriented mission and need to find appropriate solutions using limited resources[11]. Application of CC for libraries will increase the efficiency and opportunity for collaboration, decrease in-house technical expertise, cost reduction, data security, privacy, and data ownership, long term stability.

According to Fox, "one of the key pressures that pushes libraries to cloud solutions and proves to be an impediment to the migration is the availability of IT support services. He also observes that goals and policies of organization might also force libraries in making use of cloud computing services"[12]. Libraries have been adopting cloud based solutions for different services including storage or data back-up services, electronic journal access management, library bibliographic database, Institutional repositories and digital libraies, knowledge management, mobile applications, E-learning, statistics tracking, Integrated Library System (ILS) hosting and cloud-based sharing applications.

Because cloud services are modular, libraries can pick and choose one or two cloud services for less sensitive computing needs and keep the rest in-house until they are more comfortable with the prospect. With cloud-based computing, work done in one place and facilities are available to all from anywhere. When library resources are stored in the cloud it offers several benefits. Common data can now be easily shared among library users. The need for local storage, maintenance and backups is eliminated. And the end libraries can achieve web scale when they massively aggregate data and users, something a cloud environment makes possible. Another great benefit of resources stored in the cloud is the opportunity for collaboration and cooperative intelligence. Libraries can agree to share pools of data for cooperative collection building, cooperative cataloguing, cooperative preservation or digitization, cooperative sharing of materials, etc.

When library resources are widely distributed across systems it makes library Web presence weak. When search engines such as Google, Yahoo and Bing can harvest from large data stores it opens the opportunity for the collective to work on search engine optimization, or the improvement of library collections appearing more relevant to search engines thus displayed higher in search results. This is a complex and ever changing task that would be prohibitive for individual libraries to accomplish. Further, aggregated data can attract a much larger aggregation of users who interact with the data, add to it and re-use it. The result is every user adds benefit for every other user.

Cloud computing solutions can create the new workflows needed by librarians because it offers the opportunity for a cooperative platform for libraries to build on. There are four key principles of a cooperative platform:

- *Openness*, meaning that services and data are made available to support greater interoperability, not only within and between cloud services, but also with library-developed and third-party applications;
- *Extensibility*, meaning that the platform can easily accommodate the addition of new services and applications, developed either by the service provider or by members of the community;
- *Data richness*, meaning that a library can interact with and expose a wide variety of information about purchased, licensed, and digital content through this platform; and
- *Collaboration*, meaning that libraries can harness the collective power of the community of libraries to innovate and share solutions.

6.1. Libraries and SaaS

Libraries are making use of both user and business grade cloud applications to provide new services to patrons, market the library, save money by replacing traditional software products, collaborate with staff, and much more. In a SaaS environment, organizations use an application via a hosted service. They do not have access to the underlying infrastructure (i.e. network or server

elements) and are not responsible for managing the underlying software. A common library example is electronic journal subscription management systems. Other examples are:

6.1.1. Google Apps

Google Apps cloud services, a multi-tenant, internetscale infrastructure, offers faster access to innovation, superior reliability, and security, and maximum economies of scale as compared to on-premises, hosted and software plus services technologies[13]. Many libraries have switched to Google Apps to handle their email and calendar sharing and are using Google Docs to collect responses to web forms, Google Calendar for instruction and scheduling meeting rooms, and further using Google Analytics to collect statistics about their website, catalog, and blogs.

6.1.2. Microsoft SharePoint

Microsoft SharePoint is a cloud intranet and being used as a team collaboration tool by their circulation and interlibrary loan departments for online discussions, task assignment and tracking, announcements, documentation library, procedures and schedules etc.

6.1.3. Enterprise Koha

Koha is an example of an ILS that is available as SaaS. Libraries needn't install any software but just subscribe to this kind of service and they're up and running with an integrated library system.

6.1.4. WorldCat

OCLC's WorldCat.org application is an example of library cloud services. Libraries today can access WorldCat's collection of 1,771,574,679 items from 72,000 libraries worldwide from any online device including the iPhone and Android phones.

6.1.5. Library Thing

Many small libraries are using the Library Thing service for their cataloging and OPAC needs, IM & SMS Services. Hundreds of libraries are using services such as Question Point, LibraryH3lp, Text a Librarian, and Meebo to offer patrons IM and SMS text reference services.

6.1.6. Social Software

Today no. of libraries is making use of social software and Web 2.0 applications to improve public services and create knowledge bases, and more. Libraries are also using Web-based applications for video sharing to provide patrons with instructional videos, clips from library events, library tours, new service announcements, screen casts, and more. Hundreds of other libraries are reaching out to patrons through Word Press blogs, wikis, Face book, and other social media properties. Staff users of Facebook take advantage of cloud, as do those who use photo sharing services such as Flickr[14].

6.2. Libraries and PaaS

Libraries are beginning to develop using these types of services to easily create their own Web-based and mobile applications without having to create the infrastructure for a development environment within their libraries. PaaS solutions focus on providing a hosted platform on which a specific application can be deployed. This platform is often some provisioned space and computing

resources from a hosting company running a pre-configured set of tools. Organizations can deploy a locally developed or managed application on the platform but do not manage the underlying server infrastructure. Some examples of PaaS are:

6.2.1. OCLC Web Services

OCLC provides the tools and environment for developers to create new Web applications based on World cat. Right now they are offering many different API's and widgets and are working toward a full PaaS offering in the near future. In other words, this will generate cost benefits for libraries and efficiencies not possible when utilizing disparate, specialised systems[15].

6.2.2. Yahoo! Pipes

Libraries are also using services such as Yahoo! Pipes to offer their patrons custom news feeds, improve their catalog searches, and build map mashups.

6.2.3. Google App Engine

Google's App Engine including ELibrary, is an interface for access to all the library's electronic resources. They have also migrated two Microsoft Access databases that they used for serials circulations and government publication management to new web-based applications.

6.2.4. Catalog and Database Face book Applications

Libraries and library-related databases are building their own applications which enable their patrons to search their library catalogs and in some cases journal articles from within Face book's social network.

6.3. Libraries and IaaS

Libraries have started jumping on board with this new style of computing and have been adopting IaaS to host their websites and store their data, to alleviate their IT departments, and increase efficiency. IaaS environments allow users to provision servers, storage space, and networking components to meet their computing needs. In an IaaS environment, the organization is responsible for starting and sizing a server & managing its network access. Some examples of IaaS are:

6.3.1. LibLime

LibLime uses Amazon's Web Services to display book jacket covers, and reviews and ratings in its SaaS offering.

6.3.2. The Kansas Regional Library Systems and the State Library of Kansas

The "My Kansas Library on the Web" initiative enables any public library in the state of Kansas to have a free, hosted website. And all of these websites are hosted in the cloud on Amazon's EC2 service.

6.3.3. Kent State University Libraries

The Ohio LINK library consortium is using the Amazon's Web Services to host a handful of their Digital Resource Commons repository instances such as Kent State's Centennial Collection, and is testing server administration in the cloud, as well as the limits of DSpace repository software

6.3.4. DCPL

The District of Columbia Public Library is using Amazon's EC2 service to host their library's website and they are also using Amazon's S3 service to backup their ILS.

6.3.5. Libraries currently using cloud computing:

Library of congress, University of Arizona, My Kansas Library, Kent State University Libraries, DC Public Library, British Library, Boston Public Library, Carnegie Mellon and North Carolina State University, University of California etc. are some of the libraries using Clouds.

7. Strategy for adopting Cloud Computing in Libraries:

Migrating towards cloud needs a well-defined strategy that supports Cloud Computing capabilities. Representing an important part of the organization IT strategy (Sheelvant, 2009), migration must be aligned to this. The success of the strategy implementation depends on the existence of a service-oriented architecture at the level of the organization that offers the necessary infrastructure for cloud implementation. Without service oriented architecture, migrating towards cloud has no sense from the financial point of view because it leads to high costs with reengineering of existent library systems.

Transition to Cloud Computing and the experience of libraries in using it, we suggest a migrating strategy towards cloud, formed of the following stages (figure 1):

a) Developing the knowledge base about Cloud Computing;
b) Evaluating the present stage of the library from the point of view of the IT needs, structure and usage;
c) Experimenting the Cloud Computing solutions;
d) Choosing the Cloud Computing solution;
e) Implementation and management of the Cloud Computing solution.

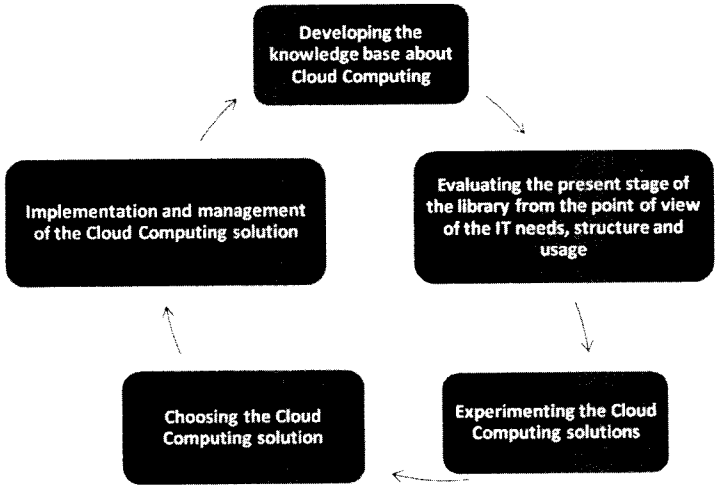


Figure 1: Stages in implementing Cloud Computing

7.1. Developing the knowledge base about Cloud Computing for Libraries:

The first step consists in developing the knowledge base by participating at seminars, workshops, conferences, discussions with the suppliers and consulting the libraries which are

adopted successfully. The research is conducted by a team formed mainly of IT & library management staff who permanently communicates with the users of the solution regarding the objectives, the progress, costs and benefits of the Cloud Computing solution.

7.2. Evaluating the present stage of the library from the point of view of the IT needs, structure and usage:

The first step consists in understanding the library IT infrastructure. With respect to the IT needs, their structure and usage, the analysis may start from the categories of users who interact with the present IT infrastructure (figure 2) and their necessities.

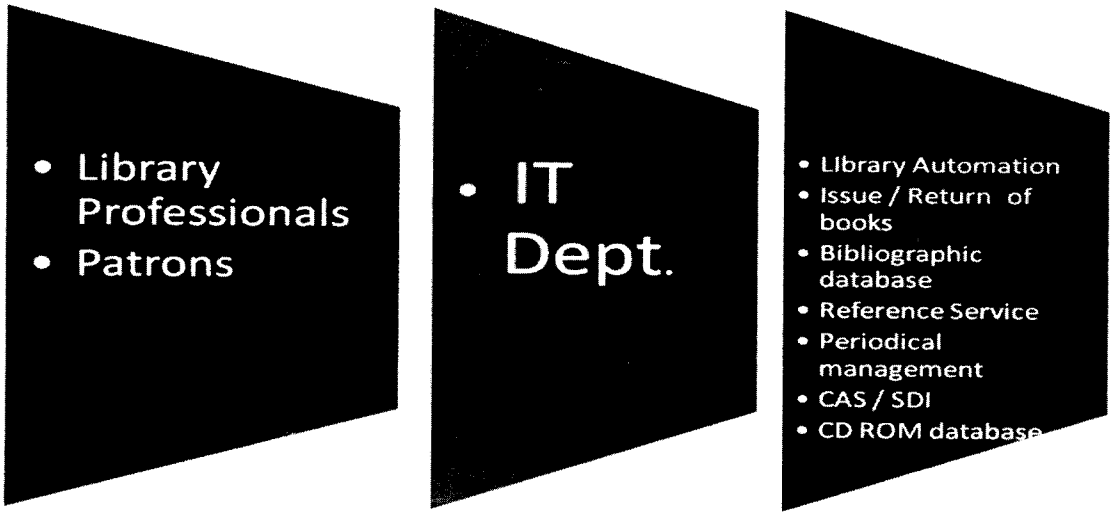


Fig 2. Simplified Structure of the Main Users of IT Services in a Typical Library

The Cloud Computing solution will allow to all categories of users access to stored files, e-mail, database and other applications from anywhere at request (Nicholson, 2009), which leads to a more efficient use of information services. The objective is to identify the emergent technologies, efficient from the point of view of costs that satisfy the necessities of the patrons and library staff. The hardware and software needs shall then be analyzed from the perspective of the three cloud models (figure 3).



Fig 3. Simplified Structure of the Main Users of Library Services through Cloud Computing

By using a cloud model and applications based on cloud, they obtain the advantage of the ability of working and communicating in the online environment without taking into account space and time. Library users will benefit from the advantage of using the latest technologies, experimenting the results and communication, while paying for using this services.

7.3. Experimenting the Cloud computing solution for libraries:

The transition to cloud may be achieved gradually, starting from testing a pilot project in cloud and then externalizing the applications chosen for cloud. The first step consists of settling some cloud targets, such as development and environment testing or storing some data inside the cloud. The next step may consist of the daily processing of the internal and in-house operations, addressing at the same time the components of public and private cloud in order to assure the security and protection policies (Bozzelli, 2009).

7.4. Choosing the Cloud Computing solution for Libraries:

The first step consists of identifying the data and applications, functions and main processes within the library. These may be grouped according to the three large categories of activities from the library: library staff, information databases and administrative support for the first two activities. Second step is represented by the evaluation of the elements identified in the first step according to several criteria, such as mission, importance within the library, sensitivity, confidentiality, integrity, availability, in order to determine the candidate elements for cloud. A strategic analysis must be conducted in order to choose the implementation solution regarding the decisions of integration/migration.

7.5. Implementation and management of the Cloud computing solution:

It is performed based on some continuous evaluations of the cloud technology benefits upon the library and its users. At the same time, implementation supposes establishing a flexible program of risk management, testing the solution performance and implementation management. The migration of the data, services and processes towards the cloud platform must be done based on some well-defined models/strategies. Each migration model assumes specific objectives to be achieved, according to the organization policy, control and information security (Mircea et al., 2011). Data migration must be performed by keeping an optimum balance between the data accuracy, migration speed, nonfunctioning time and minimum costs. At the organization level there must be a management model that includes policies regarding security, management of the applications and infrastructure, management of the risks and the continuous evaluation of the Cloud Computing solution (Mircea et al., 2011).

8. Conclusion

Libraries have the opportunity to improve their services and relevance in today's information society. Cloud computing is one avenue for this move in the future. It can bring several benefits for libraries and give them a different future. The cooperative effect of libraries using the same resources, shared hardware, services and data—rather than hosting hardware and software on behalf of individual libraries - can result in lowering the total costs of managing library collections and enhance the both library user's experience and library staff workflows. The vision is to use cloud computing to deliver library resources, services and expertise at the point of need, within user workflows and in a manner that users want and understand. The cloud computing model will encourage libraries and their users to participate in a network and community of

libraries by enabling them to reuse information and socialize around information. It can also create a powerful, unified presence for libraries on the Web and give users a local, group and global reach. We intend to explore and adopt cloud as a part of building a more scalable, extensible and robust libraries.

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Bibliographic Databases in Health Sciences: *Some Successful Initiatives*

Subramanyam, N **Krishnamurthy, M**

Abstract

The rapid increase in medical information poses a challenge for keeping up with the latest developments in the field. Information searches can be difficult without a basic knowledge of the way information is organized and indexed. In preparing scientific studies and in making clinical decisions, the key issue is to effectively scrutinize previous literature. Bibliographic databases are extensive compilations of references to documents. In this context, reference is the information included in the document, such as information on authors, abstract, journal title and year of publication. Many bibliographic databases include a link to the full text. In the case of health science, the choice of which bibliographic database to use is not always easy, as some of the material may be in other bibliographic databases that focus on different disciplines.

Keywords : Medical Information, databases, open access, E--Resource, Access

1. Introduction

Information overload, demanding work with strict time limits, and the extensive number of medical bibliographic databases and other research sources all underline the importance of being able to search for up-to-date information effectively. Medical journals play a key role in providing access to the latest information in medicine and health and bibliographic databases play an important role in accessing them. This paper sheds light on the role of the information search process and discusses how to approach key medical bibliographic databases and information sources, using the field of psychiatry as an example. Because of an increasing amount of information, the constant renewal within the discipline and a variety of services available, those seeking information must precisely define what kind of information they are looking for and from which sources the information needed may be found. The twenty first century promises the same level of development in the biological sciences, Today biotech companies are developing engineered plants and animals and labs are producing bacteria that digest oil spills . Researchers are rediscovering cures for diseases using tropical plants and developing cures for other diseases through genetic manipulation. We now have the visible human and the human genome projects, which are already affecting our society in ways we are only beginning to realize. These projects have demonstrated tremendous potential, but also pose as yet unresolved and even unrealized ethical quandaries. This exciting and unsettling environment is influencing the health sciences information management professions in how they practice, whom they serve, where they practice, what service they provide, and the composition of the health information professions. Tremendous medical advances have been place and will continue during the next century. However, provision of quality health care to all may be more difficulty as control of health care management networks. Networks increasingly focus on cost containment issues sometimes at the expense of quality care.

2. Medical Science Databases: An Overview

The rapid increase in medical information poses a challenge for keeping up with the latest developments in the field. Information searches can be difficult without a basic knowledge of the way information is organized and indexed. In preparing scientific studies and in making clinical decisions, the key issue is to effectively scrutinize previous literature. That is why familiarity with

medical information sources and the ability to use them effectively is important. In a rapidly developing science, journals are an important channel for disseminating new information, and they are the primary publication medium for professional communication in medicine. It has been estimated that there are some 20,000 to 30,000 journals published on medicine and health, yet on the database PubMed just over 300 psychiatric journal titles found. Not only are printed journals being increasingly replaced by electronic journals but also the amount of medical information is approximately doubling every 5 years, which is why having a strong knowledge of bibliographic databases and the ability to locate relevant information are crucial skills . It has been shown that training individuals how to conduct effective information searches has an important effect on the use of bibliographic databases. Adequate training in information- searches leads to an increase in the development of more sophisticated electronic information resources . The explosion of information, the emergence of evidence-based care, new Internet-based technologies, rapid growth of bibliographic databases and shifts to electronic publication practices means that knowing how to conduct effective information searches is that much more urgent

The electronic tools used in an information search include library databases, reference books, various portals and Internet search engines. Information can also be hand-searched by researching hard copies of specific journals. Choosing the best articles in those journals can provide descriptors and keywords that can be used on a database search for other relevant information. When extensive information is needed, the search process should be planned and conducted systematically. To acquire comprehensive knowledge of a subject and to keep abreast with the latest developments calls for a *systematic* and *advanced information search.*

3. Choice of Databases

Bibliographic databases are extensive compilations of references to documents. In this context, *reference* is the information included in the document, such as information on authors, abstract, journal title and year of publication. Many bibliographic databases include a link to the full text. In the case of health science, the choice of which bibliographic database to use is not always easy, as some of the material may be in other bibliographic databases that focus on different disciplines. This means that restricting the search to a certain bibliographic database may result in omission of important references. When considering the choice of databases for an information search, the extent of the database's coverage should be taken into account. For example, when conducting psychiatric research, information on previous studies can be found in psychological bibliographic databases. in addition to medical ones. It is therefore recommended that several bibliographic databases be used in order to cover as much information available on the subject as possible . Different bibliographic databases also vary in such areas as types of publications they include and the periods of time they cover . *Indexing* refers to a description of documents using certain rules, vocabularies and key words. *Thesaurus* is a special vocabulary where the relations between terms are expressed in a standardized manner. One should be aware that different databases use different keyword systems and different levels when indexing material. The translation of terms from one database to another is not the best strategy when devising a search strategy . A thesaurus is affected when there is rapid development in a field and recently introduced terms and concepts in the literature are not included in the vocabulary quickly enough. Searches may take considerably longer in bibliographic databases that emphasize description as compared to those whose articles are not indexed extensively and users are expected to utilize the free text search. A *free text search* makes use of freely chosen search words targeting all desired fields in the bibliographic database. Some databases, such as Medline, include a function that automatically maps the natural language terms in the free context search and changes them into suitable key

words. When authors are willing to answer queries concerning their texts, which helps to develop key search terms, their articles become more rapidly available.

4. Access to Databases

Bibliographic databases are commercial products, which is why not all databases are licensed by individual research organizations. PubMed (www.pubmed.gov) is freely available on the Internet as is Medline. In addition to licensed material, there is a lot of information that is accessible to all users. Open access (OA) journals can be searched through the *Directory of Open Access Journals* (www. doaj.org) or through the free digital archive of biomedical and life sciences journal literature at PubMed Central (www.pubmedcentral.nih.gov). The Public Library of Science (PLoS) (www.plos.org) and BioMed Central (BMC) (www.biomedcentral.com) are independent OA publishers that offer several freely accessible journals and a wide coverage of the field of medicine. There are also different OA repositories, like the Directory of Open Access Repositories – OpenDOAR (www.opendoar.org) and CiteSeer (www.citeseer.ist.psu.edu), both of which store scientific literature. The advantage of OA journals is that published articles are freely available and the openness in dissemination is greater. According to Eysenbach, OA has at least 3 advantages: a citation count advantage, an end-user uptake advantage and a cross-discipline fertilization advantage. It was found that OA articles are cited earlier and more often than non-OA articles.

The ever-increasing network of the information search environment has changed the way we work, study and do research and underlines the importance of having strong information search skills. These skills are described as enabling a person to survive successfully in an ever-increasing flow of information and to achieve the goals at hand. In today's world, the ability to locate, evaluate and use relevant information can be regarded as a basic skill. Besides information overload, there has also been a significant rise in the number of information resources, which has affected the localization of information. Choosing which bibliographic databases in health science to search is not an easy task, as the materials might be located in bibliographic databases in different fields . While scientific journals act as a channel for publishing new information in medicine, bibliographic databases play a key role in accessing them. With the aid of bibliographic databases, the information needed can be used extensively and economically. Information search tools have improved greatly for the benefit of users and will continue to do so. This will lead to changes in the way information is acquired, but the basic ideas behind the information search will remain unaltered. The increasing amount of medical information and the services and sources that are available means that those searching for information must be able to define more precisely what kind of information they are looking for and how the information needed can be found. An organized, well-planned and critical approach to an information search is extremely important and will become even more so as our world of knowledge continues to expand.

5. Access to Digital Information: New Scholarly Publishing Paradigm

In the 1990's a broad movement to enhance public access to scholarly journal articles through the use pre-print servers began in grow. Essentially, the idea of these servers was that authors would deposit their pre-prints into such servers, providing readers worldwide with a quick way of obtaining access to research results, without needing paid subscription to the source journal. These types of servers began as informal vehicles for the dissemination of preliminary research and un-peer reviewed literature. However the last decade witnessed the rapid evolution of these into increasingly important media for dissemination of research results in certain fields. Digital Libraries in Indian universities has not been of the desired level and order. While the elite institutions such as IISc, the IITs and a few elite universities have been quick to build digital

Library, a very large number of universities, especially the state universities, colleges and institutions of higher education are yet to initiate any major action in building digital Library. According to a recent paper (Tilak, Jandhyala B.G. 2009. Private sector in higher education: a few stylized facts. Social Change; March 2009; vol 39(1); p. 1-28) there are as many as 421 universities (including deemed universities) and over 18000 colleges (including over 5000 professional colleges) in India. There is a vague idea among many that anything available on Net is free. Access to information is essential for scholarly communication as new knowledge is developed from existing information.

6. Open Access: Some Successful Initiatives

Open Access Health and Medical Science related journals that can be accessed on the World Wide Web without any charges.

- ***Los Alamos Preprint Archive*** (arXive) http://www.arxive.org/ Original e-print server for physics suggested and practiced by physicists for over fifteen years. All one needs to do is to deposit one's paper - preprint, the final refereed and revised version or the published version – in an interoperable archive with appropriate metadata. It is currently managed by Cornell University and which operates through about twenty mirror sites spread around the world. Physicists (at least those working in the field of High Energy Physics) worldwide upload their papers, read the papers of others and what is more can send their comments after reading a paper. No time is lost. Anyone with an Internet connection can take part. Physicists do publish in prestigious journals and are not bogged down by endless arguments about copyright.
- ***The Lancet Electronic Research Archive*** (ERA) http://clinmed.netprints.org/ Freely available reviewed papers of special interest to developing countries.
- ***British Medical Journal*** http://www.bmj.com/ Full text of papers free to all online. Plus much additional material.
- ***BioMedCentral*** http://www.biomedcentral.com/ Free material, and encourages new free journals. Handling charge of $500/article now made to authors (except those from the developing world and some other authors for which the charge is waived)
- ***PubMedCentral*** http://www.pubmedcentral.gov/ Publishers deposit material for free access after a period determined by each publisher (typically 0-2 months currently). Full text may also be read from publisher's site instead of from PMC, but full text also on PMC for searching purposes.
- ***Directory of Open Access Journals*** http://www.doaj.org/ This service covers free, full text, quality controlled scientific and scholarly journals. This site covers all subjects and languages.
- ***Flying Publisher Free Medical Information*** http://flyingpublisher.com/ Promotes free access to medical information online
- ***OAIster*** http://oaister.umdl.umich.edu/o/oaister/ OAIster is a project of the University of Michigan Digital Library Production Service. The Project's goal is to create a collection of freely available, previously difficult-to-access, academically-oriented digital resources that are easily searchable by anyone.
- ***Oxford Open*** http://www.oupjournals.org/oxfordopen Oxford Open is an open access project of Oxford Journals, a division of Oxford University Press (OUP). Oxford Open offers

an optional author-pays model to authors of accepted papers in a range of Oxford Journals titles.

- ***Public Library of Science*** http://www.plos.org/ The Public Library of Science (PLoS) is a nonprofit organization of scientists and physicians committed to making the world's scientific and medical literature a public resource.
- ***Scholarly Journals Distributed Via WWW*** http://info.lib.uh.edu/wj/webjour.html .This directory provides links to established Web-based scholarly journals that offer access to English language article files without requiring user registration or fees.
- **SPARC** http://www.arl.org/sparc/ .SPARC is an alliance of academic and research libraries and organizations working through advocacy, education, and incubation of alternatives to correct market dysfunctions in the scholarly publishing system.
- SPARC Open Access Newsletter, Forum, and Blog http://www.arl.org/sparc/soa/index.html - forum
- ***Washington DC Principles for Free Access to Science*** http://www.dcprinciples.org/ The Washington DC Principles for Free Access to Science outlines the commitment of not-for-profit publishers to work in partnership with scholarly communities.
- ***Blackwell's Online Open*** http://www.blackwellpublishing.com/static/openaccess.asp .Through its Online Open Model, Blackwell Publishing Online offers authors who wish to publish their research in a Blackwell journal the opportunity to ensure that their article is immediately made freely available for all to access online.
- Policy on Enhancing Public Access to Archived Publications Resulting from NIH-Funded Research http://grants.nih.gov/grants/guide/notice-files/NOT-OD-05-022.html

7. Conclusion

Tremendous medical advances have been taken place and will continue during the next century. Provision of quality health care to all may be more difficult as control of health care management networks. Networks increasingly focus on cost containment issues sometimes at the expense of quality care. The importance of knowledge based information in providing quality bibliographic information may not be universally recognised. However more studies are needed that demonstrate a relationship between access to reliable and tamely health care information.

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Creation of Open Access for the Virtual Communities in Digital Scenario

Shivarama, J

Abstract

From the Beginning of the human society is always divided by some types of differences. In the agriculture era the land lords and the land workers, in the Industrial society the Industry owners and Industry workers, now we are moving to the information and knowledge era. In the information era we can divide the society In two major classes; the information rich and information poor. The information rich people are using information resources whereas information poor people are not able to access information resources.

Keywords: Open Access, Open source, Virtual communities

1. Introduction

Open Access is simply the free online availability of digital contents, scholarly journal articles, research results which authors publish without expectation of payment and is based on an ethical argument that research funded by the public should be available to the public. OA operates within the legal framework and own the original copyrights to for their work. Authors can transfer the rights to publishers to post the work on the web or else can retain the rights to post their work on the archives.

2. Open Access Movement

The first major international statement on open access was the Budapest Open Access Initiative in February 2002, launched by the Open Society Institute. This provided the first definition of open access, and has a growing list of signatories. Two further statements followed: the Bethesda Statement on Open Access Publishing in June 2003 and the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities in October 2003.

The Budapest Open Access Initiative defines open access as "free availability on the internet, permitting users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal or technical barriers other than those inseparable from gaining access to the internet itself." To achieve open access to scholarly journal literature, we recommend two complimentary strategies,

2.1. Bethesda Statement on Open Access Publishing

According to the statement issued at the Bethesda Meeting on Open Access Publishing held on April 11, 2003, "An open access publication is one that meets the following two conditions:

- The authors(s) and copyright holder(s) grant(s) to all users a free, irrevocable, worldwide, perpetual right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship, as well as the right to make small numbers of printed copies for their personal use.
- A complete version of the work and all supplemental material, including a copy of the permission as stated above, in a suitable standard electronic format is deposited

immediately upon initial publication in at least one online repository that is supported by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access, unrestricted distribution, interoperability, and long-term archiving.

2.2. Berlin Conference

In the conference on Open Access to Knowledge in the Sciences and Humanities held in Berlin (20-22 October 2003), the conference agreed that "In accordance with the spirit of the Declaration of the Budapest Open Archives Initiative, the ECHO Charter and the Bethesda Statement on Open Access Publishing, we have drafted the Berlin Declaration to promote the Internet as a functional instrument for global scientific knowledge base and human reflection, and to specify measures which research policy makers, research institutions, funding agencies, libraries, archives and museums need to consider."

In September 2012, ten years after the Budapest Open Access Initiative, Scientists, Foundations, Libraries, Universities, and Advocates Unite and Issue New Recommendations to Make Research Freely Available to All Online. It include the development of Open Access policies in institutions of higher education and in funding agencies, the open licensing of scholarly works, the development of infrastructure such as Open Access repositories and creating standards of professional conduct for Open Access publishing. The recommendations also establish a new goal of achieving Open Access as the default method for distributing new peer-reviewed research in every field and in every country within ten years' time.

3. Open Access Journals

Second, scholars need the means to launch a new generation of journals committed to open access, and to help existing journals that elect to make the transition to open access. Because journal articles should be disseminated as widely as possible, these new journals will no longer invoke copyright to restrict access to and use of the material they publish. Instead they will use copyright and other tools to ensure permanent open access to all the articles they publish. Because price is a barrier to access, these new journals will not charge subscription or access fees, and will turn to other methods for covering their expenses. There are many alternative sources of funds for this purpose, including the foundations and governments that fund research, the universities and laboratories that employ researchers, endowments set up by discipline or institution, friends of the cause of open access, profits from the sale of add-ons to the basic texts, funds freed up by the demise or cancellation of journals charging traditional subscription or access fees, or even contributions from the researchers themselves.



3.1. Enhancing the research process

An open research literature enhances the research process in a number of ways.

First, open literature means that research can move faster and more efficiently. Scientists do not have to spend time seeking out articles that they cannot access through their own library. In a subscription-based world, this entails asking colleagues in other institutions, writing to the author or using inter-library loan systems to obtain an article. In an Open Access world the article is available with a few clicks of the mouse. This speeds up not only the research process itself, but peer review, when reviewers look up supporting articles cited in the paper, and other research-related activities such as reviewing the literature for a new project. Authors cite a number of problems that Open Access overcomes, enhancing the efficacy of the research process and 'returning their faith in the integrity of their own work'.

Second, interdisciplinary research is generally considered to be growing in importance as scientific problems increasingly require the input and technologies from various disciplines to resolve. Open Access enhances interdisciplinary research because it makes it easy for scientists in one discipline to locate and use the literature of another. (their institution may not cater for this need if there is no strong research programme in the other discipline).

Third, the new computational technologies can *only* work on an open literature, such things as text-mining and data-mining technologies. These computational tools extract information from articles – often across disparate fields of research – and create new knowledge. These computational applications are already used extensively in pharmaceutical research and some areas of chemistry, and will form the basis of a new approach to research for the future. Access to abstracts and bibliographic details is not enough: these tools need to be able to 'read' the full text of a research article, including any data within it and supporting it.

4. Visibility and Usage of Research

Open Access maximises visibility of research outputs and through this increases their chances of usage. Articles that are in repositories or Open Access journals are easily and immediately discoverable through a Web search using appropriate keywords and are retrievable, in their entirety, with one click. Data on repository usage demonstrates the levels of interest in research and at the same time is an indicator of the severity of the access. Would-be users with library access to subscription journals or books have no need to visit repositories. Importantly, Open Access provides this much-needed visibility for developing world research, which has always been hampered by the lack of channels for reaching developed world scientists and the bias of the large abstracting and indexing services towards developed world outputs. Open Access changes this and redresses the balance, making developing world research just as visible as that from wealthy, research-intensive regions. This will help to change roles and perceptions in the scientific community and in time deliver an economic benefit to developing countries as they attempt to build their own knowledge societies.

5. Impact outside academia

As well as citation impact, Open Access can have beneficial impact on other constituencies. The most often used example of this kind of impact is the benefit to patients from access to health research information, but the education, professional, practitioner and business sectors are potential users and beneficiaries of scientific research. It is early in our understanding of their needs and the benefits that can accrue to these constituencies.

6. Indian Scenario

Importance of open access archives, institutional repositories and open access journals has been realized by the library and information professionals in India. This movement has been accelerated by the availability of open source softwares namely DSpace, EPrints, Greenstone, etc. The research institutions in India are actively involved in the development of institutional repositories. Indian Institute of Science, Bangalore, INFLIBNET Centre, Ahmedabad and Documentation Research and Training Centre (DRTC), Bangalore are the leading institutions with major contributions. Open access journals and institutional repositories are two important means for delivering open access to research literature. Studies and usage statistics of some repositories show that the researchers of developed nations are accessing the Indian literature available in the open access journals and archives. India is not only leading in open access movement of the developing countries, but also making developed countries aware of qualitative scholarly literature originating from these countries. Most of efforts are continuing to set up open access archives or institutional repositories. In future, sustainable growth of open access archives and journals will be seen in India.

7. Conclusion

Open Access should be seen as a means of accelerating scientific discovery by providing free and unrestricted access of scientific knowledge via the Internet. An essential role of Open Access is the long-term preservation of peer-reviewed scholarly journal articles and research data. Open Access is not only used for journal articles but is also being implemented to theses, scholarly monographs, and book chapters. Promotion of Open Access is very crucial to encourage innovation, socio-economic development, and flow of knowledge around the world. As such, Open Access can be defined as an instrument ultimately used for public welfare to stimulate the growth of global science, as well as maintain the quality of scientific achievements at the same time.

Through Open Access publications, scientists can avoid subscription fees and copyright and licensing restrictions to access free scholarly literature. Since Open Access publishing allows the permanent restoration of scientific data through digital copies, other than the constraint of Internet access, scientists around the world can freely share information and collaborate to enhance the progress of science. **Open Access journals** not only give royalty to free literature, but also reduce costs for paper-copy production, physical storage, and distribution through digitalized copies. The benefits of implementing Open Access are reaped by many end users, such as, students, researchers, clinicians, patients, policy makers, and journalists. As long as there is Internet access, people from all over the world, be it an underdeveloped country in Africa, a developing country like India or developed countries such as USA or UK, will have immediate access to latest research findings. Thus, **Open Access initiative** helps in unlocking the traditional methods of subscription articles and releasing information to tertiary level readers, who normally would not have access to first hand research studies.

Changes in both attitudes and technology, however, mean that knowledge need no longer be confined primarily to economically robust institutions or regions. The cost of sharing the results of scientific and medical research, in particular, is falling as electronic dissemination replaces paper and print. As a result, open-access publishing – which makes published literature freely and universally electronically available – is on the rise. Although it is mostly scientists in industrialised nations who are originating and accessing the material, this form of electronic publishing is also a potentially powerful way of minimising the knowledge gap between the developed and developing world.

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Digital Preservation and Its Needs in Digital Libraries

Balu Dhondiba Khamkar

Abstract

In this paper the researcher has discussed the digital preservation and its need in the digital libraries. Digital preservation is a broad term used to describe the continued accessibility and maintenance of digital resources and safeguarding these for the foreseeable and the distant future. Digital preservation is a vital part of the creation and management of any digital collection. Libraries and archives play a critical role in organizing, preserving, and providing access to the cultural and historical heritage of the society. Digital preservation concerns two types of documents: namely "born digital documents" and "digitally created documents". Digital preservation will add little values to the research process if it serves only as an alternative form of storage. Preserving digital materials in formats that area reliable and usable will require long-term maintenance of structural characteristics, descriptive metadata, display and computational and analytical capabilities which demand mass storage and software for retrieval and interpretation.

Keywords : Digital Preservation, Need, Digital Resources.

1. Introduction

Four wheels of librarianship are: Collection of materials appropriate for libraries, organization of the collection, preservation of material, dissemination of information. Some of the most technically advanced Libraries in the world, have been working in developing standards, making tools and technologies available, and encouraging all sorts of digital services with impressive results. The problems that these complex objects, and the changing standards of the infrastructure that supports them, presents to the digital archivist is convoluted, and while apparently not totally intractable, certainly difficult. The tools, systems and software that they will develop will take account of these many variables, technological changes and shifting standards. In effect the digital archival community broadly agrees on what to do, but is locked into resolving the details around complex digital objects.

2. Types of Digital Documents

Digital preservation concerns two types of documents: namely "born digital documents" and "digitally created documents". Born Digital documents: These refer to those materials that were initially created using some form of digital technology. They are often termed as "electronic records". Digitally created documents: These refer to that material, which have been transformed from analog to digital form through some reproductive means such as rekeying the information or scanning the document or object etc.

3. Need and Purpose of preservation of digital resources

Continued access to digital materials requires the maintenance of intact data streams and the means to read and interpret them. Digital storage media are vulnerable to damage or deterioration, and hardware and software become obsolete, so the time frame for making preservation decisions is short compared to paper-based materials. Action needs to be taken early and to be sustained for as long as the materials are needed. A) To preserve digital materials the key needs are: 1) To protect the integrity of the data streams. 2) To maintain a way of displaying and

using the materials that retains their authenticity. B) Related needs are: 3) To record enough metadata to manage preservation, show provenance and help users understand the materials 4) To manage associated rights issues to monitor technology for changes that could lead to loss of access. C) Digital preservation and conversion of data offers the following advantages. 5) Reduces expensive document storage costs. 6) No need for specialist paper storage facilities like record rooms. 7) Makes better use of office space. 8) Saves thousands of man- hours every year by eliminating labor intensive searching and retrieval of paper documents. 9) Stores long set of magnetic on a single CD-ROM. 10) Provides immediate access to all data files via PC or LAN. 11) Provides access to Center's data from anywhere in the world via the internet.

4. Standards and Protocols

To present or save a digital object, there are some standards like national standards, international standards, and industry standards. These standards fall into three major areas: material description, user access, and system architecture. Under the material description, we need to look at two forms- 1) the abstracted information (metadata), which constitutes the bibliographic description in a library system, and 2) the material itself. Description standards include SGML and HTML from the web and PDF etc. Bibliographic Standards: MARC, Dublin Core, Metadata, ACCR, URL etc. Records Structures: ISO 2709, Extensible Markup Language (XML), Hypertext Markup Language (HTML) Encoding Standards: Unicode ASCII

5. Examples of Digital Preservation Initiatives

1) The Library of Congress operates the National Digital Information Infrastructure and Preservation Program 2) The British Library is responsible for several programmes in the area of digital preservation. 3) The Safety Deposit Box software from Tessellate is being widely adopted by National Archives and has been selected by the National Archives in the UK, Netherlands, Switzerland, Finland, Estonia, Malaysia and Austria as well as Family Search and the Well come Collection. 4) Ex Libris Rosetta is commercial software helping memory institutions to collect, manage, archive and preserve their digital collections, ensuring its data integrity and access over time. 5) The Meta Archive Cooperative is a library-run, collaborative approach to digital preservation. 6) ARKive preserves film, video, audio and photographic media on endangered species. 7) National Digital Information Infrastructure and Preservation Program (NDIIPP), 8) Portico, a not-for-profit organization originally launched by JSTOR in 2002, is a digital preservation service. 9) FDsys (Federal Digital System) is a system being developed by the United States Government Printing Office to authenticate, preserve, and provide access to government information from all three branches of the Federal government. 10) Elsevier Science digital archive. In 2002, the Koninklijke Bibliotheek became the official digital archive for 7 terabytes of Elsevier Science journals. 11) LOCKSS (Lots Of Copies Keep Stuff Safe), under the auspices of Stanford University, develops and supports open-source software for digital preservation based on a distributed network of preservation appliances running a sophisticated voting protocol. 12) MetaArchive Project Six universities (Emory University, the Georgia Institute of Technology, the Virginia Polytechnic Institute and State University, Florida State University, Auburn University and the University of Louisville) and the Library of Congress are developing "a cooperative for the preservation of at-risk digital content [about] the culture and history of the American South" in a private LOCKSS network. 13) Alabama Digital Preservation Network (ADPNet) In 2006, the Institute of Museum and Library Services (IMLS) awarded a two-year National Leadership Grant to the Network of Alabama Academic Libraries (NAAL) and seven Alabama institutions to build a low-cost distributed digital preservation network for the state. 14) ASERL ETDs Eight universities of the Association of Southeastern Research Libraries (Florida State University, the Georgia Institute of

Technology, North Carolina State University, the University of Kentucky, the University of Miami, the University of Tennessee, Vanderbilt University and the Virginia Polytechnic Institute and State University) are preserving each other's collections of electronic theses and dissertations (ETDs) in a private LOCKSS network. 15) GPO LOCKSS Pilot The Government Printing Office conducted a pilot program to "manage, disseminate, and preserve access to Web-based Federal Government e-journals that are within the scope of the FDLP and IES" (Federal Depository Library Program and International Exchange Service), using LOCKSS technology. Pilot participants included 18 universities, the German National Library, the United States National Agricultural Library and the Government Printing Office. 16) Alaska State Publications Program To continue complying with its obligations under Alaska state statutes to "make state publications freely available to Alaskans by distributing them to local depository libraries", the Alaska State Library is expanding its depository program to preserve Alaska State publications that are Web-only by making them accessible to LOCKSS collection. 17) CLOCKSS "Controlled LOCKSS") is "a not-for-profit community partnership among publishers and libraries that is developing a distributed, validated, comprehensive archive that preserves and ensures continuing access to electronic scholarly content" using a private LOCKSS network. 18) New media art preservation. Arts organizations (including the Solomon R. Guggenheim Museum, the Berkeley Art Museum, the Daniel Langlois Foundation for Art, Science and Technology, the New Museum of Contemporary Art's's Rhizome.org and the Franklin Furnace Archive, amongst others) have been collaborating on various initiatives in the research of New media art preservation. 19) The National Digital Heritage Archive (NDHA) programme is a partnership between the National Library of New Zealand. 20) The Rose Goldsen Archive of New Media Art The Archive was founded in 2002 21) DSpace is an open source software that is available to anyone who has the World Wide Web. DSpace essentially takes data in multiple formats (text, video, audio, or data), distributes it over the web, indexes the data (for easy retrieval), and preserves the data over time. 22) The National Archives of the United Kingdom have pioneered various initiatives in the field of digital preservation. 23) The British Library is responsible for several programmes in the area of digital preservation. 24) PLANETS (Preservation and Long-term Access through Networked Services) is a four-year project co-funded by the European Union under the Sixth Framework Programme to address core digital preservation challenges. 25) The Safety Deposit Box software from Tessella is being widely adopted by National Archives and has been selected by the National Archives in the UK, Netherlands, Switzerland, Finland, Estonia, Malaysia and Austria. 26) Digital Preservation Europe (DPE) is the EU project registered in Information Society Technologies (IST) priority funded under Sixth Framework Programme of EU. The project started in the April 2006 and will end in the March 2009. 27) PADI is a comprehensive archive of information on the topic of digital preservation from the National Library of Australia. 28) The Preserve Games project was launched in 2008 by professor Megan Winget in participation with IMLS and the Center for American History at the University of Texas in order to help preserve the creation history of Massively multiplayer online game games. 29) The Digital Preservation Coalition (DPC) is a UK-based non-profit limited company which seeks to secure the preservation of digital resources in the UK and internationally to secure the global digital memory and knowledge base. 30) CASPAR (Cultural, Artistic and Scientific knowledge for Preservation, Access and Retrieval) is a European project on Digital Preservation co-funded by the European Commission from 2006 to 2009, within the Sixth Framework Programme.

6. Digital Preservation Approaches and Strategies

- **How is digital data to be preserved? There are two key issues for data preservation**

  a. Preserving the physical media on which the bit stream is recorded.

b. Preserving the means of interpreting, reading and utilizing the bit stream.

Given that the bit stream is merely a very long series of binary codes; the preservation of the physical media should maintain its integrity over time. However, being able to read, use or interpret that bit stream may become increasingly difficult as systems evolve, adapt and eventually become redundant, so presenting a fog through which the bit stream become unusable.

- **Approaches to Preserving Layers of Meaning**

a. Make information useful b. Policies & procedures (periodically revisited & audited) c. Promoting awareness of issues among creators, managers and users of digital resources d. System development e. System administration f. Ongoing maintenance - copying, converting, reformatting, emulating, normalizing, migrating.

- **Measures for Promoting Interoperability - Abstraction and Virtualization**

a. Virtual machines b. Application programming interfaces nc. Middleware

Open Standards - a. Supporting interoperability over time by adopting conventions that are widely adopted by others, formally approved, maintained and documented (e.g. ISO standards). b. Openness is a matter of degree – few specifications are completely closed or completely open.

- **Representation Information & Format Registries**

a. Concept of representation information: "The information that maps a Data Object into more meaningful concepts. An example is the ASCII definition that describes how a sequence of bits (i.e., a Data Object) is mapped into a symbol." (OAIS) b. How representation information is often expressed through file formats c. Role of registries of representation/format information.

6.1. Spectrum of Technical Digital Preservation Strategies

Traditional Dichotomy: Emulation vs. Transformation/Migration

- **Emulation** – Use of software to imitate obsolete computer equipment on new computer equipment, i.e. trick files and applications into thinking they're still running in their original environment. b. Transformation/Migration – Digital object that depends on obsolete computer equipment is changed in order to run directly on new equipment.
- Advocates of emulation contend that it better supports notion of preserving an "original," along with its "look and feel," and it can be more cost-effective than repeated transformations of digital objects.

Open Issues Related to Emulation - a. What level to emulate b. When to create the emulator - now vs. later, once vs. periodically c. How to develop emulators - what language, what platform d. Intellectual property rights

Migration - a. Periodic transformation of the bits/bytes to run directly on newer platforms. b. Used widely as an approach to actively managing legacy systems. c. Work can be expensive and introduce errors of translation. d. Since the resulting objects can run directly on newer platforms, layers of technology can be minimized.

Not Just "Emulation vs. Migration" - a. All strategies use standards in some way b. General consensus to keep original bits c. Transformation can be minor or extensive d. Transformation/Emulation can take place now or at time of access

Significant Properties - "Whoever takes the decision that a particular digital object should be preserved will have to decide what properties are to be regarded as significant. "Properties of digital objects that affect their quality, usability, rendering, and behavior".

Defining Significant Properties can serve a Variety of Purposes a. Writing specific provisions into submission agreements. b. Developing criteria & empirical tools for evaluating preservation approaches. c. Documentation of preservation decisions in terms of specific properties.

Passive Preservation:- Passive preservation is concerned with the secure storage of digital objects, and the prevention of accidental or unauthorized damage or loss. As such, passive preservation needs to encompass the following functions: {Brown, A. 2006} a. Security and access control b. Integrity c. Storage management d. Content management e. Disaster recovery

Active preservation:- Active preservation generates new technical manifestations of objects through processes such as format migration or emulation, to ensure their continued accessibility within changing technological environments. It comprises three basic functions, operating in a continuous cycle, potentially supported by the services of a technical registry. {Brown, A. 2006}

6.2. Digital Preservation Policy:

At the present time, the policies for ensuring long-term storage, maintenance, migration and access to digital materials, whether at the local or national level, are not frequently present both in the private and in the public sectors. Moreover, the policies publicly available via web are mainly developed by cultural heritage institutions and have been elaborated very recently. Frequently, the confusion about the most appropriate practices and methods, the lack of a consensus, the difficulty in engaging the interest for these themes and the shortage of good models for digital preservation can be some of the difficulties that institutions meet in developing their policies, even if the need for defining policies is increasing at the same degree of the growth of the digital heritage. The primary aims of a policy are to provide guidance and authorization on the preservation of digital materials and to ensure the authenticity, reliability and long-term accessibility of them. Moreover, a policy should explain how digital preservation can serve major needs of an institution and state some principles and rules on specific aspects which then laid the basis of implementation.

6.3. Digital Preservation Challenges:-

Digital preservation requires the management of object over time, using techniques that may result in frequent and profound changes to the technical representation of that record. Any preservation strategy must therefore be underpinned be rigorous logical framework which supports the concept of multiple technical representation of an object. And the process of change through which they arise. Technology Obsolescence a. New Conception of "Long-Term" "A period of time long enough for there to be concern about the impacts of changing technologies, including support for new media and data formats, and of a changing user community, on the information being held in a repository. This period extends into the indefinite future."

6.4. Copyright:

Copyright applies to work that recorded in some way. Rights exist for musical and dramatic work as well as films, sound recordings and literary, artistic or typographic arrangements. It gives the author/creator specific rights in relation to the work, prohibits the unauthorized actions (mainly copying or broadcasting), and allows the author to take legal action against such infringements.

Copyright issues in digital preservations:

- Under what circumstances dose the preserving organization have the right or permission to ingest the content into the preservation system or storage environment? This activity may be deemed illegal copying under copyright laws unless the permissions to store and make available have been clearly agreed, with associated written evidence.
- Especially for moving image and sound recordings there may be many creators and copyright holders.
- There may be restrictions on the separation of elements of a work or their independent use, for example, removing a sound track from a visual track.
- Under what circumstances may the content being preserved be made accessible as this may be defined as publication, performance, or broadcasting? The digital domain creates this new problem because of the naturally one-to-many relationship of digital content and networked access.
- Metadata to record and track copyright will be required to enable digital preservation and eventual use. Sufficient metadata fields and associated records must be available to record all the rights holders and their relationships with each other and the wider collection.

6.5. Issues Related to Digital Preservation

Preservation is a response to the threat of destruction. Information professionals all over the world are trying to rejuvenate their professional practices to ensure long term preservation of digital information.

Preservation strategies: Strategies concerned with digital preservation need to be involved at the beginning of the digital life cycle.

Data creators and publishers: It is vital that there is a sound and effective dialogue between creators and publishers of digital information and preservation professionals.

Intellectual Property Rights: Preservation rights need to be part of license negotiations between publishers and library consortia.

Collection management: There shall be collection Development Policy (CDP) foe digital information to maintain the possibility of future serendipity.

Metadata: Need to develop appropriate standards on Metadata for digital preservation.

Staff expertise: The education and training programmes in LIS shall focus on the staff skills and expertise in digital preservation.

7. Suggestion:

Keeping in view of the above factors, some of the suggestions are:

- Draft a set of guidelines, standards and practices for digital preservation.
- Develop means to coordinate digital preservation activities among institutions.
- Develop institutional policies for acquisition, conversion, storages and maintenance of digital materials.
- Plan and programme for education and training of digital preservations

- Prepare a model for infrastructure required for digital preservation.
- Sharing of technical know- how of digital preservations among the professionals.

8. Conclusion

Digital preservation encompasses a broad range of activities designed to extend the usable life of machine- readable computer files and protect these from media failure, physical loss and obsolescence. Digital preservation will add little values to the research process if it serves only as an alternative form of storage. Preserving digital materials in formats that area reliable and usable will require long-term maintenance of structural characteristics, descriptive metadata, display and computational and analytical capabilities which demand mass storage and software for retrieval and interpretation. The digital preservation is process that requires the best available technology, careful thought, administrative policy and procedures. Preservation in the area of digital technology is a shared responsibility. There is an ongoing need to work as a community to drive the development of needed products, to grow a demand for commercial imaging services, and support for international standards to meet digital preservation needs. The Archives, Libraries, Museums and other Repositories, have been instrumental in preserving and providing access to scholarly communications, documentary heritage, and other cultural resources in traditional formats. There are no digital preservation policies or established methods to preserve digital information. Digital preservation is a new challenge and they are just beginning to confront the policy, technological and human resource implications. In digital preservation, all that looks new is old again. Keeping in view the recent developments in the information handling and management, the benefits of digital preservation and digitization could not be overlooked and augmented effectively to preserve and disseminate for the future generation to come. Therefore, the information professionals are to be trained in area of digital preservation and digitization techniques. The emerging research on preserving both born-digital and born-digital documents is vibrant and working toward the development of strategies, technologies, and methods that will enable digital preservation to become an established veracity.

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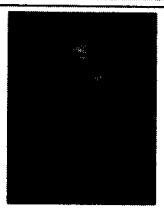
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Evaluation of Open Access E-Resources in LIS: *A Study*

Kaushal Chauhan **Mahapatra, R. K.**

Abstract

This study highlights the importance of online Free E-Resources with their facilities and features. The research methodology adopted for the study is investigative in nature. The findings of the study highlights the importance, the salient features, the problems encountered by the users and suggests some remedial measures for its improvements. Various statistical methods have been used for data analysis. The present study is the result of the *extent of independent, electronic scholarlyjournals,* ***those that are available through Internet, usually the World Wide Web,*** *free of charge* ***to the user, and publish academic articles,*** *usually peer reviewed in library and information science.* ***The criteria for evaluation of open access E-Resources discussed and lists of open access E-Resources with their websites and bibliographic details are provided. Authors tried to give a detailed introduction and evaluation of free online E-Resourcesand discussed its scope, coverage, authority, arrangement, treatment, and other features of library and information science.***

Keywords: E-Resources, Open access, Library and information science

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Importance of Open Access and Open Sources in Networked Environment

Vidya B. Patil **Sangeeta S. Kusugal**

Abstract

Open source and open access to research findings are of great use to scholars in developing nations. Open sources & open access are possible through Digital Libraries. These concepts are implemented by using proper methods & tools. Open access & open sources are the potentials to make very close to the entire body of literature available to anyone with an Internet connection. This would make a considerable difference to a wide range of scholars, students and others who are otherwise unable to obtain or afford access. What is holding back this far greater circulation of knowledge, at this point, is general lack of faculty awareness and interest in increasing access to published literature.

Keywords: Open Access, Open source, , Digital Libraries, E-resources

1. Introduction

Digital Libraries have been the subject of more than a decade of attention by researchers and developers, and yet in all this time the implementations have not matched the promises. By far the majority of systems have concentrated on content and provided limited or basic functions for users. Developing countries like India are showing interest in digitizing their library materials. In digitization, software is one of the key requirements. Open source software (OSS) is new genre of software. They are increasingly becoming popular for the simple reason that mostly they are available free and can be easily downloadable from the web.

Libraries are beginning to utilize a tool that is allowing them to compete with the expensive advancements in technology. The concept of source code sharing has been around since the 1950's; however, the use of OSS as a means for providing advanced library services has only recently gained significant momentum in the last several years. Research libraries have historically been at the forefront of the OSS movement because of their adoption of management information systems. Many research libraries are located at educational institutions and allowed early practitioners to create the core of the OSS movement. Over time, research libraries contributed to library OSS development through the user group communities that often arise and engage in enterprise computing systems. The increasing interest in OSS has been based on economics and the desire of the library community to seek out user-centered customizable library portal.

2. Open Source

To further the development of knowledge, scholars require access to relevant Scholarly literature. Increasingly, this literature is interdisciplinary, global, expensive, digital, and hidden behind technical walls to comply with license restrictions. It is also burgeoning. Little wonder that even scholars at the richest universities in the world have difficulty accessing the specialized literature that they need, while those at the poorest barely have any access at all. What can be done? The open access movement believes it has an answer to this critical question. Many of its prominent figures have little or no interest in reforming the existing scholarly communication system. Rather, they are interested in transforming it so that it can function effectively in the rapidly changing technological environment.

The Open source label itself came out of a strategy session held on Feb 3rd 1998 in Palo Alto, California. The open source campaign was launched as part of an effort the concept of 'Free

software' on the grounds of reliability, cost and strategic business risk. Even though it is not free but distributed under licenses GPL, LGPL, BSD and MIT, it should be kept in mind that royalties are still contributing but not always in terms of money. Since then OSS come of age and is now broadly accepted by software producers, consumers as a viable alternative.

2.1. Open Sources Software

Open source software is primarily defined as software, which is freely redistributable and includes the source code. This is different from the commercial software where source code is highly guarded and programs are only distributed in their binary un modifiable format .The most important aspect of they open source movement is the participation of the user. When a user want a feature or bug fix for a program, they have traditionally been at the mercy of the software vendor However with open source they can modify the programe to their own needs or fix what is broken Many user will help to develop the programe for free ,simply to improve the product and benefit the community. Thus it is a collaborative programming infrastructure that co-opts copy right Law by freely releasing source code to the general public for any use, modification and redistribution without licensing restrictions.. Linux, Eclipse, Apache, Tomcat web server and various other projects.

2.2. Types of software (Tools)and its products:

- Operating systems
- Linux(Ginu/Linux), Free BSD, Open BSD, Net BSD, GNU/Hurd
- Utilities
- GNU Utilities, Multi Router Traffic Grapher
- Languages
- GNUC/C++, Perl, Python, Tel
- Windowing System
- X Window system
- Desktop environment
- GNOME (GNU Network object model Environment), KDE (K Desktop Environment), GNU Setup, Xfice
- Web browser
- Net scape-6 Mozilla
- Productivity Application
- ABI Word, GNU IMAGE
- Server Type Software
- Samba, ,Apache, php
- Relational Database Management
- MySQL, Postgre SQL
- Object Oriented Database
- Zope

- Library Application
- Free Reserves (www.lib.edu./san/freereseserves0), Prospero, Jake

With these softwares & tools user can access open sources easily. More succinctly from the above open source promotes software reliability and quality by supporting independent peer review and rapid evaluation of source code. To be certified as open source the license of a program must guarantee the right to read redistribute, modify, and use it freely.

2.3. Advantages of OSS

The main aim of the open source is to let the product be more understandable modifiable, duplicable, or simply accessible, while it is still marketable.

- Many librarians are now considering OSS because of its low costs. Unlike commercial software, there are no initial purchase fees, licensing fees, or upgrade fees.
- OSS is generally not tied to proprietary hardware, so the hardware costs associated with OSS tend to be lower.
- The original supplier of the software has no monopoly on the information, the market for support and maintenance of OSS is more competitive than that for commercial software with comparable user bases. Thus support and maintenance costs are often lower.
- Librarians prefer OSS for preservation, privacy and auditing, community resources, and open standards.
- OSS product is not locked into a single vender.
- The entire library community might share the responsibility of solving information systems accessibility issues.
- Allows any body to make new version of the software

2.4. Disadvantages of OSS

OSS comes with a number of risks as well. They are;

- When considering any software for long-term use, one must consider longevity, and OSS is no exception. OSS projects may fragment into incompatible versions or stagnate.
- It offers the opportunity for users to continue to contribute to a project even after the original developers leave.
- OSS is often not as user-friendly as commercial counterparts.

3. Selected Open Source Softwares

The Open source is multifaceted and multi dimensional in nature. In order to present there features an attempt is done in the following paragraphs for selected open sources.

DSPACE: It is a DL system to capture, store, index, preserve & redistribute the intellectual output of the university research faculty in digital formats. Currently it supports exporting digital content, along with its metadata in a simple XML encoded file format.

- Open source
- Institutionally based, multidisciplinary repository

- Support interoperation with other system
- Submission is easy
- Flexible storage & retrieval architecture adoptable to multitude of data formats and distinct research disciplines, known as communities
- Digital preservation.

EPRINTS: It is generic archive software, intended to create a highly configurable web-based archive. Its primary goal is to be setup as an open archive for research papers, but it could be easily used for other things like images, audio achieves anything that can be stored digitally by making changes in configuration.

- The archive can use any metadata schema
- Can be placed in a configurable, extendible hierarchy
- Data integrity checks are performed automatically without the need for administrator intervention
- Submission is via a simple but extremely powerful www-based interface.

KOHA: Koha is the world's first free open source library system. The koha system is a full catalogue, OPAC, circulation, Member Management and Acquisition package. In this software one could 'Test Drive koha' (http://koha.org/drive/) to explore its features and capabilities. This facility will immensely help the prospective users as they can evaluate the software before they plan to install it locally. One could also join the mailing list at http://koha.org/mailing/.

- A simple web based interface for patrons and library staff
- The search interface is easily customizable
- Circulation tracking system
- Full acquisition system including cataloguing, budgeting and pricing
- Simple acquisition system for smaller libraries
- Able to catalogue websites as normal items
- Easy to install and maintain

Greenstone Digital Library Software: Greenstone is suite of software for building and distributing digital library collections. It provides a new way of organizing information and publishing it on the Internet of on CD-ROM. One of the pioneering and laudable efforts of Greenstone is its commitment to lower the bar for construction of practical digital libraries, yet at the same time leave a great deal of flexibility in the hands of the user. This software is promoted by the New Zealand Digital library project research group at the University of Waikato, headed by Dr. Lan H.Witten, and is sponsored by the UNESCO in August 2000.

- Open source
- Easy installation and use
- Indexing and storage
- Collection building and configuration
- Collection browse and search
- Support for Unicode and Dublin core

- Z39.50 and OAI compliance
- Access and Delivery-Internet, CD-ROM
- Multilingual
- Accept different file formats

Since the study is focused on Greenstone open source software, detail features of this software are given in chapter IV.

4. Open access

Open access resources are nothing but information resources freely available online. Open access allows academics and scientists in developing and tradition countries to not only access the material which they need to conduct their research, but provides a means by which they can more efficiently contribute their important work to the global research community. This can be done through the development of open access repositories by all types of libraries and enabling the users to users to use it freely. Open Access is a term used to describe published academic papers, books, reports, and other periodicals that are electronically available to readers without financial or technological barriers. The importance of open access for fundamental as well as applied research and education cannot be

4.1. Open Access Resources

Open access resources are publications that have "free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other then those inseparable from gaining access to the internet itself". (Budapest Open Access Initiative)

4.1.1. Online open access journals

Online open access journals that have no paper versions began to be actively created along side of traditional printed journals at the end of the 1990s and the beginning of the 21st century, owing to the launching of an international movement for open access to scientific and humanitarian knowledge. The Directory of Open Journals (DOAJ), which is kept by Lund University (Switzerland) numbered 3386 journals as of the end of May, 2008 (the search for full-text articles is open for 1160 journals, their total number is equal to 187 432) (http://www.doaj.org). Traditional journals also began joining this movement. The idea appeared of creating hybrid open-access journals (hybrid OA journals), in which only some of the articles are in open access, and the remaining articles are paid (to be more exact, they are paid for by universities and scientific organizations), as they are distributed through the usual type of subscriptions. This scheme was suggested for the first time in 1998 and examined in the Florida Journal of Entomology by Walker. It was extended to other journals of the Entomological Society of America. Later, this idea was developed by David Prosser in 2003 for the journal Learned Publishing. Finally, this hybrid model came to be named the Walker–Prosser model for open access journals.

4.1.2. Popular Open Access Journals

- **African Journals Online:** http://www.ajol.info/ AJOL is a database of journals published in Africa, covering the full range of academic discipline

- **Look Smart Find Articles:** http://www.findarticles.com/ Find articles is a Look Smart product that searches and provide free access to millions of articles from academic, industry and general interest publications.
- **AGORA Program:** http://www.aginternetwork.org/en/ The AGORA program, set up by FAO of UN together with major publishers, enables developing countries to gain free or reduced cost access to a digital library collection of 913 journals in the fields of food, agriculture, environmental science and related social sciences.
- **The Essential Electronic Agricultural Library:** http://teeal.cornell.edu/index.html The library of agricultural literature is available on CD-ROM or LAN access only. Purchase of back files is available at US$3,500 for 1993-2003 data, and US$1,000 each for 2004 and 2005 subscription
- BioMed Central is an independent publishing house that provides immediate open access to peer-reviewed biomedical research. BioMed Central's portfolio of 168 journals includes both general and specialist journals.
- **Indian Medlars Centre:** http://indmed.nic.in/ : A database lists open access biomedical journals published in India.
- **Medknow publications:** http://www.medknow.com/journals.asp Medknow Publications is the largest publisher in India for academic and scientific biomedical journals. The company offers open access, peer reviewed, scholarly journals.
- **Association for Information Systems:** http://plone.aisnet.org/ It was agreed in 2000 that countries that are not high income economies (according to World Bank definition) should be granted free subscriptions to their Information Systems publications, Communications of AIS and the Journal of AIS.
- **BMJ:** http://www.bmjjournals.com/ BMJ focuses on the publishing of medical science journals. Free access to the journals is available to developing countries and via the HINARI initiative.
- **Proceedings of National Academy of Sciences (PNAS):** http://www.pnas.org/ PNAS Online is a database of proceedings from National Academy of Sciences. It is freely and immediately available to more than 140 developing countries.
- **Directory of Open Access Journal:** http://www.doaj.org/ Directory of open access journals is freely accessible. It covers a board range of subjects including art and humanities, life sciences, law, mathematics, social sciences, and technology.

5. Conclusion:

Libraries are in tremendous pressure to develop digital libraries suitable for their user environment. However developing a digital library involves huge expenditure. The slashing down prices of Hardware has come as a sign of relief for libraries for the procurement of Hardware. However the ever-escalating cost of the software is making the implementation of IT, a miserable economic proposition for libraries. Fortunately, the open source movement has come as a "Shot in the arm" for libraries. More and more libraries are trying to adopt OSS. The role of OSS in the library sector has continued to grow and is exemplified by the number of software applications now available for libraries to tailor their own portals. OSS has allowed librarians to take an active role in becoming national leaders by taking more control of their literary collections. OSS does not come

without obstacles; however, the growing number of communities that support these systems indicates that OSS within libraries may become the norm.

Today modern user-friendly software enables academic editors and referees to undertake themselves tasks that used to require skilled craftspeople such as compositors. And above all, new facilities can be incorporated into journals, such as hypertext links both within and between papers, interactivity between paper and reader, and the inclusion of multimedia features such as animation, video clips and sound into papers. And electronic journals still has to cope with the economy and speed, with the authority and authenticity given to the printed world. It is also subject to the vagaries of archiving and the lack of indexing.

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Library Management Software Packages: *A Study*

Govardhan Aute **Shakuntala Lomte**

Abstract

Present paper describes the national level library management software packages. Acquired result reveal that software packages fulfilling needs of client but open source packages are found most useful and highest level of satisfaction to their users. All packages providing OPAC service and few packages providing spine label printing facility. On the basis of evaluation criteria, SOUL and KOHA is most useful for library automation.

Keywords: Library Automation, Softwares, Evaluation Criteria's.

1. Introduction

The circulation function was the first library operation to be automated, due to its repetitive, routine and time consuming, multitasks (eg. Check-out, Fines, Notices etc.) In the last 1970's and early 1980's, vendors of automated systems introduced the Online Public Access catalogue systems, those that combine circulation, OPAC's and cataloguing had became widely accepted in large libraries. These systems operated on mainframe & mini computers. The high cost of these computers and of the automation software was beyond the reach of many media centers and small libraries.

The proliferation of microcomputers in the early 1980's provided an incentive to automate media centers and small libraries. Computer Cat, an Apple II microcomputer based on line catalogue was the first automated system to be introduced in a media centre. Developed by Colorado computer systems in 1981 for Mountain View Elementary school in Colorado the system comprised three main components: OPAC, Cataloguing and Inventory. Computer catalogue was a replica of the card catalogue; it provided author, titile and subject searching capabilities.

All over the world, even in India several commercial firms have developed the library softwares, but they are expensive. Present paper tries to describe the national level library management software packages.

2. Library Management Software

'Software is a set of programmes written or developed to enable the computer to do desired operations in libraries.' The processes of having a machine or machines accomplish tasks hitherto performed wholly or partly by humans. As used here, a machine refers to any inanimate electromechanical device such as a robot or computer. As a technology, automation can be applied to almost any human endeavor, from manufacturing to clerical and administrative tasks. The fundamental constituents of any automated process are a power source, a feedback control mechanism, and a programmable command structure.

3. Library Automation

Library automation refers to use of computers, associated peripheral media such as disks, optical media, computer networks etc. and utilization of computer based products and services in the performance of all type of library functions and operations. The utilization of computer and related techniques make the provision to provide the right information to right reader at the right time in a right form in a right personal way. Automation of library activities provides the services

very efficiently, rapidly, effectively, adequately and economically. The modern libraries and information a center facilitates free communication because access to information has become a fundamental right of the clientele. The role of computers and their associated peripheral media are being increasingly used in library and information services for acquisition, storage, manipulating, processing and repackaging, dissemination, transmission, an improving the quality of products and services of library and information centers.

Library software has become the most powerful tool for changing the scenario of libraries from traditional to automated, from automated to electronic, from electronic to digital, and from digital to virtual. Software has become increasingly more powerful and the introduction of new applications has increased. Producing customized programs has become easier with software development packages. A number of software packages have been developed for use in the management and dissemination of data in libraries. Some have been developed by commercial agencies; others have been developed indigenously by institutions for in-house use; and there is yet another class where customized applications have been generated on the basis of existing software.

4. Objectives of Research

- To find out best library management software and to set priorities for software selection.
- To evaluate national level library management softwares.
- To point-out views of librarians & users about software, which is used for automation.

5. Hypotheses

- SOUL 2.0 is the best compatible to library needs.
- Priority for software selection as SOUL 2.0, LIBRARIAN, LIBMAN, MAITRAYEE, GRANTHALAYA, SANJAY, KOHA etc.
- Most of librarians are satisfied with SOUL 2.0 and LIBMAN.

6. Scope and Limitations

- Present paper focused on only national level application softwares and open source software.
- For identifying, evaluating a packaged software for library the following criterias suggested by GAROOGAIN are adopted, a) Capabilities b) Maintenance support c) User friendliness d) Documentation e) Cost f) Flexibility g) updating and revision.
- Present study confines itself to academic libraries.

7. Research Methodology

Present research is a survey research in which random sampling method is used while collecting data. Primary and secondary information sources also used for research work. To select questionnaire as a tool for data collection. Structured questionnaires analysed with the help of SPSS (version 16.0) software.

7.1. Data collection Procedure:

Automated libraries were chosen as a sample for data gathering against questionnaires. Thus 400 automated libraries were chosen for questionnaire and mail by speed post and online

also. The sample included academic libraries in India. Due to mailing questionnaires by speed post and online, the response rate against the questionnaire was 72.75 (291 out of 400) percent. Sections of this questionnaire was consist general questions about the library and different aspects of software being used.

8. Major Findings

- As per opinions, commercial library software SOUL is more efficient than other software. LIBSOFT is less efficient than other commercial library software. Open source library software Koha is more efficient than others.
- About capabilities of various library management software packages, it is found that, SOUL is on top level. Secondly LIBMAN and DELPLUS also capable packages for automation. Open source software KOHA and E-Granthalaya are best than other open source software packages.
- On the basis of evaluation criteria maintenance, commercial library software Librarian and LIBMAN are excellent. In this criteria open source software KOHA is better than Nalanda and others.
- Commercial library management software packages, Librarian, SOUL, DELPLUS and LIBMAN are user-friendly packages for automation. Open source software KOHA and E-Granthalaya are also user friendly other than other open source software packages.
- Documentation is powerful in SOUL, DELSIS, Libsys and Librarian software packages. Open source software KOHA and E-Granthalaya are also powerful software packages.
- SOUL and DELPLUS commercial library management software packages are more cost effective. And open source software packages are always free of cost.
- Technical support for DELPLUS, SOUL, Librarian and LIBMAN are more than other software.
- Updating facility of SOUL, Librarian and SLIM is excellent. And open source software packages are also good in this sense.
- Documentation of SOUL are significantly higher than its capabilities, maintenance, user-friendly, cost, technical support and updating.
- Documentation of LIBSYS are also significantly higher than its capabilities, maintenance, user-friendly, cost, technical support and updation in LIBSYS.
- Technical support of LIBSOFT is significantly higher than its documentation, capabilities, maintenance, userfriendly, cost and updation.
- In SLIM library management software package, updation is significantly higher than its documentation, capabilities, maintenance, userfriendly, cost and Tech. support.
- User friendliness of LIBMAN is significantly higher than its documentation, capabilities, maintenance, cost, technical support and updation.
- In open source library management software package KOHA, user friendliness is significantly higher than its documentation, capabilities, maintenance, cost, technical support and updation.
- In E-Granthalaya open source library management software, user friendliness is significantly higher than its documentation, capabilities, maintenance, cost, technical support and updation.

- Commercial software suchika, LIBRARIAN and Trishana are more efficient about acquisition function, LIBSOFT, DELSIS, Tulib and Gyanodaya are less efficient and Koha open source software is also more efficient about acquisition function.
- LIBRARIAN and LIBSYS are best for cataloguing module. And Autolib are less useful than others. Koha open source software is also useful for cataloguing module.
- Circulation module of Tulib (Mean 18), LIBSYS and SOUL are more powerful than other commercial softwares. Open source software Koha is also powerful than other open source softwares.
- Serial control module of DELSIS, SOUL, LIBRARIAN and SLIM is most effective than other commercial softwares. Serial control module of Koha is also effective.
- Important functions of library software (i.e. budget control, accession work, MARC based data entry, OPAC, book lables, barcode lables, catalogue cards printing, user registration, fine calculation, stock taking, creating purchase order, serial holding list and boolean searching.) is available in almost all softwares. But spine lables printing facility is found in 45.54 percent library software, out of which 50 percent are open source software and 44.09 percent are commercial software.

9. Conclusions

Following conclusions are based on the literature review and findings of the study:

- A variety of software are being used by the libraries in India.
- SOUL 2.0 is the best library management software for automation.
- Commercial library software SOUL and open source software KOHA is more efficient.
- SOUL is on top level in capability, documentation, cost effectiveness and updating. Librarian package is higher in maintenance and user friendliness. DELPLUS is best for technical support.
- Most of the libraries are purchasing or developing software without any sharing of experience with each other.
- KOHA and E-Granthalaya open source software are more popular than commercial software packages.
- Priority for software selection is as SOUL, Librarian, DELSIS, LIBSYS, LIBMAN and DELPLUS. Open source software KOHA is also included in priority list.
- Most of the libraries are dissatisfied with the performance of their software.
- LIBRARIAN and LIBSYS are best for cataloguing module.
- Most of the software providers are not providing training facility or online help.
- OPAC service is available in most of all software.
- There is no coordination among the libraries even after using the same software.
- Spine lables printing facility is found in 45.54 percent library software only.
- Most of librarians are satisfied with SOUL 2.0 and LIBMAN.
- All the libraries cannot afford standard software due to their high cost. Some softwares, which as available free of cost are not providing all desired software modules, updating and Technical support.

- Librarian and LIBMAN are excellent in 'Maintenance'. Open source software KOHA is better than Nalanda.
- Serial control module of DELSIS, SOUL, LIBRARIAN and SLIM are most effective than other commercial software. Koha is also effective.
- Most of the libraries are using open source software, due to the availability of essential library software modules.
- Librarians found difficult, to enter the bibliographical details of entire collection and shared cataloging is not found.

Acquired result reveal that software packages fulfilling needs of client but open source packages are found most useful and highest level of satisfaction to their users. All packages providing OPAC service and few packages providing spine lable printing facility. On the basis of evaluation criteria, SOUL and KOHA is most useful for library automation.

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Open Access: A Gateway to Scholarly Publication

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Abstract

This paper outlines the open access movement. It discusses the open access initiatives and its two models are explained. Serials crisis and the publishing cycle is briefly discussed. The features of open access publishing and the beneficiaries are highlighted. Finally some suggestions are provided to promote open access movement.

Keywords: ICT, Open access, scholarly publication

1. Introduction

Earlier open access in libraries meant that the resources of the library be open for the users to read, use and get it's issued unlike only for reference under closed access system. But now in the I.C.T. ear open access refers to all the online materials be accessible to all the users of the internet free of cost which removes price barriers of subscriptions, licensing fees, permission etc any user, anywhere can access full text, read, download, store and take print outs. Since the mid 1980's the journal prices have gone up four times faster than inflation. So the purpose of open access is to provide an accessible alternative journal articles via internet.

Budapest Open access initiative describes as "There are many degrees and kinds of wider and easier access to this literature. By Open access to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, carwl them for indexing, pass them as data to software, or use them or any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over he integrity of heir work and he right to be properly acknowledged and cited".

OA is not limited to literature but can apply to any digital content, from raw and semi-raw to learning objects, music, images, multi-media presentations and software. It can include works that are born digital or to older works, public domain literature and cultural heritage objects which are digitalized later in life. Open access journals are that give open access to all or a sizable part of their articles available in digital or online form free of charge without any pricing restrictions, copyright laws and licensing fees.

2. The Open Access Movement evolved due to:

- The over flowing output of Scholarly publishing
- The decrease in library budgets compared to increasing prices of journals
- The challenges of digital preservation
- Many scholarly periodicals are in the hands of a limited number of large commercial publishing houses.
- In the last 20 years many commercial publishers have merged due to which their market share has increased.
- Monopoly of some of the publishers and escalating the cost of subscription to journals for the past several years.

- Subscriptions of electronic journal and databases are increasing day by day.
- Electronic materials are not available when they go off-line.

3. OA Initiatives

The open access movement in scholarly publishing was initiated in the year 2003. The nature, the scientist and wall street journal's were ranked pioneers in promoting the concept free for all another remarkable open access launch in the same year was the public library of science. But the authors had to pay $1500 for each article published. Elsevier having 1800 journal articles, in the year 2004 changed their policy on author's rights and granted rights to post their own versions and not Elsevier's published version of the final text in an open access e-print archives at their own institution. Similarly Springer verlag another important scholarly publisher having more than 1000 journals came up with a new policy for authors to pay a fee of $3000 to have their articles made freely available for anyone to read, download or print "thought they had permitted its authors to post their versions of published articles in e-print archives. The well come trust also provides all its research findings open to public in the medical field and pharmaceutical areas so that public get wider access to the knowledge of health and medical sciences.

4. Features of Open Access (OA)

- Open access literature is not free to produce and publish, but it is less expensive to produce that conventionally published literature and also less expensive that priced online only literature.
- As long as the full text is OA, price add-ons are compatible with OA. If the enhancements are costly to provide the producers may have to charge accordingly. For some OA journals, priced add-ons take care of part of the revenue.
- OA is compatible with copyright laws, peer reviews, preservation, career advancements, indexing etc.
- The important feature is that the bills are not paid by the readers and hence there are no access barriers.
- The OA project is a constructive programme and not destructive. It does not aim at putting non-OA journals or publishers out of business.
- OA is a king of access, not a business mode, license or content.

4.1. Open Access Barriers

Open Access is not synonymous with universal access, but it has the following few access barriers such as:

- Filtering and censorship barriers: many governments, employers limit the access to all.
- Language barriers: Almost all the online literature is in English or just in one language and machine translation is weak.
- Handicap access barriers: Handicapped users are not yet able to access most of the websites.
- Connectivity barriers: The digital divide keeps billions of people including scholars, offline.

4.2. Two Models of OA

There are two modes of delivering open access to research articles. Lone mode is OA journals and the other is OA repositories. The main distinction between the two is open access journals conduct peer reviews and OA archives do not.

4.2.1. OA journal (Gold OA)

- It Conducts peer reviews
- Authors are allowed to retain copyright
- Some publishers of OA journals re for non-profit. Eg: Public library of science or (PLOS) and some are for profit eg. Biomed central.

4.2.2. OA archives or repositories (Green OA)

- OA archives do not conduct peer reviews.
- OA archives contain preprints, post prints or both and also contain e-prints theses and dissertations course materials, learning objects, data files, audio and video files, institutional records, or any other kind of digital file.
- OA archives can provide access to all their contents or can also allow authors to control over the accessibility to their works, OA archives comply with the open archives initiative (OA) protocol for metadata harvesting which facilitates interoperable. In this the users can find a work in an OAI-complaint archive without knowing actually which archive exist, where they are located or what they contain.

5. Web 2.0 Technologies and open Access

Web 2.0 technologies have many features wherein the authors can exchange their immediate research findings or correlate in public mail forums, link their articles and commonly work on particular research and communicate to their groups through these forums. RSS (Really Simple Syndication) is an XML-based syndication format for distributing content on the web. RSS Readers are programs designed to gather information from many different sources and display them in a single interface. Most RSS readers are available to download free on the Web. We can choose between desktop readers or web-based options. Desktop readers work through software installed on our computer. Research involving a team work can work together wherever they may be, commonly share their findings and also arrive at an agreement with the publishers and publish their research in the open access platform for the benefit of the users.

6. OA beneficiaries

- **Authors:** OA enables increased visibility and impact of their work giving them world wide audience larger than that of any subscription based journal. No matter how prestigious or popular.
- **Readers:** OA provides barrier free access to the literature for their research purpose not limited with library budgets where they may have access privileges. Free software will help readers to access full text articles, indexing, mining, summarizing, translating, querying, linking, alerting and recommending.
- **Teachers and Students:** OA treats rich and poor on equal basis for these resources and permits to reproduce and distribute content.
- **Libraries:** OA is a solution for the rising prices of periodicals. It also allows the users to

access without any barrier. When the library budgets are limited the librarians can provides the user community with the resources they need for research purpose thereby help the university in achieving its standards and increase its research profile.

- **Journal publishers:** OA makes their articles more visible, discoverable, retrievable and useful. If a journal is OA it can use this superior visibility to attract submissions and advertising. If a subscription based journal provides OA to some of its content or say back issues after a certain period then it can use its increased visibility to attract all the same benefits plus subscriptions.
- **Funding Agencies:** When the results of the research are made widely available, more retrievable and more useful through OA the return on investment in research will be increased. OA provides public access to the results of publicly funded research thereby serving the funding agency.
- **Government:** As funding agency the government benefit from OA in all the ways mentioned above. OA promotes democracy by sharing government information as widely and as fast as possible.
- **Citizens:** OA gives access to peer reviewed literature for which they have indirectly paid through taxes. OA provides access to scholarly literature to researchers, physicians, technologists, manufactures and doctor etc.

7. Conclusion and Suggestions

The authors are not paid royalties by the publishers but faculty can gain as their research reputation grows, resulting in salary increase, job offers, speaker fees, consultancies etc. it is important to note that authors are charged processing fee and libraries pay as subscription thereby paying twice for the same will be avoided.

The smart publishers can be challenged if the faculty and researchers of an institution agree to deposit their publications at their institution for the benefit of their user community. The libraries can use open source software's like open journal system (OJS) which helps authors to publish their articles online with Email notification and commenting ability for readers. It provides complete context sensitive help online. Create digital repository with Dspace and Fedora software and convince their faculty to deposit their publications in the intranet group. The libraries can also collect other open access journals and make it available to the user community by organizing them and proving a link form the library web page.

The libraries should create awareness about the importance of open access movement for author's wide publicity of research output and thereby benefit to the user community. The institution and funding agencies should sponsor their researchers or faculty for posting their publications in an open access platform.

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Open Access and Open Source Tools for LIS Professionals: *Some Insights*

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Abstract

Access to published information is of interest to many users. Library and information science (LIS) professionals are especially interested in gaining access and guiding users to all available information. though they are often dependent on traditional subscription-based library resources, moving away from the costly ones and replacing them with usage of available open access sources, presents practitioners with a significant budget consideration in today's shrinking economy. This paper highlights utilization of availability of open sources through use innovative technological tools, techniques and skills.

Keywords: Open access, Initiatives, Repositories, Free webs, Open access initiatives.

1. Introduction

The open access has arrived and is more than just a fad or some idealistic dream. The benefits of open access are manifest, as are the many challenges posed by shifting towards broader support for open access. The academic and other libraries continue to afford commercially published journals, especially those within the sciences, technology, and medicine, and still build their humanities, social sciences, and general monographic collections. Libraries are positioned to be at the forefront of the open access revolution, but it is altogether possible that they will allow themselves to be left behind. They stand to gain much by investigating potential new roles they might play in the transforming landscape of scholarly communication, but first they must consider the many ways in which they may be affected by open access, weighing significant costs against significant benefits and always with their communities' best interests in mind. A library is not a building stacked with books it is a repository and source of information and ideas, a place for learning and enquiry, and for the generation of thought and the creation of new knowledge. libraries in particular have the potential to bridge the gap between the 'information poor' and the 'information rich' by ensuring that people from all sectors and settings of the society and economy across the India have easy to access knowledge they seek.

2. Open access: A Conceptual Framework

In the history and landmark event with respect Open Access is ***"Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities"*** emerged in 2003 conference held at Berlin hosted by Max Planck Society. The Budapest Open Access Initiative arises from a small but lively meeting convened in Budapest by the Open Society Institute (OSI) on December 1-2, 2001. The purpose of the meeting was to accelerate progress in the international effort to make research articles in all academic fields freely available on the internet. The participants represented many points of view, many academic disciplines, and many nations, and had experience with many of the ongoing initiatives that make up the open access movement.

3. Open Access Initiatives

- **1971 - Project** Gutenberg launched on the Internet (originally as an FTP site). There are now 18,000 free books online.
- **1997** - Research Papers in Economics (RePEc), and PubMed were launched (which includes free access to Medline).

- **1998** - Scholarly Publishing and Academic Resources Coalition (SPARC) was launched by ARL, and later SPARC-Europe was formed.
- **1999** --- The Open Archives Initiative (OAI) was launched
- **2000, "PubMed Central"** launched to supplement PubMed's citations and abstracts with free full-text articles.
- **2001**, The Australian National University launched its **E-Print** Repository, the first OAI-compliant institutional archive.
- **2001**, The Budapest Open Access Initiative
- **2003** , Landmark Year in the history of OAI
- The Bethesda Statement on Open Access Publishing.
- The Public Library of Science launched its first open-access journal, PLoS Biology.
- The Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities was released by the Max Planck Society and European Cultural Heritage Online.
- The UN World Summit on the Information Society approved a "Declaration of Principles and Plan of Action" containing endorsements of open access to scientific information.
- **2004**, The National Library of Canada started providing open access to doctoral dissertations on deposit at Theses Canada.
- **2004,** Elsevier, the world's **largest publisher** of medical and scientific literature announced its new policy permitting authors to post the final editions of their full-text.
- **2004,** the 34 country signatories to the OECD issued the Declaration on Access to Research Data from Public Funding.

4. Changing the Library Operations

4.1. Information as a conversation: Librarians are also beginning to use blogs to engage patrons in an ongoing discourse. They have created blogs, front and center on their homepage, on a variety of topics from building construction to the new automation system. One of the benefits of blogs as opposed to a feedback link on the library web site is that blogs encourage an ongoing dialogue between patron and staff. They also create a sense of community because everyone can see the comments and participate in the conversation.

4.2. The changing landscape of the Internet: Anyone who has used GoogleMaps to find the closest pizza parlor to his or her house, or to map directions to an unfamiliar location, has experienced Web 2.0, the latest web development, expected to transform the Internet into a highly interactive environment independent of browser or operating system. Web 2.0 uses a powerful set of tools known as AJAX, or asynchronous JavaScript and XML. AJAX pulls data from multiple, disparate systems and renders it into a rich, highly interactive interface in the user's browser.

4.3. Increase in remote access to library services: With the proliferation of portable computing devices and a generation of new library users who have never known a world without computers, libraries are offering more remote services (Rose N, 2005). Virtual reference, access to the library catalog from the PDA, and wireless Internet access for patrons are some common examples of remote service.

4.4. Libraries have a long history of cooperating in order to provide improved services to their users and to reduce their costs. In my area of interest - library automation - consortia and other cooperative arrangements provide opportunities to deliver access to broader collections to library users at lower costs to participating libraries.

4.5. Characteristics of the new generation of library interfaces include: relevance ranking, faceted navigation, search result clustering, breadcrumb trails, and a faster, more comprehensive search environment.

4.6. Today, there's an uneven deployment of Web technologies in libraries. On the one hand, we see many well-designed Web sites that deliver library services to users. Lots of these sites already embrace many aspects of Web 2.0.1 also see a large number of libraries that either have no Web site at all or that try to get by with a site that's underdeveloped and not able to meet the expectations of the current generation of Web users.

4.7. One of the most interesting recent developments in the digital library arena involves the Open Archives Initiative (OAI). Developed only within the last few years, many of the major players in digital libraries and scholarly communications have lent strong support to this new approach to information discovery, search, and retrieval and will likely be a key piece of the future digital library landscape

5. Need and Purpose of Open Access

Here it's some of issues are to promote get beneficiary of open access and source moment in present libraries and innovative tools for effective utilize availability e-resources and services to users in changing library environment. a) *Retrieve* now days most of source available in print as well as electronic forms, in this regards the user and librarian both are in confusion to choose which is good for reading and build their collections, b) *Search/access* in traditional library system sources are available in particular location, the user should go and get their need information. Sometime this is time consuming for the users and Library professional when they have hug information/documents in the library. The open access and source tool is became backbone for the E-Learning, Distance Learning and Lifelong learning, c) *Foreign documents*, d) *Time/space*, physical document are expecting more space for arrangement and difficult to know the status and identification of the documents, e) *Restricted sources* like thesis/dissertations, reports etc., are kept in restricted, but new innovative tools such Open sources, Software, Web tools are made that types of information also easily to reach to the user Ex. Vidyanidhi - Digital Library and E-Scholarship Portal, Mysore is kept more than 6000 number of electronic thesis for free access, f) *Information explosion* is impact in present libraries, because libraries not able to procurement all information which are published by different publisher, in this critical view the e-source most helpful to fill gap of the our library resources, g) *Cost* is most impact in collection development and its routine works, because library is an a non-profit organization and most organizations are not able give sufficient financial back for their libraries to adapting new innovative techniques and build their library collections, h) *Co-operations* at present India J-GATE (JCCC) from Informatics India, IITs-BARC-TIFR Cooperation, TIFR Libraries Consortium, ISI-Library Consortia Deals, SNDT Consortia of LISA, STI Network, FORSA Libraries Consortia, ICAST Consortia, IIM Libraries Consortia, INDEST Consortia, CSIR Consortia, HELINET Consortium, VIC Consortium of ICICI-Knowledge Park, ISRO Libraries Consortia and INFLIBNET consortium under UGC InfoNet, WBUT Consortium etc., initiatives of India consortia's are promoting for the access, i) *Durability* also here we concerning promote to the open access, the print resources are difficult to maintain in proper way and its needs more man power to maintain and operating. The present public libraries as well as academic libraries in India still also struggling to with adapting new innovative tools and techniques for reset

of the library routine's and services and technological tools of Open source and Open access try to fill gab of digital divide between traditional and Virtual library system in rural and urban environment.

6. Technological tools for Open access

6.1 Availability v/s Usability

Electronic Publishing and e-dataabase	Open access – journals
Online Catalogue's: Worldcat, OPAC, OCLC	Open access- books
CD-ROM technology, Micrographic forms	Multimedia, Lib_Web_Cats

Open access journals are scholarly journals that are available to the reader "without financial or other barrier other than access to the internet itself." To enhance the access of these collections by creating direct links to the journals and their articles included in this A-to-Z-list. All information about the included journal collections is available at the websites of the included projects. These websites are directly accessible from the Open Science Directory. The Open Science Directory will not replace these programs. The some important e-resources available flat forms are following such as The Pubmed central, DOAJ, Open Science Directory, Open Access Working Group (OPWG), Online Access to Research in the Environment (OARE), HINARI Programme, INASP-PERI by International council for Science (ICSU), Social Science Open Access Repository (SSOAR), Access to Global Online Research in Agriculture (AGORA), ROAR, Open DOAR, Medknow publication, MedInd biomedical journals, The Indian National Science Academy (INSA), Indian Journals.com, Open J-Gate, Public Library of Science (PloS), Hindawi Publishing Corporation, Springer, Thomson etc., impotents bodies continually engaging to provide open database in the way of some time restricted and most of time in open mode.

6.2. Technologies v/s Tools

Most libraries today operate in partnership with a variety of other organizations, including their parent institutions such as universities, colleges, agencies, or local government; other peer libraries; and suppliers of all varieties. More importantly, library users access our services with an ever-broader array of devices - some with desktops, laptops, smart phones, or tablets and others through some intervening application such as their academic courseware system, corporate intranet, or even social networking sites such as Facebook. This reality of interconnectedness should shape the way that libraries adopt technologies as well as guide those who create software for libraries.

In recent years, libraries have turned away from the traditional online catalog to embrace a new genre of public interfaces that go by names such as next-generation library catalogs, discovery interfaces, or discovery services. These new services aim to revitalize the stodgy online sources of the past to deliver to library patrons an experience of the collections and services of the library more in tune with the expectations set by the mainstream web. With increasing overlap and even competition to serve the information needs of library patrons by commercial destinations, it seems essential for libraries to offer the most compelling approaches possible for providing access to their valuable resources.

Discovery of services have come a long way in improving the ways that libraries provide patron with access to their collection. This genre of software has become pretty well established since its introduction almost a decade ago. Libraries are increasingly abandoning the Integrated Library System (ILS) online catalog modules or relegating them to specialized use. Discovery services take boarder view of library collections, attempting not just to address the material managed directly in the library's ILS, but also to find ways to incorporate the content available to users by virtue of subscription to electronic resources and to specialized collections of digitized documents, images, sound recordings and etc's to make utilized through following technological tools

Repositories	Library/free websites
Web technologies: Library, web 2.0, 3.0	Social Networking
Portals	Gateways
Directories tools	Online catalogs
Open URL	

6.3. Technology and Technological Skills for LIS Professionals

Libraries today have to seek out strategies that promote stronger engagement with their users. In these times where so many public libraries face threats of budget reductions, it's important that they demonstrate vigorous use of their facilities and services and satisfy patrons who will help defend them and lend support when needed. Smart use of technology can help libraries strengthen their programs and facilities in ways that foster better services, higher patron satisfaction, and more positive perceptions. Libraries should be use technology in creative and innovative ways that enable libraries to offer new kinds of services or to revitalize an existing activity in a way that becomes more interesting and appealing to library users.

Library is concern very limited access to library resources is because budget constraints, many college libraries not able to subscribe e-resources even though these resources are very useful to the present day user's community. In these circumstances the availability of open access resources are became gift for the all type's libraries in the current technological environment.

6.3.1. Free website

Those involved in developing library Web sites can consider a number of measures to ensure that their own site runs counter to this trend and sees increased use over time. Some helpful techniques include search engine optimization to ensure the best possible exposure in the search engines and the highest rate of delivery of users from search engine results to your Web site, help out the Search Engines through XML Sitemaps, make good use of meta tags in Web page headers, leverage social bookmarking, and use RSS to draw users to your site. But more than anything else, the key to increasing interesting your library's Web presence involves offering compelling and interesting content. Design your site to enhance, promote, and deliver access to the library's collections and services

Free website is most powerfully tool for providing the information to their user, now days many more web developer is providing facilitate to create own site's and every one can create it, who have little about knowledge of IT and HTML, then after creation of sit, just write a formal letter to all e-resources and service provider for give permission who are providing free access facilities through the institutional repositories, portal, information gateways etc and just give links to all from the your own site and create user awareness how to use and utilize it. It most helps to user to utilizing availability of e-resources on web. Just go on searching on the internet and attempt to enter the search term "free web site".

6.3.2. Process of creating free web site

- It is significant for you to know your objective why you want to have a website.
- Make an effort to include valuable information into your free web site.
- To improve the targeted visitors of one's website. So, website readers are significant.
- To make your own website, you will feel like you have probably created one of the most important matters in your life

- When you through, you may check out your free web site every now and then and do some edits on it to make it up-to-date.
- To create a list about the contents which you are proceeding to set in for your website.
- It is often a wonderful option of yours by the time you decide to produce anything that may be valuable.

6.3.3. Personal Experience

We made a free library site http://excelbusinessacademy.yolasite.com/ for 'Excel Business Academy' Bangalore, with using "Yalasitecom" freewebs applications to utilization of open access database. It have 8 contents in the site such as a) *Home*: it having brief information about library and Institute, b) *E-resources*, page we give links which are open access journals, books database's available in the field of Business and Management, then c) *Bulletin* board it have news paper clippings, faculty notes, previous years question papers, institutional events, d) *Gallery*, next contents e) *Services*, it is provide guidance for the library and its usage, f) *E-database* giving facilitate make it use of other Institutional Repository database like IIM Kozhikode, Cambridge university etc., both National and International institutional database, g) *E-News papers*, here we giving links of online news paper, magazines, dictionaries, encyclopedias etc., which are freely available in internet, lastly h) *Contacts* give the facilitate referral and reference service to users through e-mail and ask to librarian.

6.4. Portal- Gateways and Social networks

The library and information science (LIS) professionals working in a college library have to take the advantages and actively involved in customizing all the open access resources which are available in different databases, directories, archives, e-resource subject gateways according to the courses offered by the college or institution. On the other side availability of open sources software (OSS) helps to LIS professional create a good web portal or electronic gateway to access and management of open access resources and services.

6.5. Institutional Repositories

The present libraries have been increasingly involved in the creation of digital library collections and other content repositories. It's not unusual at all for libraries to be involved in digitizing collections of manuscripts, photographs, newspapers, postcards, or multimedia content such as audio recordings and radio or television programming. Most of libraries have become increasingly active in building repositories of content produced within their institutions and in other aspects of publishing scholarly content as well. While books and journals - both the print and electronic variety - stand as the mainstays of library content offerings, it's the collections of rare, historic, or local material that provide the greatest opportunity to increase the impact that the library makes on its community. These collections of nontraditional content provide the best jewels of the library, and delivering them digitally can amplify their impact tremendously. As per reference of the ROAR (http://roar.eprints.org/, 14 January 2013) indicating at that more than 2712 Institutions and organizations was successfully implemented of the IR's in all over the world, to access to scholarly and institutional resources using open source software's. The following table is indicating, the status of most usable open software in various organizations in all over the world.

DSpace	Eprints	Bepress	OPUS	ETD-db	Fedora	GSDL	MiTOS	DIGIBIB	DiVA	Others
1321+	482+	172+	50+	30+	37+	19+	17+	19+	17+	548+

7. Conclusion

Open access resources is an emerging tool for many libraries and information centers is because of many libraries are may not able to offer high paid subscription to scholarly publications published by prominent publishers of the world. The escalation of prices for the scholarly subscriptions bring minimizing or cancellation of e-resources. The open access is a mantra of the 21st century really a good boon for the all types of libraries to co-up with the budget constraints especially under developing and developing countries including India context. One of the top issues in the present library arena in the recent years involves the development of a new generation of interfaces to replace online services that have fallen behind the expectation of Web savvy library users. This aspect of libraries currently attracts incredible interest almost all libraries are giving consideration to how they can bring the search tools they offer for their collections and their overall Web presence up to the level expected on the Web today. Even in this early point in the adoption cycle of new library interfaces, it's time to press onward toward even more effective and powerful search tools.

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Open E-Resources for Academic Libraries

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Abstract

A blend of E-resources is available freely on the web. Selection of proper resource is really a challenge. This article throws light on different types of Electronic resources and different sources available under each heading. Open Access movement brought revolution especially in case of electronic resources. Many volunteers started hosting resources on web as everyone can access to it and supports the theory 'knowledge has to be shared'. Here is a glimpse of E-resources available in Science, Social Science field.

Keywords: Open Access resources; Electronic resources; Academic Libraries.

1. Introduction

E-resources are resources in which information is stored electronically and it can be accessible through electronic systems and network environment. E-resources are a very broad term that includes a variety of different file formats. Instant access is quite possible with E-resources within a fraction of second. Acquiring knowledge from E-Books, E-Journals, Online resources, CDROM, Internet with related Databases are the impact of E-Resources.

Electronic resources are made available on internet in most of the disciplines of knowledge. It creates new capabilities and opportunities for students, faculty, scientists, researchers and general public in meeting of the informational needs. Day by day open access resources are increasing on internet in most of branches of knowledge.

2. Objectives

- To assess the availability of Library Open E-Resources
- To identify availability of different Open E-Resources
- To assess the types of Electronic Accessing Mode

3. Open Access E-resources in Academic Libraries

Information and Communication Technology (ICT) has made a major impact on students which automatically reflect on Academic Libraries. Now a days students and faculty members are using E-Books, E-Journals, E-Courseware in addition to print Books. They are very much dependant on Internet, in other words called as Googlerians.

4. Types of E-resources

4.1. E-Journals

University of Glasgow library defines e-journal as "Any journal that is available over the internet cannbe called an electronic journal" (Bhatt 2005). Jones and Cook say that "An e-journal is a digital periodical that publishes on the Internet or www. E-journals are primarily those journals that are published and distributed in electronic format as CDROMs or online on the Internet" (Bhatt 2005).

4.1.1. Some Examples of the Open Access e-Journals

- Directory of Open Access Journals (DOAJ): www.doaj.org
- Bentham Science Publishers http://www.benthamscience.com/a-z.htm
- BioMed Central (STM) http://www.biomedcentral.com/
- Hindawi Publishing Corporation http://www.hindawi.com/search.aspx
- Indian Academy of Sciences http://www.ias.ac.in/
- Indian Journals http://indianjournals.com/ijor.aspx
- PubMed Central http://www.ncbi.nlm.nih.gov/pmc/
- Gateway For Free E-journals http://www.icast.org.in/ejournal/ejournal.php
- Open Access Journals: http://www.isibang.ac.in/~library/openaccessjournals.html
- Gateway For Free E-journals http://pp5lw2jm6m.search.serialssolutions.com/?L=PP5LW2JM6M

5. E-Books

An electronic book (variously, e-book, ebook, digital book, or even e-edition) is a book-length publication in digital form, consisting of text, images, or both, and produced on, published through, and readable on computers or other electronic devices. An electronic book (also e-book, ebook, digital book) is a text- and image-based publication in digital form produced on, published by, and readable on computers or other digital devices. E-books are presented visually or aurally, with the audio book as a precursor to, and limited exemplum of, electronic publishing's potential. Components other than text have been considered enhancements, including multimedia (sound, images, film/video/animated graphics) (4)

5.1. Some Examples of the Open Access E-Books:

- Google Books http://books.google.co.in/: Try a search on Google Books. If the book is out of copyright, or the publisher has given us permission, you'll be able to see a preview of the book, and in some cases the entire text. If it's in the public domain, you're free to download a PDF copy.
- RapidSearch http://rapidsearch.infobind.com/: Rapid Search helps you search full Software, Books, Movies, Games, Scripts and many resources 100% free
- The Open Library http://openlibrary.org/: Over 23,000 public available free e-books
- FreeFictionBooks http://www.freefictionbooks.org/: Universal Digital Library http://www.ulib.org/index.html
- Community Texts http://archive.org/details/opensource
- Directory of Open Access Books www.doab.com
- Book Finder www.bkfinder.com
- OAPEN Library http://www.oapen.org/home?brand=oapen

6. E-Courseware

Training material on a diskette, CD or DVD, or downloaded from the internet, for use with a self-learning or coach assisted program. Educational software designed especially for classroom

use (5). Courseware is educational material intended as kits for teachers or trainers or as tutorials for students, usually packaged for use with a computer. Courseware can encompass any knowledge area, but information technology subjects are most common. Courseware is frequently used for delivering education about the personal computer and its most popular business applications, such as word processing and spreadsheet programs. (6)

MIT OpenCourseWare http://ocw.mit.edu/: MIT offers a huge variety of free online course materials on various topics, engineering being one of them. They have sections for Aeronautics and Astronautics, Biological Engineering, Chemical Engineering, Civil and Environmental Engineering, Electrical Engineering and Computer Science, Engineering Systems Division, Materials Science and Engineering, Mechanical Engineering, and Nuclear Science and Engineering.

TUDelft Open Courseware http://ocw.tudelft.nl/: Collection of free online courses from the Delft University of Technology. Subjects include water management, microelectronics, offshore Engineering, Nanoscience, Media and Knowledge engineering, and many others.

Biological and Irrigation Engineering:
http://ocw.usu.edu/Biological_and_Irrigation_Engineering/

Civil and Environmental Engineering:
http://ocw.usu.edu/Civil_and_Environmental_Engineering/

Electrical and Computer engineering
http://ocw.usu.edu/Electrical_and_Computer_Engineering/

UC Berkley Webcasts http://webcast.berkeley.edu/courses.php: Free online webcasts of various courses from UC Berkely. These are actual UC Berkeley Courses recorded and posted as webcasts online shortly after they're recorded, so you can actually follow along with current course offerings. They also have archived courses going back to the Fall 2001 semester.

Carnegie Mellon Open Learning Initiative:
http://oli.web.cmu.edu/openlearning/forstudents/freecourses

NPTEL Free Online Courses: A collection of free online course materials in both video and text formats published as a joint venture between the Indian Institutes of Technology & the Indian Institute of Science. Includes basic, civil, computer, electrical, electronics & communication, mechanical, ocean, biotechnology, mining, and metallurgy engineering course

JHSPH open course ware http://ocw.jhsph.edu/

E-Clipping: The main object of E-Clipping is retrospective search and comprehensive analysis of new items. It facilities users to retrieve news clips by simple clicks the news to view them by specific date duration or news source.

7. ETD

All full-text publications are freely accessible via the Internet. MIT, Berkeley, Stanford and many Indian Universities already initiated this project to facilitate the creation, archiving and accessing of doctoral theses.

Worldwide Electronic Theses and Dissertations Index
http://www.*etd.ohiolink.edu/world.cgi*

NDLTD : Networked Digital Library of Theses and Dissertations *http://www.ndltd.org/*

DART-Europe E-Theses Portal *http://www.dart-europe.eu/basic-search.php*

Australian Digital Theses Program *http://research.anu.edu.au/thesis/*

British Library, ETHOS (Electronic Theses Online Service) *http://ethos.bl.uk/Home.do*

Vidyanidhi http://www.vidyanidhi.org.in/

Networked Digital Library http://www.ndltd.org/

MGU PhD Theses Archive http://www.mgutheses.org/

Shodhganga http://shodhganga.inflibnet.ac.in/

IISc Repository of Theses and Dissertations http://eprints.iisc.ernet.in/

8. E-Patents

The exclusive right, granted by the government, to make use of an invention or process for a specific period of time, usually 14 years. Some of the important Patents Organizations accessed through online are mentioned below. (7)

- World Intellectual Property Organization http://www.wipo.int/portal
- Google Patents Search http://www.google.com/patents
- Free Patents Online http://www.freepatentsonline.com/
- US Patent and Trademark Office http://patft.uspto.gov/
- CIPO: Canadian Intellectual Property Office http://brevets-patents.ic.gc.ca/

9. E-Standards

- NSSN : Search Engine for Global Standards http://www.nssn.org/
- International Organization For Standardization (ISO) http://www.iso.org/iso/
- ANSI: American National Standards Institute http://www.ansi.org/
- BSI : British Standards Institution http://www.bsigroup.com/
- Canadian Standards Association http://www.csa.ca/cm/ca/en/home

10. E-Database

More and more e-database in bibliographic as well as full text sources are available and also added up frequently with the growing demand of users. Some databases are networked solutions. Web enabled databases are easily accessible from user desktops through web browser while the networked solutions many require special installation at client side.

Examples:

- International Information System for Agricultural Science and Technology) (AGRIS) http://forestportal.efi.int/view.php?id=1990&r=4
- MEDLARS
- ERIC database on education. http://www.eric.ed.gov/

- Agricultural online access (Agicola) http://www.library.sfsu.edu/find/dbs/moreinfo.php?db=11
- MEDLINE http://www.nlm.nih.gov/bsd/pmresources.html
- Indian Citation Index: http://www.indiancitationindex.com/ici.aspx

11. Abstracting and indexing database

Abstracts, like all summaries, cover the main points of a piece of writing. Unlike executive summaries written for non-specialist audiences, abstracts use the same level of technical language and expertise found in the article itself. And unlike general summaries which can be adapted in many ways to meet various readers' and writers' needs, abstracts are typically 150 to 250 words and follow set patterns.

11.1. Nature Publishing Group's publication

http://www.nature.com/authors/author_resources/about_indexing.html

Dialog http://www.dialog.lk/

CAS-Cambridge Scientific Abstracts http://www.csa.com/e_products/databases-collections.php

OCLC First search http://firstsearch.oclc.org/

Ovid: Ovid® http://www.ovid.com/webapp/wcs/stores/servlet/topCategories?storeId=13051&catalogId=13151&langId=-1

12. Blogs

To write entries in, add material to, or maintain a weblog about himself or others or any Topic or about a product or Organization is called as Blog.

Newton Excel Bach *http://newtonexcelbach.wordpress:* Authored by Doug Jenkins, this is a blog geared toward people working with excel in scientific/engineering applications.

Engineering Library: 39 Fantastic Free Resources for Students *http://www.overheadcranetec.com/blog/resources/engineering-library-39-free-resources-for-students/*

13. Nitte Meenakshi Institute of Technology http://librarynmit.wordpress.com

13.1. E-Discuss Forums

A discussion board (known also by various other names such as *discussion group, discussion forum, message board,* and *online forum*) is a general term for any online "bulletin board" where you can leave and expect to see responses to messages you have left. Or you can just read the board. The first discussion boards were available on bulletin board systems. On the Internet, Usenet provides thousands of discussion boards; these can now sometimes be viewed from a Web browser.(8)

- **Eng-Tips** http://www.eng-tips.com/: A relatively popular engineering forum with topical discussion focused on most engineering disciplines.

- **Physics Forums Engineering Section:** A physics discussion forum with an active engineering section. Topics include General Engineering, Engineering Systems & Design, Mechanical Engineering, Electrical Engineering, Materials & Chemical Engineering, and Nuclear Engineering http://www.physicsforums.com/forumdisplay.php?f=98
- **Engineer Boards:** Discussion forum with very active exam prep and exam discussion topics, among others. http://engineerboards.com/

13.2. E-Gateways

A gateway is a node that allows you to gain entrance into a network and vice versa. On the Internet the node which is the stopping point can be a gateway or a host node. A computer that controls the traffic your network or your ISP (Internet Service Provider) receives is a node. In most homes a gateway is the device provided by the Internet Service Provider that connects users to the internet. (9)

Online Reference Zone http://www.isibang.ac.in/~library/onlinerz/index2.html

A Gateway of online open access Reference sources in Science and Technology. A click on any of the above subject tabs will lead to a web page displaying the category of reference resources that are included in this zone such as Dictionaries, Encyclopaedias etc. A second click will take the user to the door of reference resource from which actual information can be found. A federated search facility is also provided.

Gateways for free E-Journals: http://www.icast.org.in/ejournal/ejournal.php

ICAST provides Access to 700 Free E-journals covering Subjects like Business & Managment, Chemistry, Earth Sciences, Engineering, Environmental Sciences, General Works, Health Sciences, Information Technology, Library Science,Life Sciences, Material Science, Mathematics, Media and Communication, Physics & Social Sciences.

13. E- Biographies

A **biography** is a detailed description or account of someone's life. It entails more than basic facts (education, work, relationships, and death), a biography also portrays a subject's experience of these events.(10)

- Biographical Dictionary http://www.s9.com/
- Biography Center http://www.biography-center.com/
- Biography.com http://www.biography.com/
- Composers Index http://www.voiceoflyrics.com/compo/_compo_e.html
- Women's Biographies http://www.distinguishedwomen.com/
- Nobel Prize Winners http://www.almaz.com/nobel/

14. Advantages Open Access E-Resources

There are number of advantages of electronic resources such as.

- It allows remote access.
- It can be used by many users simultaneously.
- It is interactive and allows interaction between author/publisher and users.

- It provides timely access to documents.
- It supports searching Capabilities.
- It accommodates unique features such as links to related items.
- It eliminates printing and postage cost.
- It do not require physical Processing.
- It can easily merge with altering services.
- It can solve the problems of missing issues of Journals.

15. Disadvantages of Open Access E-Resources

The following are the disadvantages of E-Resources

- Initial high infrastructure and installation cost.
- Need special equipments to access.
- Lack of Compatibility among different publishers.
- Hardware and software compatibility issues between publisher and user.
- Excessive printing of documents.
- Difficulty inherent in relating to a large amount of data on a screen.
- Causes more concern about right.

16. Conclusion

No doubt, ICT and Internet has made today's generation self-dependant to some extent. New generation has become Neititizens, but the thing is they should know which type of information is available; Where is it available; What is the search strategy etc. This has to be done from the Library professionals who should act as Information Analysts. Present students are fast learners and they need proper direction. Hence, Teachers and Librarians are supposed to play Facilitator's role than ever.

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4. http://www.businessdictionary.com/definition/courseware.html#ixzz2Ta9c2IKT
5. http://www.huffingtonpost.com/2010/03/05/the-definition-of-an-eboo_n_487834.html
6. http://www.investorwords.com/3621/patent.html#ixzz2TahKYaps
7. http://www.lsbu.ac.uk/library/html/jargon.shtml
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Open Source Digital Library Software: *A Comparative Study*

Sushma H.R.

Abstract

Open Source Software (OSS) is a software available free of cost with source code for anyone to use. Open source digital library packages are gaining popularity nowadays. Digitization involves huge money to create and maintain, and the OSS appears to be a means to reduce it. To build a digital library under economic conditions, open source software is preferable. Among these, Dspace and Greenstone are becoming more popular in India and abroad. This paper deals with the comparison of these two popular OSS from various points of view.

Keywords: Open Source Software, Greenstone, DSpace, Institutional Repository

1. Introduction

Library profession is moving away from traditional library towards creation and maintenance of a digital library. Information contents that were confined to traditional formats like books, journals, maps, sound recordings are getting increasingly available in diverse digital formats. New formats being the core elements of digital collection have emerged such as multimedia, hypertext, dynamic pages, interactive video, etc. Each format poses distinct challenges for its preservation and access. Capturing, storing, indexing, preserving and redistributing content case use and web based user interfaces are some of the core challenges of any digital library that are being faced by the library professionals.

Shrinking budgets and the increasing prices of journals drive us to look forward to and new alternative sources of information by which they can collect, store, arrange and disseminate information to the users. The concept of Open Access has evolved to find out the solutions for these types of problems. The website www.opensource.org defines "open source promotes software reliability and quality by supporting independent peer review and rapid evaluation of source code". To be certified as open source, license of a program must guarantee the right to read, redistribute, modify and use it freely.

2. Need for the Study

There has been several software developed in Library and Information Science to build a digital library. Most of the libraries are having inadequate financial provisions. Hence the open source software's are helping the librarians in developing the digital libraries. The present study has been tried to reveal feature and characteristics of selected software packages.

3. Scope

The study covers only selected two open source digital library software i.e. Dspace, GSDL

4. Objectives

- To study the basic features of the relevant software for creating the digital library.
- To consolidate the information on Open Source Software.
- To compare the selected Open Source Software.

5. Features of Open Source Software

Open source doesn't just mean access to the source code. The distribution terms of open source software must comply with the following criteria.

- OSS is freely available to users, usually through a license. Source code is free to change, modify and redistribute it.
- OSS is normally created and maintained by developers crossing institutional and national boundaries, collaborating by using communications and development tools.
- Successful applications tend to be developed more quickly and with better responsiveness to the needs of individual library or institution who can readily use and evaluate open source software applications because they are free.
- Intellectual Property Right to open source software are belongs to everyone whoever is involved.

6. Dspace

Dspace Open Source Digital Library System is popular software for developing digital libraries. It has been jointly developed by MIT (Massachusetts Institute of Technology) Libraries and Hewlett Packard Lab. It is available under BSD open license for research institutions. Dspace is very good system for capturing, storing, indexing, preserving, and redistributing digital research materials. DSpace was designed as an open source application that institutions and organizations could run with relatively few resources. It is to support the long-term preservation of the digital material stored in the repository. It is also designed to make submission easy. DSpace supports submission, management, and access of digital content. Dspace accepts varied forms of digital materials like:

- Documents, such as articles, preprints, working papers, technical reports, conference papers
- Published Books
- Theses/dissertations
- Computer programs
- Visualizations, simulations, and other models
- Multimedia publications
- Administrative records
- Bibliographic datasets
- Images
- Audio files
- Video files
- Reformatted digital library collections
- Web pages

DSpace support the types of file formats

- Text
- Images
- Audio
- Video

6.1. Features of Dspace

- **Technical Support:** It has very good technical support. Dspace developers share information, help each other and solve technical problems through dspace-tech. Developers use the "Dspace Wiki" to keep in touch with one another, and to share and contribute code fixes and enhancements. Dspace runs on any UNIX or LINUX operating System. It can be easily Installed and maintained and provides Dspace-tech, where we can meet other Dspace developers.
- **Document formats:** Plug-ins is used to ingest documents. For textual documents, there is plug-ins for PDF, XML, HTML, RTF, Plain text, Excel, PPT, etc. Dspace supports different types of file formats including text, audio, video and images.
- **OAI Support:** Dspace is OAI-PMH compliant. It defines the metadata standards based on Dublin core for the purpose of interoperability. It uses OAI-PMH through OAICat (an open source product of OCLC) tool for harvesting metadata, which can be easily extendable to other metadata schemes by developing Java programs. The recent versions allow clientele to define their own metadata formats by using XML input forms.
- **Institutional Repository (IR):** Dspace is well established as an institutional repository too, i.e., digital library software in which scholarly publications in different forms (audio, video, images, etc) are archived and preserved. It is found more appropriate to capture, store, preserve and redistribute the research output of an institution.
- **Digital Preservation:** Dspace provides long term physical storage and management of digital items in multi layered security, professionally managed repository including standard operating procedures such as back up, mirroring, refreshing media and disaster recovery. Dspace assigns a persistent identifier to each contributed item to ensure that it is retrievable for into the future.

7. Greenstone

The Greenstone digital library software is an open-source system for the construction and presentation of information collections. It builds collections with effective full-text searching and metadata-based browsing facilities that are attractive and easy to use. Moreover, they are easily maintained and can be augmented and rebuilt entirely automatically. The system is extensible software "plug-ins" accommodate different document and metadata types. The aim of the Greenstone software is to empower users, particularly in universities, libraries, and other public service institutions, to build their own digital libraries. The Greenstone "Collector" is an interactive subsystem for managing and accessing collections.

7.1. Greenstone is

- **Widely accessible:** Collections are accessed through a standard web browser. **Multi-platform:** Collections can be served on Windows and UNIX, with an external Web server or (for Windows) a built-in one.
- **Metadata-driven:** Browsing (and, if desired, searching) indexes are built from metadata. Metadata may be associated with each document or with individual sections within documents. It must be provided explicitly (often in an accompanying XML or spreadsheet file) or derivable automatically from the source documents.
- **Extensible:** Plug-ins can be written to accommodate new document types. Classifiers can be written to create new kinds of browsing indexes based on metadata.

- **Multi-language:** Unicode is used throughout and is converted on-the-fly to an encoding supported by the user's Web browser. Separate indexes can be built for different languages: a plug-in allows automatic language identification for multilingual collections.
- **International:** The interface is available in multiple languages: new ones are easy to add.
- **Large-scale:** Collections containing millions of documents, and up to several gigabytes, have been built.

7.2. Greenstone provides

- **Flexible searching:** Users can search the documents' full text, choosing between indexes built from different parts.
- **Flexible browsing:** Users can browse lists of authors, lists of titles, lists of dates, hierarchical classification structures, and so on. Different collections offer different browsing facilities, determined at build time.
- **Zero maintenance:** All structures are built directly from the documents themselves. New documents in the same format can be merged into the collection automatically. No links need be inserted by hand, but existing hypertext links in the original documents, leading both within and outside the collection, are preserved.
- **Phrases and key phrases:** Standard classifiers create phrase and key phrase indexes of text - or indeed any metadata.

7.3. Greenstone enables

- **Multimedia:** Collections can contain pictures, music, audio and video clips. Currently, non-textual material is either linked in to documents or accompanied by written descriptions to allow access.
- **CD-ROM option:** Collections can be published on a self-installing CD-ROM. A multi-disk solution has been implemented for larger collections.
- **Distributed collections:** Collections served by different computers can be presented to users as though they were part of the same library, through a flexible process structure.
- **Easy modify:** it is easily modified.

8. Comparative Study

8.1. Pre-requisites for Installation

Digital repositories use so many software components for its implementation. The following are the software environment for the DSpace and Greenstone.

DSpace

Operating System	:	Windows/UNIX/LINUX
Software Platform	:	JDK 6 or later
Java Build Tool at first stage	:	Apache Maven 2.2 or later
Java Build Tool at second stage	:	Apache Ant 1.7 or later
RDBMS	:	PostgreSQL or later/Oracle or later
Servlet Engine	:	Tomcat 6.x or later

Greenstone

Operating System	:	Windows/UNIX/LINUX

Software Platform	:	JDK 1.5 or later, Perl 5.0 or later and GCC
Database	:	GNU Database Manager
Web server	:	IIS/Apache web server

8.2. Installation Procedure

Installing DSpace requires some special skills and installation procedure is based on command line interface. Greenstone uses the Install Shield software for easy installation, and this would simplify the installation process.

8.3. Data storage

DSpace offers two means for storing content. The first is in the file system on the server. The second is using SRB (Storage Resource Broker). Meta data, organization of the content, e-people and authorization details will be stored in RDBMS either in PostgreSQL or Oracle. While as in Greenstone all source documents will be stored in Greenstone Archive Format.

8.4. User Interface

The DSpace provides two user interface systems one is JSPUI based upon JSP technologies and the other is XMLUI based upon the Apache Cocoon framework. These interface systems provide subsystems to support submitters and others involved in the submission process, end-users looking for information and system administrators. Greenstone provides two interfaces one is Java based Greenstone Librarian's Interface (GLI) and other is Greenstone User Interface. Greenstone User Interface is web based interface, with this user can access the content either by browsing or searching.

8.5. Content Creation Procedure

In DSpace any authorized e-people can create content with related metadata by using submission interface later it must be authorized by group manager. Creating the content in Greenstone is very simple. GLI allows collecting sets of documents, import or assigning metadata, and building them into a Greenstone collection.

8.6. Document Formats

Both the DSpace and Greenstone supports most of the commonly used file formats like TXT, RTF, DOC, PPT, XLS, PDF, AVI, MPEG etc. with the support of appropriate plug-ins'. Both repositories support HTML and web pages without any dynamic content.

8.7. Metadata

Dublin core is default metadata format for both the DSpace and Greenstone. DSpace is OAI-PMH (Open Archive Initiative Protocol for Meta Data Harvesting) compliant. DSpace supports new metadata formats in XML form input. Further Greenstone additionally supports NZGLS (New Zealand Government Locator Service), AGLIS (Australian Government Locator Service) as metadata formats. New metadata sets can also be defined using Greenstone's Metadata Set Editor.

8.8. Simple and Complex Objects

D Space and Greenstone both supports simple objects. Coming to complex objects DSpace supports partially, Greenstone does not support.

8.9. Browsing and Searching:

D Space supports searching for one or more keywords in metadata or extracted full-text and browsing though title, author, date or subject indexes. DSpace uses the Lucene search engine and the search indexes are configurable, enabling customization of which DSpace metadata fields are indexed. In Greenstone users can browse interactively around lists, and hierarchical structures, that are generated from the metadata that is associated with each document in the collection. Greenstone constructs full-text indexes from the document text—that is, indexes that enable searching on any words in the full-text of the document. Indexes can be searched for particular words, combinations of words, or phrases, and results are ordered according to how relevant they are to the query.

8.10. Multi-lingual support

Both the DSpace and Greenstone digital repositories are internally using Unicode, which gives the feasibility to support multiple languages.

8.11. Easy to use workflows

D Space Provides ingest workflow via a web user interface for non-technical users, While Greenstone provides Java based Interface.

8.12. Security

D Space supports good security mechanisms which includes data transfer encryption (SSL), authentication of web user interface, different user accounts and roles, and has a web interface for editing permission policies. Greenstone provides security through user-ids and passwords.

8.13. Reporting Features

Reporting features are useful to improve the repositories. DSpace generates the statistical reports by using log files. The present version of Greenstone does not have this feature.

8.14. Extensibility

Both the digital repositories are extensible. DSpace provides Add-ons feature and Greenstone provides Plug-ins feature for their future extensions.

Comparative Study of Dspace and Greenstone

Digital Library Software Packages	DSpace	Greenstone
URL	http://www.dspace.org	http://www.greenstone.org
Creator	Hewlett Packard and MIT	University of Waikato
Latest Version	Dspace 1.8.2	Greenstone 2.85
Operating System	Linux and Unix	Both Windows and Linux
Language	Java &JSP using the Java Servlet Framework	Perl , C++, Java
Database	Relational & Supports Postgre, SQL & Oracle	Its own
Web Server	Apache 1.3/2.0	Apache/ISS
License	BSD Berkeley Software Distribution http://www.opensource.org/licenses/bsd-license.php	GNU General Public License http://www.gnu.org
Institutional Repository	Yes	Yes
Digital Preservation	Yes	Yes
Web Interface	Yes	Yes
OAI-PMH V2.0	Yes	Yes
Metadata Standard	Dublin Core	Dublin Core
Supported File Formats	AIFF,WAV,GIF,JPEG, PNG, TIFF, HTML, Txt Format, XML, MPEG	MS-Word, PDF, HTML, PostScript, JPEG,OIF

9. Conclusion

Importance of Open Source Software (OSS) in creating their own digital library has been realized by LIS professionals. It provides a new way of organizing and publishing the information on Internet or on CD-ROM. In this commercial world OSS has gained the popularity among information community as these are freely available to use and create their own digital library collections. End user is free to make changes and modifications before redistribution. Dspace and Greenstone both can be used to capturing, storing, indexing, preserving and redistributing the content. Both have been tested with creation and maintenance of a wide variety of digital collection all over the world. A major feature and plus point with both of these software has been the involvement of digital library researchers in their development.

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Open Source Software:
A New Perspective for Libraries in Information Management

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Abstract

Today we are living in competitive world where everything is driven by cutting edge technology and advanced software that enhances the quality as well as the speed of delivery of services to the end users. Libraries are also not far behind in making use of the advanced technologies in extending the effective and efficient services. The budgetary provisions in the libraries do not conform to the pace of technology and also for making heavy investment in acquiring commercial software and maintaining it within meager budgetary provisions. As a result many prospective libraries look for open source software as an alternative. It has become imperative to implement and use certain technology driven software to distribute and manage vast information resources in the libraries. In this article an effort has been made to focus on some of the significant general and specific features of some of the popular Open Source software packages of integrated library management software, digital library software, content management system, and institutional repository software.

Keywords: Free/open Source Software (FOSS), ILMS, CMS, Digital library software

1. Introduction

The importance of software as a source of competitive advantage only continues to rise from year to year, in providing effective services to the library users. The ongoing challenge of maintaining high quality library software while responding to the increasing demands for new features and functionality for organizing and management of information in libraries are compounded with increasing installation charges and maintenance costs from the commercial software vendors. Particularly some of the prospective libraries in the developing countries are facing difficulty in adopting the commercially available software due to financial constraints. The budgetary provisions in the libraries do not conform to the pace of technology and also for making heavy investment in acquiring commercial software and maintaining it within meager budgetary provisions. As a result many prospective libraries are looking for open source software as an alternative.

There are several OSS available today for libraries to provide new value – added services to end- users while handling large volumes of library data. The concept of OSS that it is absolutely free seems to be impractical. Although unlike commercial software there is no initial purchase fees or license fees or up-gradation fees, but it requires an investment of time and effort by users like other commercial software. The benefits of OSS are compelling libraries towards the use of OSS software and many libraries have adopted these software's for various purposes more specifically for automation, creation of digital library and institutional repositories etc.

2. What is OSS?

Open source has become synonymous with the OSS, the source code of which is freely available to the users. There are additional requirement besides the availability of source code that a program must meet before it is considered open source including: the software must be free to distribute; derivative works must be allowed; the license cannot discriminate against any fields of endeavor. Open source software (OSS) is a computer software whose source code is available under

a license for users to look at and modify freely and permits users study, change and improve the software, and to redistribute it in modified or unmodified form.

The OSS differs from the closed source or proprietary software. The primary difference between the two is the freedom to modify the software.

Types of software: In this cyber age there are some terms like freeware, open source, and shareware which are commonly used as synonyms. However there is difference among these terminologies and their use.

- **Proprietary (commercial) software:** A kind of software for which user has to pay high cost for its purchase, maintenance, and improvement. User cannot modify or customize software for his own needs, makes him feel helpless at the mercy of external software.
- **Shareware software:** Shareware can be down loaded free of cost to try as a sample, but for the ultimate use, user is supposed to pay for it. It is developed and released by someone who keeps full control of the intellectual property. The user does not have access to the source code and cannot customize it. There is also no collaboration or community around shareware.
- **Freeware software**: Freeware is a type of software which can be downloaded, used, copied, modified, and customized without any restrictions. No access to the source code, no community, no development, and no improvement can be possible.
- **Free/ open source software (FOSS):** It is both free and open. It is liberally licensed to grant users the right to use, copy, change, and improve its design through the availability of its source code rather than its cost. FOSS is an inclusive term that incorporates both the ideologies of free software and open source software (OSS), which despite describing similar development models, have differing in cultures and philosophies. Free software focuses on the philosophical freedoms it gives to users, whereas OSS focuses on the perceived strengths of its peer-to-peer development model.

3. Features of OSS

Open source does not just mean access to the source code. The distribution terms of OSS must comply with the following criteria:

- Free redistribution
- The license cannot discriminate against any persons.
- The license cannot discriminate against any fields of Endeavour.
- Source code (A set of human readable and understandable instructions that comprise the 'recipe' from which program can be made).
- License must not be specific to a product.
- License must not restrict other software.
- Integrity of the author's source code.
- Derived works.

4. Advantages of OSS

- People can have any number of copies of programs on their machines.

- With the availability of source code one can customize the software as per one's own requirements.
- Software does not depend on any specific hardware or operating system platform to function.
- It provides cheap alternatives to expensive commercialized solutions.
- Oss provides no restrictions on how the software is used.
- Oss is more reliable than commercial or proprietary software.
- Provides security and technological independence to the libraries.
- There is group of community who can provide support thorough mailing lists. Internet relay chat center to get quick answer to any of problem or query.

5. Limitations

- Up-gradation and customization of OSS is very difficult due to the lack of technical support from the software developers.
- OSS products require technical expertise to operate and maintain open source costs more to support because the software is typically self supporting.
- OSS is also not known for ease of use as the focus is usually on functionality.
- Lack of formal support and training, which can lead to confusion and chaos.
- Sometimes source code of OSS may be very complicated.
- **Selection criteria:** Functionality, user interface, design, security levels, user controlled customization, migration of data, features and functions, flexibility, reports that help to take decisions, conforming to standards like MARC, Z39.50, ISO-2709, etc are some of the evaluation criteria to be followed while selecting an OSS.

6. Open Source Software: An overview

There are many open source software being used in libraries. Open source software can be categorized into three broad groups based on their Features and characteristics.

- Library **Integrated Management software's:** Koha, NewGenlib, Evergreen, OpenBiblio, OPALS-NA, AvantimicroLCS, ABCD, WEBLIS, PhpMylibrary, Glibm (GNU library Management system), BiblioteQ, Java Book Cataloguing system, etc.
- Content **Management systems:** Joomla, Drupal, Wordpress Mambo, TYPO3, DotNetNuke, etc.
- Institutional **Repositary or Digital Library software:** GSDL, Dspace, Ganesha, Fedoracommons, E-print, CDSInvenio, Dienst, VoDL, etc.

Here, an attempt is made to focus on few selected Open Source Software and explain the features and characteristics of some of the prominent OSS in detail as following.

6.1. KOHA

Koha was created in 1999, by Katipo communications for the Horowhenua Library Trust in NewZealand. Koha is reliable full featured open source integrated library software and thousands of different kinds of libraries all over the world are using it. Circulation, cataloguing, acquisition, serials, patron management, reservations, branch management, full catalogue are the functional

modules of KOHA. It has web interfaces, built using library ILS standards and uses the OPAC interface. Libraries can receive technical support from any party because it has no vendor-lock in. provides provision for online reservations and renewals. It supports MARC 21, UNIMARC & Z39.50, and Written Using Perl language.

Requirements: Apache web server, my sqtabase, perl, koha W32 intel.

Platform: UNIX, LINUX, WINDOWS.

6.2. NewGenlib

Developed by Verus solutions Pvt. Ltd. Domine written using Perl. The software was developed over a four-year joint effort between a professional charitable trust, Kesavan institute of Information and knowledge management (KIIKM) and fledging software development company.

Requirement: J25E Kit, Postgresql, JBOSS Application server, Java Runtime Environment, NewgenLib files, Back up in plain SQL, newgenlib.ear.

Platform: LINUX, WINDOWS.

Supporting Standards: MARC21, MARC-XML, AGRIS, Z39.50,

Modules: Acquisition, Cataloguing, Serials Management, Circulation, Administration, MIS Repots, End of day process.

6.3. Avanti

Avanti Micro LCS Software is developed by Peter Schlumf. This is a small, simple, easy to install and use open source software. It is a platform independent and can run on any system that supports a Java runtime environment. Very useful for small libraries. It has powerful and very flexible architecture. This software incorporates Z39.50 and MARC standards. It has circulation, catalogue, OPAC Modules.

6.4. OPENBiblio

This Software was developed by open Biblio Community written in PHP. It is very easy to use, requirements to set up this Software are: PostgreSQL or MySQL, Apache, XAMPP. Very useful for small and medium size libraries.

Platform- Windows, LINUX.

Standards-239, MARC.

Functional Modules: Cataloging, OPAC, Circulation, Report.

6.5. PhpMy Library

Developed by Polerio Baboa, it is a PHP/MySQL web based library automation application meant for smaller libraries.

Requirements: MySQL, Apache, PHP, PhphyAdmin,

Platform: LINUX, Windows.

*Standard:*It strictly follows the USMARC.

Modules: Acquisition, Cataloging, Circulation

6.6. Dspace

Developed by Massachusetts Institute of Technology (MIT) libraries and Hewlett-Packard (HP), as an open source applications that institutions and organizations could run with relatively

few resources. It is to support the long term preservation of the digital material stored in the repository. Dspace accepts all kinds of digital formats, such as articles, preprints, working papers, technical reports, Conference papers, Books, Theses, Data sets, Computer programs, etc. It is not difficult to install as it was earlier, now installation become very easier as there are number of line CDs are developed

Requirements: Javajdk, Postgresql, Apache Ant, Apache-tomcat, Apache-maven,

Standards: D space followed by simple Dublin core and Qualified Dublin core metadata standards.

Platforms: LINUX, Windows

Current Verssion: 3.8.6

6.7. Greenstone

Green stone is a suite of Software for building digital libraries. The software was developed by University of Waikato, New Zealand distribution in corporation with UNESCO and the Human Info NGO. It is an open source multilingual software, It provides a way of Organizing information and publishing it on the internet in the form of fully searchable, metadata- driven digital library

Requirements: Apache, OAI-PMH, Wget, YAZ, GCC, XML::Parser, Xhtml, etc.

Platform: WINDOWS, LINUX, Macintosh OS-X.

Present version: 2.85

6.8. E-Prints

Developed at the University of Southampton School of electronics and computer science in 2000 and released under a GPL license for building open access repositories that are complaint with the Open Archives Initiative protocol for Metadata Harvesting (OAI-PMH). It is one of the most widely used free open access, institutional repository software for archiving pre-prints and post – prints of faculty members. Due to simple installation process, E- prints is being used by many libraries.

Requirements: Debrian/Ubuntu, Redhat/Fedora.

Platform: Windows XP/Vista/7.

Latest version: v3.3.10

6.9. Joomla

Joomla is an open source content management system written in PHP, runs on cross platform operating system, developed by Joomla project Team. It will help to build website and other powerful online applications.

Requrement: MySQL, Apache, ISS.

Architecture: Extension layer, Application layer framework Layer.

Features: User friendly, FTP supportive.

6.10. Drupal

Developed by Dries Buytaert. It can be a great choice for libraries for building their websites and handling complex volume of data along with publishing information about library, Drupal also allows to support creating blogs storing formatted bibliogrouphic information, automatically

building site map form menus and content categories, providing tags to every content, providing social bookmarking support, photo/ video sharing, RSS feeds support, faceted search feature, maintaining user profiles, etc. Using Drupal library catalogue can be created by importing MARC Records and it is multilingual software.

Written language: PHP

Requirements: MYSQL, SQL Server, PostgreSQL, Mavia DB, postgre SQL SQLite, Apache, IIS, Lighttpad, Nginx.

OS: Cross platform.

Architecture: Template, User Permissions, blocks and menus, modules, data (Nodes etc).

7. Conclusion

As the former president of India, APJ Abdul Kalama said "open source software offers developing nation such as India the best opportunity to modernize". The open source movement has become a boon to the libraries. Due to shrinking budgets and the increasing prices of journals, librarians have to look forward for a new alternative by which they can collect, store, arrange and disseminate information to the users. Open source offers useful savings in time .money and resources. With exponential growth of information, user expectations are growing and more and more 'personalized' services are required by users and there is a great opportunity for librarians to play a leading role in organizing and presenting filtered information by making use of these OSS tools. The LIS professionals' should keep eyes on development and choose appropriate technology depending upon needs. At the same time librarians and LIS professionals' are required to acquire new skills for developing and managing the libraries by using OSS.

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Open Source Software for Digital Library Initiatives: *A Comparative Study*

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Abstract

The implementation of Open Source Software or OSS in libraries represents a method for improving library services and collections. This paper provides features of OSS. It also highlights the advantages and disadvantages of Open Source Software for Digital library. The focus of this paper is compare of five popular digital library open source software are Dspace, Fedora, Greenstone, E-Prints, Ganesha.

Keywords: Digital Library, Open source Software, Dspace, Fedora, Greenstone, E-Prints, Ganesha

1. Introduction

Open source is a software development model as well as a software distribution model. In this model the source code of programs is made freely available with the software itself so that anyone can see, change, and distribute it provided they abide by the accompanying license. In this sense, Open Source is similar to peer review, which is used to strengthen the progress of scholarly communication.

The term 'Open Source' in common usage may also refer to any software with publicly available source code, regardless of its license, but this usage provokes strong disapproval from the OSF open source community, which may call them "disclosed source: rather than open source. Open Source Software is any computer software whose source code is either in the public domain or more commonly, is copyrighted by one or more persons or entities and distribution under an open source license such as the GNU General Public License (GPL). Such a license may require that the source code be distributed along with the software, and that the source code is freely modifiable, with at most minor restrictions, such as a requirement to keep the authors names and copyright records in the code. OSS is typically and maintained by developed by developers crossing institutional and national boundaries, collaborating by using internet based communications and development tools. Products are typically a certain kind of "free", often through a license that specifies that applications and source code are free to use, modify, and redistribute as long as all uses, modifications, and redistribution are similarly licensed; General Public License. The present study is to compare library software's and provide user friendly OSS for library.

2. Features of Open Source Software

The main features of OSS, and mechanisms that drive the working of open source projects which enable these features are:

- One of the main attractive features of Open Source Software is that its source code is available freely.
- It is possible to customize a particular software application according to local needs.
- Redistribute the software to other users, who could themselves use it according to their own needs. This redistribution can be done for free, or at charge, not fixed beforehand.
- Have the software at their disposal to fit to their needs, of course, this includes improving it, fixing its bugs, augmenting its functionality, and studying its operation.
- Users of a piece of software must have access to its Source Code.

3. Why Adopt OSS in Libraries?

The range and quality of software available for libraries is small compared to other industrial applications.

According to Chudnov (1999) there are three factors pushing the use of OSS in libraries:

- OSS licenses allow libraries to cut budget on software and use it to other issues needing more funds.
- OSS product is not locked into a single vendor. Thus even if a library buys an open source system from one vendor, it might choose to buy technical support from another company or get it from in-house experts.
- The entire library community might share the responsibility of solving information systems accessibility issues.

4. Open Source Software Licenses

Author can choose to protect their software with different licenses according to the degree with which they want to fulfill these goals, and the details which they want to ensure. In fact, authors can distribute their software with different licences through different channels. Therefore, the author of a program usually chooses very carefully the licence under which it will be distributed. And users, especially those who redistribute or modify the software, have to carefully study its licence.Under the Open Source Software; licenses must meet ten conditions in order to be considered open source licenses.

- **Free Redistribution**: The software can be freely given away or sold.
- **Source Code**: The source code must either be included or freely obtainable.
- **Derived Works**: Redistribution of modifications must be allowed.
- **Integrity of The Author's Source Code**: Licenses may require that modifications are redistributed only as patches.
- **No Discrimination against Persons or Groups**: No-one can be locked out.
- **No Discrimination against Fields of Endeavor**: Commercial users cannot be excluded.
- **Distribution of License**: Rights must apply to everyone who receives the program.
- **License Must Not Be Specific to a Product**: The program cannot be licensed only as part of a large distribution.
- **License Must Not Restrict Other Software**: The license cannot insist that any other software it is distributed with must also be open source.
- **License Must Be Technology-Neutral:** No click-wrap licenses or other medium specific ways of accepting the license must be required.

5. OSS Licensing Bodies

Some of the common OSS licenses are as follows:

- **GNU General Public License**. Richard Stallman of the Massachusetts Institute of Technology and the Free Software Foundation developed the GNU General Public License in 1985. The GPL is based on the international legislation on copyright, which ensures its enforceability.

The main characteristics of the GPL are; it allows binary redistribution, but only if source code available is also guaranteed; it allows source redistribution, but only if source code availability is also guaranteed; it allows source redistribution; it allows modification without restrictions; and complete integration with other software is only possible if that other software is also covered by GPL

- **BSD (Berkeley Software Distribution)**. The BSD license covers, among other software releases. It is a good example of a "permissive" licence, which imposes almost no conditions on what a user can do with the software, including charging clients for binary distributions, with no obligation to include source code, the authors only want their work to be recognized. In some sense, this restriction ensures a certain amount of 'free marketing'. It is important to notice that this kind of license does not include any restriction oriented towards guaranteeing that derived works remain open source.
- **MPL (Mozilla Public License)**. The MPL is a much more comprehensive contractual-style license document, which like the GPL requires derivative works to be freely licensed, although not necessarily under the MPL. The MPL contains some very good clauses dealing with the possible existence of third party intellectual property claims or patent rights over contributed code and clause detailing how the contributions of developers are to be documented. MPL is in many respects similar to the GPL, but perhaps more "enterprise oriented".

6. Advantages of Open Source Software

Open Source Software offers a different exponentially better software development model. Companies can also improve their products, and increases their market. So open source is good for every one. The main advantages of OSS are:

- **Access to source code**: The availability of the source code and right to modify enables the unlimited tuning and improvement of software products.
- **Right to Redistribute Modification**: Its right to redistribute modifications and improvements permits all the advantages due to modifiability of the software to be shared by large communications.
- **The Right to use the software in Any Way**: This, combined with redistribution rights, ensures large population of users, which helps in turn to build up a market for support and customization of the software, which can only attract more and more developers to work in the project.
- **Cost Effective**: Usually, the perceived advantage of open source models is the fact that OSS is made available graits or at a low cost.
- **Customizable**: Since OSS comes with the source, one can customize existing software to suit own's needs. Open source license's typically guarantee the right to be able to customize the software.
- **Preventing Re-invention of the Wheel**: Since we can reuse existing code, effort is not wasted in re-developing software that already exists. Open source development can build on the entire body of work already released under a suitable open source license.
- **Helping the Progress of Technology**: Efforts can be concentrated in making existing software better. This helps the progress of technology.
- **More Secure**: Since the source code is open, more people scrutinize the source code and hence more flaws are found and corrected.

- **Technology Transfer to Zero Cost**: Since the source code is open, anyone can learn how the software was developed, thus facilitating technology transfer at zero cost.
- **Allows for Easier Localization**: To translate a particular software package into another language using proprietary software is possible.
- **Prevent Misuse of Monopoly Positions**: The availability of the source dictates that software vendors will always have to follow market demands and will not be able to misuse monopoly positions.
- **Development Advantages**: With many open source projects, a virtual community of developers grows around the software. The company then incurs lower overhead because of unpaid, outsourced work that is closer to customers who use the product.
- **More Programmers are better**: One would think that by having more programmers, a piece of software could be created faster and better.

7. Disadvantages of Open Source Software

There are several disadvantages, some of which are aspects of higher life cycle costs. Because of the disadvantages listed below, open source products for the most part have become popular as black box, server-side appliances, not as interactive applications. The main disadvantages are:

- **Perceived Disadvantages of Open Source Models**: Of course, open source development models lead also to the perceptions of some disadvantages. However, some of them are only disadvantages if we stick to classical or proprietary development models, which is of course not the case with open source.
- **Limited or Not Accountability**: There is limited domain of solutions, and limited hard real-time support.
- **Patented Proprietary File Formats**: Some file formats have been patented, or for other reasons, cannot be read by Open Source products. Software patents are often given out loosely.
- **Resistance to Migration**: Most of the world's offices and desktops are using proprietary software. The migration to open source costs money and takes efforts in the short term, before long term benefits can be obtained.
- **Total Cost of Ownership Argument**: For a long time, it was argued that although OSS was initially cheaper, the long term "total cost of ownership" was higher. Increasingly, OSS is winning this argument.
- **Lack of Advertising**: There are only a few major proprietary software companies, and they have made a lot of money, which they can them spend on advertising.
- Proprietary Software offering Open Source Code: The proprietary software sometimes tries to blur the line between proprietary and free or open software. This is an attempt to show that proprietary has same openness as OSS.
- **Lack of an Ecosystem**: A problem often cited is the lack of an open source 'ecosystem', comprising lots of companies both large and small and willing to offer support etc. Major organizations need this before they are willing to use any product.
- **Restricted Choice**: In virtually every area of software there are dozens if not hundreds or

even thousands of choices for different commercial packages, but rarely are there more than one or two, if any, open source options.

- **Poor Integration**: Open source products tend to be created be people, so as a result their products are poorly integrated.
- **Poor Interactive Capabilities**: Open Source Software with an interactive user interface is good as "average good" interactive packages in windows.
- **Difficult to Use**: OSS tend to be written by engineers for others engineers and for many of them it is accepted that ordinary function will involve creation of configuration files, writing scripts, or actually editing the source code and recompiling. This makes OSS difficult to use.
- **Higher Cost of Installation**: Commercial vendors are forced by intense competition to configure their products for easy installation. Open source tends to have much higher installation costs because a much greater degree of expertise usually is required for installation.
- **Higher Cost of Operation**: Open source products tend to require a much higher degree of technical expertise to operate and maintain, so they end up costing more.
- **Higher Cost of Technical Support**: Open source costs more to support because the software is typically self supporting.
- **Lack of Capabilities/ Features**: Open software packages tend to have far fewer features and capabilities than commercial equivalents.
- **Poor Customer Response**: A well-run commercial software company will immediately turn around customer requests for enhancements. With open source, if you do not do it you are at the mercy of a disjoint community of developers.
- **Lack of Innovation/Codification of Obsolete Architectures**; The glacially slow pace of development within open source movements and the design by committee, consensus process tends to assure that obsolete architectures get implemented within open source.
- **No Warranty**: There is no single company backing the product.

8. Popular Digital Library Open Source softwares

There are number o Digital library open source software's are available for the sake of study only five software's are selected. They are.

- **Dspace:** It is a groundbreaking digital institutional repository that captures, stores, indexes, preserves, and redistributes the intellectual output of a university's research faculty in digital formats. It manages and distributes digital items, made up of digital files and allows for the creation, indexing, and searching of associated metadata to locate and retrieve the items.
- **Fedora:** Fedora is a general purpose repository service. The Fedora project is devoted to the goal of providing open-source repository software that can serve as the foundation for many types of information management systems. The software demonstrates how distributed digital information management can be deployed using web-based technologies, including XML and web services.
- **Greenstone:** It provides a new way of organizing information and publishing it on the Internet or on CD-Rom. It is open-source, multilingual software, issued under the term of the GNU General Public License. The system operates under UNIX, windows, and Mac OS/X, and works with standard Web servers. The Unicode character set is used throught, so

documents and interfaces – can be in any language. It builds collections with effective full-text searching and metadata-based browsing facilities that are attractive and easy to use. Moreover, they are easily maintained and can be augmented and rebuilt entirely automatically. The system is extensible software 'plug-in' accommodate different and metadata types. The greenstone 'collector' is an interactive subsystem for managing and accessing collections.

- **E-Prints** is the acknowledged world-leading Digital Repository Software. The default configuration supports open access to scientific research materials with the aim of improving the visibility and impact of academic work. Although the default configuration aims to facilitate authors self-archiving their academic work, E-Prints can be configured to manage any collection of digital content. Christopher Gutteridge is the lead developer for E-Print. It enables research to be accessible to all, and provides the foundation for all academic institutions to create their own research repositories. E-Print is working towards a more modular design, which would it easier for the community to build and share extensions.
- **Ganesha:** Ganesha Digital Library or GDL is a tool for managing and distributing digital collection using web-based technology. GDL enable institutions or personals to share their knowledge as well as simultaneously access and utlize knowledge in Indonesian "gaint memory' in the form of network of Indonesian DLN digital libraries.

9. Comparative Statement of Five Important Open Source Software

The following table explain about the OSS, their URL, contact information, enable, administrators/project sponsors, License, Pre-requisite Software for Installation, Versions Used, Written Language, User Interface Language, Platform, Metadata Support, Items Support the Type of Content

About	Dspace	Fedora	Greenstone	E-Prints	Ganesha
URL Address	www.dspace.org	http://www.fedora/commons.org	www.greenstone.org	www.eprints.org	www.gdl.itb.ac.id
Contact Information	sales@dspace.com.au	http://www.fedora-commons.org/contact-info	GSDL-users@list.scms	Hans.falk.hoffmann@cern.ch	mrg@kmrg.itb.ac.id
Enable	Internet	Internet	Internet and CD_ROM	Internet	Internet and CD_ROM
Administrators/ Project Sponsors	MIT Libraries and Hewlett-Packard Company.	Cornell University Information Science and the University of Virginal Library.	New Zealand Digital Library Project with UNESCO and the Human Info NGO.	University of Southampton UK.	Indonesian Digital Library Network.
License	BSD	ECL	GNU	GNU, GPL	GNU
Pre-requisite Software for Installation	Apache 1.5, Java 1.4, Java J2E, Oracle, Postgre SQL 7.3, SQL Later.	Apache 0.2, Apache 1.5, Java 1.4, Java J2E, Oracle, MySQL, PHP, Postgre SQL 7.3 and Postgre SQL Later.	Apache 0.2, Apache 1.5, C++, Java J2E, MySQL, PHP, perl.	Apache 0.2, Apache 1.5, Java 1.4, Java J2E, Oracle, MySQL, PHP, Perl, Postgree SQL later.	Apache 1.5, MYSQL, PHP, Perl
Versions Used	1.6.0 in 2010	3.4.2 in 2011	2.62 in 2005	3.3.1 in 2011	4.0 in 2004
Language Written	Windows and Linux	Linux	Windows and Linux	Unix and Linux	Windows, Linux and Unix
User Interface Language	English, French, German, Italian, Russian	English	English, Spanish, French and Russian	Phrase can be Converted in any language	English, Indonesian
Platform	Java, PERL	XML, API	Java	Linux, UNIX	Windows, NT 2000
Items Support the Type of Content	Text, Images, Audi, Videos.	Text of letters, Audi videos clips, Images.	PDF Documents, JPEG and GIF images, word documents, Plain text files, email messages, HTML files.	Text of letters, Audio, Video clips, Images.	Text, Audio, Video, Image, Software.
Metadata Support	Yes	Yes	Yes	Yes	Yes

10. Conclusion

Open Source Software reliability and quality by supporting independent peer review and rapid evolution of source code. To be certified as open source, the license of a program must guarantee the right to read, redistribute, modify, and use it freely. Based on this study user can select the OSS software which suits their needs.

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Open Source Software Tools for libraries: *An Insight*

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Abstract

The open source movement has become a boon to the libraries. This paper discusses about various Open source software which can be adopted in Libraries. The paper describes in brief about the feature of few softwares like NewGenLib, Koha, DSpace, etc.

Keywords: Open source softwares, DSpace, Koha, NewGenLibGSDL, E-Prints

1. Introduction

Information and communication technology has affected every profession in recent past and libraries are no exception. Libraries of all types are compelled to provide greater information access and improved levels of service, while coping with the pace of technological change and with limited budget. Use of software applications in libraries has become essential due to a number of factors such as growth in Electronic resources, demand for anytime anywhere access of information, and arise of library consortia. However, implementing new technologies and tools into library environments may be a highly challenging task. Despite significant benefits many libraries do not have the definite resources and infrastructure to maintain and upgrade available technologies. In addition, there is a significant demand for standards-based, open systems to promote interoperability. Open Source Software (OSS), comes to the rescue of less-privileged libraries to deal with the increasing demands for use of technology. OSS enables democratization of technology. OSS has definite advantages over proprietary systems in the total cost of ownership (TCO), since it is available free for download on the Internet. Thus OSS bears great importance to the libraries in developing countries like India. OSS also gives freedom to the users of the software to customize it to his/her needs since one has access to the source code of the software.

2. Open Source Software

Open source is a software development model as well as a software distribution model. In this model the source code of programs is made freely available with the software itself so that anyone can see, change, and distribute it provided they abide by the accompanying license. In this sense, Open Source is similar to peer review, which is used to strengthen the progress of scholarly communication. The open source software differs from the closed source or proprietary software which may only be obtained by some form of payment, either by purchase or by leasing. The primary difference between the two is the freedom to modify the software. The software is said to be open source if and only when it abides the following ten requisites:

- Free redistribution – The license must allow end users to redistribute the software, even as part of a larger software package and may not charge royalties for this right.
- Source code – The distribution must make the source code freely available to developers.
- Derived works – The license must permit modifications to be made to the software for redistribution under the same license.
- Of the author's source code – The license may require that modified distributions be renamed, or that modifications be made via patch files rather than modifying the source code.

- No discrimination against persons or groups
- No discrimination against fields of endeavor – This includes commercial or controversial endeavors.
- Distribution of license – The same license must be passed on to others when the program is redistributed.
- License must not be specific to a product – A program may be extracted from a larger distribution and used under the same license.
- License must not restrict other software – The license cannot prescribe the terms of other software with which it is distributed.
- License must be technology-neutral – The license cannot restrict the use of the program to any individual interface or platform

A variety of licenses are used to ensure that the source code will remain available, wherever the code is actually used. Open Source Initiative has approved over 50 different licenses as meeting the criteria of the organization, Following are the nine most widely used licenses.

- Apache Software License 2.0 (www.apache.org/licenses/LICENSE-2.0.html)
- New BSD License (www.opensource.org/licenses/bsd-license.php)
- GNU General Public License (GPL) (www.gnu.org/licenses/gpl.html)
- GNU Lesser General Public License (LGPL) (www.gnu.org/licenses/lgpl.html)
- MIT License (www.opensource.org/licenses/mit-license.php)
- Mozilla Public License 1.1 (MPL) (www.mozilla.org/MPL/MPL-1.1.html)
- Common Development and Distribution License (www.sun.com/cddl/cddl.html)
- Common Public License 1.0 (www.ibm.com/developerworks/library/os-cpl.html)
- Eclipse Public License (www.eclipse.org/legal/epl-v10.html).

2.1. Advantages of OSS:

- Anybody can read the source code and can contribute by modifying the code by adding new features, correcting errors.
- The software can be converted into local languages for the benefit of local people.
- It provides cheap alternatives to expensive commercialized solutions.
- It provides no restrictions on how the software is used and reduces dependences on software vendors.
- It is more reliable than closed source traditional commercial software.
- It also provides security and technological independence to the libraries.

2.2. Limitations of OSS

- Usually OSS is not plug-and-play software. They require little technical expertise to install and use.
- OSS can lack formal support making it difficult to use and install without significant technical expertise. Must rely on development communities for support.

3. Open source software application in libraries

The range and quality of software available for libraries is small compared to other industrial applications. According to Chudnov there are three factors pushing the use of OSS in libraries:

- OSS licenses allow libraries to cut budget on software and use it to other issues needing more funds.
- OSS product is not locked into a single vendor. Thus even if a library buys an open source system from one vendor, it might choose to buy technical support from another company or get it from in-house experts.
- The entire library community might share the responsibility of solving information systems accessibility issues.

OSS in Library and Information centers can bring many changes in terms of services provided to the users community. Daniel Chudnov has done a lot to raise awareness of OSS in libraries. There are number of open sources for library application which fulfills the specific needs in the areas of Library automation, Digital Library creation, Content management/ Knowledge management etc.

4. Library management Software

4.1. Koha

Koha is the first open source fully featured integrated library system (ILS) used by a considerable number of libraries in USA, New Zealand, and Europe. It is a promising full featured open source integrated library system (ILS) created in 1999 by Katipo Communications for the Horowhenua Library Trust in New Zealand, and went live in January of 2000. Currently it is being used by thousands of libraries all over the world. It is distributed under the free open source general public license (GPL). It includes modules for circulation, cataloging, acquisition, serial control, reservation, patron management and more. It supports MARC 21 and UNIMARC support, Z39.50. Koha has web-based Interfaces. Koha is built using library ILS standards and uses the OPAC (online public access catalog) interface. **Supported Platforms:** Windows & Linux, **License:** GNU-GPL, **Availability:** http://sourceforge.net/projects/koha.

4.2. NewGenLib

NewGenLib, an integrated LMS is open source under the most widely used free software license, GNU GPL. NewGenLib is the result of collaboration between specialists in library automation and software specialists. The software was developed over a four-year joint effort between a professional charitable trust, Kesavan Institute of Information and Knowledge Management (KIIKM) and a fledgling software development company. Libraries in India still do not generally use international metadata and interoperability standards (e.g., MARC-21, Dublin Core, OAI-PMH) and it is believed that this puts them at a great disadvantage when it comes to sharing metadata and building union catalogues and networking. The fact that libraries are not networked and hence are handicapped in sharing costly bibliographic and full-text resources among themselves, the importance of providing software that would allow both library management and the creation of institutional open access repositories increases. **Supported Platforms:** Windows, Linux, **License:** GNU-GPL, **Availability:** http://www.versussolutions.biz

4.3. PhpMyLibrary

PhpMyLibrary is a PHP/MySQL web-based library automation application meant for smaller libraries. The software has the facilities of cataloguing, circulation, and OPAC module. The software also has an import export feature. It strictly follows the USMARC standard for adding materials. This software is compatible with the content management system and have as facility of Online reservation system for library and also supports import from ISIS database with an ISIS2MARC program. **Supported Platforms:** Windows, Linux **License:** GNU-GPL, **Availability:** http://sourceforge.net/projects/phpmylibrary/

4.4. OpenBiblio

OpenBiblio is an easy to use, open source, automated library software written in PHP. This software has facilities of OPAC, circulation, cataloging, and other administrative work. OpenBiblio is well documented, easy to install with minimal expertise and designed with common library feature. **Supported Platforms:** Windows, Linux, **License:** GNU-GPL, **Availability:** http://obiblio.sourceforge.net/

4.5. Avanti MicroLCS

Avanti MicroLCS Software is developed by Avanti Library Systems in Java language. This is a small, simple, and easy to install and use open source software. It is platform independent and can run on any system that supports Java runtime environment. It incorporates standards such as MARC and Z39.50. **Supported Platforms:** Windows, Linux, **License:** GNU-GPL, **Availability:** *www.**avanti**librarysystems.com/*

4.6. ABCD

ABCD stands for "*Automatización de Bibliotecas y Centros de Documentación*" (Spanish), which means: *Library and Documentation Centers Automation.* Its development is promoted and coordinated by **BIREME**(WHO, Brazil) **and VLIR (the Flemish Interuniversity Council, Belgium)** using UNESCO's ISIS database technology. ABCD, in English, is "Automation of liBraries and Centres of Documentation". It is an integrated library management tool, covering all major functions in a library, such as Acquisitions, bibliographic database management, user management, transactions, serial control, online end-user searching on local and external bibliographic databases, and library portal. It also allows import and export of bibliographic records using Z39.50. **Supported Platforms:** Windows, Linux. **License:** GNU-GPL, **Availability:** http://reddes.bvsaude.org/projects/abcd

4.7. GNU Library Management System (GLIBMS)

Glibms is Library management software developed using PHP and PostgreSQL to automate the different activities carried out in the library. **Supported Platforms:** Linux, UNIX, **License:** GNU-GPL, **Availability:** http://sourceforge.net/projects/glibs/

4.8. BiblioteQ

BiblioteQ strives to be a professional cataloging and library management suite, utilizing a Qt 4.x interface and providing connectivity to PostgreSQL and SQLite. The SRU and Z39.50 protocols are used for retrieving data for books, journals, and magazines. The software is available for all major operating systems. **Supported Platforms:** Windows, Linux, **License: BSD, Availability:**http://biblioteq.sourceforge.net/download.html

4.9. Emilda

Emilda is a complete Integrated Library System that features amongst others an OPAC, circulation and administration functions, Z39.50 capabilities and 100% MARC compatibility. MARC compatibility is achieved using Zebra in conjunction with MySQL. It was developed by Realnode Ltd. In Cooperation with SDU. **Supported Platforms:** Linux, **License:** GNU-GPL, **Availability:** http://emilda.org/Emilda

4.10 Evergreen

The Evergreen Project was initiated by the Georgia Public Library System in 2006 to serve their need for a scalable catalog shared by (as of now) approximately 250 public libraries in the state of Georgia. After Evergreen was released, it has since been adopted by a number of library consortia in the US and Canada as well as various individual libraries, and has started being adopted by libraries outside of North America. Evergreen can be used by libraries to provide their public catalog interface as well as to manage back-of-house operations such as circulation, acquisition of library materials, and sharing resources among groups of libraries. **Supported Platforms:** Windows, Linux, Mac, **License:** GNU-GPL, **Availability:** http://evergreen-ils.org

5. Digital library software

5.1. Greenstone Digital Library (*GSDL*)

Greenstone is a suite of software for building digital library collections. It offers exciting ways to build and distribute digital document collections. Within a few minutes time, one can build full-text *search indexes* and *browsing classifiers* for any collection of digital documents. It provides a new way of organising information and publishing it on the internet in the form of a fully-searchable, metadata-driven digital library. It is developed and distributed in cooperation with UNESCO and the Human Info NGO in Belgium. It is multilingual software is distributed under the GNU public license. Greenstone runs on all versions of Windows, Linux, and Mac OS-X and is easy to install. **Supported Platforms:** Windows, Unix **License:** GNU-GPL, **Availability:** http://www.greenstone.org

5.2. DSpace

DSpace is a repository software package typically used for creating open access repositories for scholarly and/or published digital content. DSpace was developed by Massachusetts Institute of Technology (MIT) libraries and Hewlett-Packard (HP), as an open source application that institutions and organisations could run with relatively few resources. DSpace repository software serves a specific need as a digital archives system, focused on the long-term storage, access and preservation of digital content. It accepts all manner of digital materials, such as articles, conference papers, books, theses, data sets, computer programs, visualisations, simulations, multimedia publications, administrative records, journals, bibliographic datasets, images, audio files, video files, web pages, etc. DSpace repository software serves a specific need as a digital archives system, focused on the long-term storage, access and preservation of digital content. **Supported Platforms:** Windows, Linux **License:** BSD, **Availability:** http://www.dspace.org/

5.3. E-Prints

EPrints is a free and open-source software package for building open access repositories that are compliant with the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH).

E-Prints has been developed at the University of Southampton School of Electronics and Computer Science in 2000 and released under a GPL license. It shares many of the features commonly seen in document management systems, but is primarily used for institutional repositories and scientific journals. **Supported Platforms:** Unix, Linux **License:** GPL, **Availability:** http://software.eprints.org

5.4. Fedora

Fedora (Flexible Extensible Digital Object Repository Architecture) is a digital asset management (DAM) architecture upon which institutional repositories, digital archives, and digital library systems might be built. Fedora software gives organisations a flexible service oriented architecture for managing and delivering their digital content It is a modular architecture built on the principle that interoperability and extensibility are best achieved by the integration of data, interfaces, and mechanisms (i.e., executable programs) as clearly defined modules. Fedora was originally developed by researchers at Cornell University and the University of Virginia Library as an architecture for storing, managing, and accessing digital content in the form of digital objects inspired by the Kahn and Wilensky Framework. **Supported Platforms:** Linux **License:** ECL, **Availability:** http://www.fedora-commons.org

5.5. *CDS-Inveni*

CDS-Invenio is web-based integrated digital library software developed by CERN. CERN Document Server Software (CDS-Invenio) is a suite of applications which provides the framework and tools for building and managing an autonomous digital library server. It is a powerful, flexible digital library system suitable to handle very large collections of full-text documents. CDS-Invenio has grown into a large software suite intended to cope with large collections (almost 1 million records at CERN), and with advanced library-type functionalities. It uses MARC-21 bibliographic standard. It uses entirely freeware technology and is available under the terms of GNU General Public License. **Supported Platforms: Mac, Unix,** Linux, **License:** GPL, **Availability:** http://invenio-software.org/

5.6. Dienst

Conceptually, Dienst is a system for configuring a set of individual *services* running on distributed *servers* to cooperate in providing the services of a digital library. The *open architecture* of the Dienst system - exposure of the functionality through an defined protocol - makes it possible to combine Dienst services in flexible ways and augment the existing services with other *mediator services*, which build on the functionality of the existing services. The Dienst system originated with the Computer Science Technical Reports Project, a DARPA-funded collaboration to establish a digital library of computer science technical reports. **Supported Platforms:** Unix, Windows & Mac, **License:** CU, **Availability:** http://www.cs.cornell.edu/cdlrg/dienst/DienstOverview.htm

5.7. Ganesha

Ganesha Digital Library is one of the several digital library application used by University Library in Indonesia, as organizing digital resource tool. GDL itself was created under GPL license, based on PHP/MySQL. Pursuing the web technology, GDL was developed to meet the needs in accordance with technological developments. In the early development of the Digital Library in Indonesia, in early 2000, GDL has met international standards to be operated or implemented. Two standards have been used are the Dublin Core Metadata Element Set as a metadata standard, and

OAI-PMH as a bridge of communication among digital library applications. **Supported Platforms:** Linux, UNIX & Windows **License:** GPL, **Availability:** http://kmrg.itb.ac.id/

5.8. VuDL

VuDL is a simple to use Digital Library Administration application powered by all open source technologies. Some of the functionality currently provided by VuDL includes a built-in METS metadata editor, service image generation tools, an XML database repository, and an OAI server, along with record drivers for easy implementation with VuFind. The core of VuDL's application is powered by Orbeon Forms, a powerful XML/XForms processor. eXist (a native XML database) and the server's file system combine to support the data and image repository. VuDL is offered for free through the GPL open source license. You can modify the software and share your successes with the community. **Supported Platforms:** Linux, Mac & Windows **License:** GPL, **Availability:** http://vudl.org/

5.9. XTF

The eXtensible Text Framework (XTF) is an open source platform for providing access to digital content. Developed and maintained by the California Digital Library (CDL), XTF functions as the primary access technology for the CDL's digital collections and other digital projects worldwide. XTF is widely used in the digital library community and there is extensive help, tutorials, and a community of users for assistance in using the tool. **Supported Platforms:** Unix, Linux, Mac, Windows **License:** BSD, **Availability** http://xtf.cdlib.org/

6. Content management software/Knowledge management software

6.1. *Drupal* (http://drupal.org)

It can be a great choice for libraries for building their websites and handling complex volume of data. Along with publishing information about library, Drupal also allows to support creating blogs for every user, handling of thousands of pages, storing formatted bibliographic information, automatically building site map from menus and content categories, providing tags to every content, providing social bookmarking support, photo/video sharing, RSS feeds support, faceted search feature, maintaining user profiles, taking user polls, etc. Several Web 2.0 features are supported in drupal. Drupal also allows creating a library catalog by importing MARC records. Drupal uses a classification system for all content inits system that can allow placing content virtually anywhere on the site at any given time11. Flexible and powerful Drupal is a great choice for complex site maintenance.

6.2. Joomla (http:// www.joomla.org/)

Joomla is an award-winning content management system (CMS), which enables you to build Web sites and powerful online applications. Many aspects, including its ease-of-use and extensibility, have made Joomla the most popular Web site software available. Best of all, Joomla is an open source solution that is freely available to everyone. DotNetNuke (http://www.dotnetnuke.com/): *DotNetNuke* is the leading open source ASP.NET CMS, content management system and .NET web application development framework offering a free CMS. DotNetNuke helps organizations build and manage content-rich websites, social intranets and online communities. It is the most widely adopted Web Content Management Platform for Microsoft .Net. DotNetNuke delivers a powerful content management solution with an intuitive, easily understood interface designed for non-technical content contributors.

6.3. Mambo (http://mambo-foundation.org/)

Mambo is a full-featured, award-winning content management system that can be used for everything from simple websites to complex corporate applications. It is used all over the world to power government portals, corporate intranets and extranets, ecommerce sites, nonprofit outreach, schools, church, and community sites. Mambo's "power in simplicity" also makes it the CMS of choice for many small businesses and personal sites.

6.4. TYPO3 (http://typo3.org/)

TYPO3 is an enterprise-class, Open Source CMS (Content Management System), used internationally to build and manage websites of all types, from small sites for non-profits to multilingual enterprise solutions for large corporations.

6.5. Wordpress (http://wordpress.org/):

WordPress is web software you can use to create a beautiful website or blog. **WordPress** is a free and open source blogging tool and a content management system (CMS) based on PHP and MySQL. It has many features including a plug-in architecture and a template system.

7. Conclusion

Former President APJ Abdul Kalam said, "Open-source software offers developing nations such as India the best opportunity to modernise". The open source movement has become a boon to the libraries. Due to shrinking budgets and the increasing prices of journals, librarians have to look forward to a new alternative by which they can collect, store, arrange and disseminate information to the users. OSS seems to be way and means to LICs to effectively organize the library functions, services and facilities with minimum expenditure. If OSS is used in the libraries at operational level in libraries it can boost the services in library and information centers.

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Open Source Web tools for LIS Pedagogy

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Abstract

Open source usually refers to software that is released with source code under a license that ensures that derivative works will also be available as source code, protects certain rights of the original authors, and prohibits restrictions on how the software can be used or who can use it. By using these open source web tools teacher can integrate them in teaching process. This paper highlights the observation data, such as common learning deliverables, elements of the Teacher's tasks, and Open source web tools for LIS pedagogy and Benefits of open source web tools for their teaching process and inters departmental sharing of information among students and their URL s, and concerns. Very intension of this paper is to motivation of the teachers to use this kind of tools for their teaching particularly in LIS field.

Keywords : Common learning deliverables, Web tools for LIS pedagogy, Elements of the Teacher's task.

1. Introduction

Now a day's universities are consolidating and enhancing their commitments to various models of e-learning. These activities are leading to the adoption of corporate-wide e-learning systems, and accompanying changes in structures, processes, and infrastructure requirements. The professed ideal is to identify narrowly defined corporate IT solutions this can deliver the full range of educational, administrative and student support features to meet the organizational need to expand e-learning activities globally. The trend seems to be away from locally driven and controlled IT development and adoption towards investments in Content management system. In reality, however, universities generally are developing and using a broader array of solutions to meet their needs than may be deemed desirable under a more centralized, corporative IT approach. Instead of huge investment for IT infrastructure for pedagogy of LIS, one can move towards open source web tools that are available in the Internet for sharing and re-use of resources. The purpose of this paper is to make the LIS teachers is to: Aware of the web tools and software existence: persuade of their usefulness: be given advice about how to integrate them into their teaching practice.

2. Teaching and Learning Process

A Teaching can be defined as a process that converts an outside resource, namely knowledge, into outside results, namely learning deliverables. A process perspective on teaching helps in identifying discrete activities that makes up teaching and hence finding a tool to support each one of them. For example one of the basic activities in teaching process is discovering information. This is supported by search engines. Learning deliverable is to teacher what products/service is for a business. Learning deliverables generally consists of information and insight. Some of common learning deliverables are:

- Lecture
- Lecture Notes
- Presentation
- Audio/Video recording of class delivery
- Learning resources

- Quizzes
- Online exams
- Similarly, elements of Teacher's task is to
- Discovering outside knowledge resources
- Procuring relevant resources
- Organizing procured knowledge
- Communicating
- Collaborating
- Converting them into Learning deliverables
- class notes, handouts, presentations, manual etc
- Delivering learning deliverables
- Conducting class, seminar, workshops, tutorial etc
- Assessments
- Test, quizzes

Open Source Web tools enable teacher in each of above work.

3. Open Source Web tools for LIS pedagogy

Open source is not equivalent to free software. Open source is a work style or methodology. Oftentimes an open source license (such as the GNU General Public License, or GPL) allows distribution or modification of source code without charge, as long as the licensee maintains the author's name and copyright statement in the code. Generally open source software is freely available on the Internet, but not always. In some cases, commercial users can obtain a license to remove references to the author. Teacher can deliver their presentation in interactive and more effective form. Necessity of using open source web tools in teaching are many like, teacher can access freely anywhere and can edit, modify publish from anywhere; moreover it is easily sharable even during editing, useful templates and free lecturer videos. There is a widespread availability of high-quality open source web tools to enhance teaching process.

Open source Web Tools that can be used in Teaching are;

- E-mails
- Blogs
- online docs
- Groups
- Forms
- Translation tool
- Text to voice tools
- social networking
- Quizzes / puzzles / online exams

Teaching activities and Supporting Tools are useful for effective and interactive presentation. Better qualities of open source software are available. Here are some of the tools explained below;

Discover Information: Teacher can use search engines to gather necessary information for his presentation or he may use customized searching techniques.

Publish and Disseminate Information: Google Site makes creating and sharing a group website easy. Teacher can Create, collect and control the sites easily.

4. Benefits of Sharing, Re-using, and Giving Access

Evidence from case study suggests that teaching staff are already aware of the information technology and benefits of sharing materials in terms of saving time and trouble and improving quality.

Teachers readily share with their colleagues, students and with collaborative subject groups often using 'personal' means (such as email, blogs, groups, personal web pages, etc.) and more recently external Web 2.0 sharing systems for example Flickr, Slideshare, YouTube, ishare etc. Many of the teaching staff use the open source tools as a storage and sharing system as this is where they upload a substantial amount of their teaching materials. The recent development of the use of centrally managed institutional repository systems offers much greater potential.

Benefits of managing and sharing resources for an institution include:

- Saving time and cost by re-use
- Making better quality resources available to tutors using open source web tools.
- Supporting collaborative course development both within institutions and across institutions of university.
- Giving access to anywhere.
- Supporting the transfer of institutional research and enterprise knowledge for learning and teaching
- Developing good professional reputations for individuals and institutions.

As well as teaching materials, repositories can be useful for a wide range of institutional resources and collections. Examples include dissertations, Abstracts etc. A teacher has to share learning resources and supplementary materials with learners through

- Files can be uploaded in a Group
- A document can be shared with a number of collaborators

However, drop.io provides a simple way to share files with anyone. Online docs can be used to share teaching related information with learners. Online docs such as Google docs to share the Course syllabus, Evaluation_scheme, Class Notes, Discussion Questions, and Student submission details.

5. Open Source Web tools for Teaching and Learning process

Web tools represent a huge resource for enhancing all aspects of teaching & learning. Teaching professionals can use the following open source web tools for their interactive and effective teaching and improving the quality of education.

5.1. *YouTube*

YouTube was founded in 2005 by Chad Hurley, Steve Chen and Jawed Karim, who were all early employees of PayPal. YouTube is the leader in online video, sharing original videos worldwide

through a Web experience. Teacher can upload his video lecture and access freely anywhere. You tube is huge collection of all categories of videos like cataloguing, classification, digital library concepts, new inventions in LIS, documentaries of various libraries are also available. User can search the required video clips. User can easily download it and integrate it to his lecture series; A keyword search box provides links to suitable videos.

5.2. *Teacher tube and school tube*

Teacher Tube is a video sharing website similar to, and based on, YouTube. It is designed to allow those in the educational industry, particularly teachers, to share educational resources. The site contains a mixture of classroom teaching resources and others designed to aid teacher training. A number of students have also uploaded videos that they have made as part of K-12.

Teacher Tube went live in 2007 and so far has 15,000 free to view instructional videos created by and for teachers. It includes featured videos that are rated by viewers. Some of the diverse subjects covered include Photography, Maths, Physics, English, French grammar. A keyword search box provides links to suitable videos. The US slant and some distracting advertisements may limit its appeal, but the range of subjects and alternative teaching ideas available make it a useful resource.

Another US based website called School Tube contains videos that have been created by students with the help of tutors on a wide range of subjects. Each video is screened by a qualified teacher using school district best practice before it is made available on the site. Videos are arranged by subject heading to the left of the page. The site also works in partnership with the Student Television Network (STN), a group of journalism teachers that share their expertise to create quality videos.

5.3. *Moodle*

Learning Management systems (LMS) - is an integrated information system- that helps a faculty to create course content and organize all course related data. Moodle is open source tool it is mainly used for online test, quizzes, and puzzles. Teacher can keep the day to day lecture notes, questions in sharable form. Moodle is one of most famous open and free LMS available. Individuals and institutions need to download and installation before they can customize to their institutional use. However, now teacher can use it directly from the web or installed intranet. **Modular Object-Oriented Dynamic Learning Environment** is a free and open-source e-learning software platform, also known as a Course Management System, Learning Management System, or Virtual Learning Environment. It has a significant user base with 45,721 registered and verified sites, containing 32 million users in 3 million courses (as of January, 2010).

5.4. *E-Mail in teaching*

Seminars are integral part of many courses these days. Choosing seminar topic by the student, getting faculty approval, preparing abstract and slides demands a lot of turn-around time.

- Student submits seminar topic
- Faculty approves topic via email
- Students send slides via email
- Final presentation will be made online

5.5. Google Docs:

Online docs can be used to share teaching related information with learners. This feature is helpful in Course syllabus, Evaluation scheme, Class Notes, Discussion Questions, Student submission details. Using presentation tool has become a regular feature of all class room teaching. Google Docs allows us to create and publish presentations.

It is also very useful web tool due to its useful features:

- Upload from and save to your desktop
- Edit anytime, from anywhere
- Pick who can access your documents
- Share changes in real time
- Files are stored securely online

5.6. Blogs

A weblog or blog is a frequently updated webpage, typically consisting of fairly brief posts presented and archived in reverse-chronological order. Blog posts are primarily textual, but many include photos and other multimedia content. Blogs, started around 1997, with Dav Winer's Scripting News. A web record of Winer's reflections and commentaries on a wide range of topics; now it is longest-running blog on the Internet. In recent times tools such as Blogger have made blogging much easier and more widely accessible as "pushbutton publishing for the people". They provide a great means for faculty to support class room teaching. Faculty can use blogs to create course home page.

5.7 Translation Tools

Translation tools help us reach out to students who might find it difficult to understand teaching in English. One can use translator to render enter content in a specified language. Google provides this open source web tool for translation in various languages.

5.8 Odigo-Voice adding tool

Sometimes people prefer listening rather than reading. Odigo is open source web tool, it helps in adding voice to text file and voice messenger. Teacher can easily interface this odigo to the blogs or text file.

5.9 Forms

Online forms provide a new way to generate and use round-trip documents such as surveys, polls. It is helpful in surveying in research work through questioners, also helpful to conduct online tests, home assignments etc.

5.10 Groups

Online groups provide a handy means to create communities of the similar interest and act as a forum. They can be created for a class and students may be invited to join. This facility is available in gmail, yahoo.

5.11 Alerts

New arrivals of books, library and information science news or any type of subjects are alerted just by placing alert in internet. There is a Google alert option which makes alert to mention subject to specified E-Mail Id. Some handy uses of Google Alerts include, monitoring a developing news story, new arrivals, upcoming conferences & workshops, keeping current on a competitor or industry, getting the latest on a celebrity or event etc.

5.12 Wiki:

"A wiki is a database of pages which visitors can edit live." The building blocks of wikis are the "comments" from visitors. Wiki's provide a great means to create a common place for discussions. Teacher can generally edit a page in real time, search the wiki's content, and view updates since your last visit. In a "moderated wiki," wiki owners review comments before addition to the main body of a topic. Additional features can include calendar sharing, live AV conferencing, RSS feeds and more.Library Science teachers and professionals are using modern gadgets and open source web tools for their teaching and in their collaboration works and interdepartmental sharing of information among students also. Here shown below the some of the URLs, what normally teachers are using for teaching process.

- http://wtlt.blogspot.com/
- http://docs.google.com/present/view?id=ddqtts2d_31fd73f3cp
- http://groups.google.com/group/managementandentrepreneurship/about
- http://groups.google.com/group/managementandentrepreneurship/about
- http://wikipedia.org/
- http://worldbookonline.com/wb/Login?ed=wb
- http://www.google.com/cse/
- https://www.google.com/accounts/ServiceLogin?continue=http%3A%2F%2Fsites.google.com%2F&service=jotspot&passive=true&ul=1
- http://dastikop.blogspot.com/ --for text to voice conversion
- http://docs.google.com/present/view?id=0Aep0go4v8BPCZGN6OGt6M2JfMGRweGc2NmRt&hl=en ----for presentation
- http://empip.pbworks.com/

6. Conclusion

Open source Web tools represent a huge resource for enhancing all aspects of teaching. These open source Web-based learning & teaching systems/tools are becoming better suited to meet the need for dynamic online learning, interaction, collaboration, and networking. The new tools and collaborative approaches and systems, allow learners to take proactive control of their own learning. Educational needs should be strongly for grounded in the process. The above information is giving based on the observation and it is a good result in the teaching and learning environment. Very intensive of this study is to give a motiveness of the all the teachers and students even library science and others also. These kinds of activities are the needful in the today's teaching environment and in library science also.

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Social Networking for Libraries and Librarianship: *Challengies And Opportunities*

Khamkar, R. D. **Khamkar, B.D.**

Abstract

The purpose of this paper is to understand how emerging social network technology services and transforming structure of web and their potential, influence libraries and librarianship in the ICT environment. Libraries and librarians have increasingly been exploring social networking sites for both personal and professional resources. Social networking theory views social relationship in terms of nodes and ties. Nodes are the individual actors within the network and ties are the relationship between the actors. There can be many kinds of ties between the nodes, depending on the relationship. A Social network is a map of all of the relevant ties between the nodes being studied. The paper further discusses issues like what is social networking, its definition, history, Architecture, Characteristics, Advantages, Disadvantages, Medias, Social Networking Sites, Social networking in librarianship, Use of social networking. etc.

Keywords : Social networking, Social relationship, Librarianship, ICT

1. Introduction

Social networking theory views social relationship in terms of nodes and ties. Nodes are the individual actors within the network and ties are the relationship between the actors. There can be many kinds of ties between the nodes, depending on the relationship being studied. A Social network is a map of all of the relevant ties between the nodes being studied. The power of Social network stems from its difference from traditional sociological studies, which assume that it is attributes of individual actors whether they are friendly or unfriendly, smart or dumb, etc...that matter.

2. What is Social networking?

Social networking is the grouping of individuals into specific groups, like small rural communities or a neighborhood subdivision, if you will. Although social networking is possible in person, especially in the workplace, universities and high school, it is most popular online. When it comes to online Social networking, websites are commonly used. These websites are known as social sites. Social networking functions like an online community of internet users. Many of these online community members share common interest in hobbies, religion, or politics. The friends that you can of the many benefits to social networking online. Another benefit includes diversity because it gives individuals from all around the world access to social networking sites. This means, although you are in the United States, you could develop an online friendship with someone in Denmark or India. Not only you will make new friends, but also you just might learn a thing or two about new cultures or new languages and learning is always a good thing.

Social networking often involves grouping specific individuals or organization together. While there are, a number of Social networking websites that focus on particular interest, there are others do not. The websites without a focus are often referred to as 'traditional' Social networking websites and usually have open membership. Anyone can become a member, no matter what his or her hobbies, beliefs, or views are. However, once you are inside this online community, you can begin to create your own network of friends and eliminate members that do not share common

interest or goals. Once you are well informed and comfortable with your findings, you can begin your search from hundreds of networking communities to join. This can easily be done by performing a standard internet search. Your search will likely return a number of results, including my space, friend wise, friend finder, Yahoo! 360, Face book, orkut and classmates.

3. Why Start Social networking

Social networking is a nice form of entertainment, great for meeting people with similar interest, and can be a very effective business technique for entrepreneurs, writers, actors, musicians or artists.

Most of us have hobbies, or things that we are keenly interested in such as books, television, video games or movies. Social networking allows us to reach out to others that have the same interest.

4. Social Networking Architecture

Social networking is based on a central structure that allows people to both express their individually and meet people with similar interest. This includes profiles, friends, blog, widgets and usually something unique to that particular social networking websites such as ability to "poke" people on facebook or Hi5.

4.1. Profile:

Profiles contain basic information, like where you live and how old you are, and personality question, like who are your favorite actor and what is your favorite book. Social networks dedicated to a special theme like music or movies might ask question related to that theme.

4.2. Friends:

Friends are trusted member of the sight that is allowed to post comments on your profile or send you private messages. You can also keep tabs on how your friends are using networking. Friends are the heart and soul of Social networking. It should be noted that not all social networks refer to them 'friends' but all social networks have a way to designate members as trusted.

4.3. Groups:

Most Social networks use groups to help you find people with similar interest or engaged in discussion on certain topics. A group can be 'M.Lib.& I.Sc. Class of 2011-2012' to 'people who likes books'. They are a both a way to connect with like- minded people and a way to identify your interest. Sometimes, groups are called by other names, such as the "networks" on the face book.

4.4. Discussions:

A primary focus of groups is to create interaction between users in the form of discussion. Most Social networking websites support discussion boards for the groups, and many allow members of the group to post pictures, music's, video clips and other related to the group.

4.5. Blogs:

Another feature of some social networks is the ability to create your own blog entries. While not as feature- rich as blog hosts like wordprees or blogger bloggion through a social network is perfect for keeping people informed on what you are up to.

5. Characteristics of Social network:

Four basic characteristics differentiate a Social network from a regular website. Those characteristics are as follows:

5.1. User- Based:

Before Social network like face book or Myspace become the norm, websites were based on content that was updated by one user and read by internal visitors the flow of information was in a single direction, and the direction of future updates was determined by the webmaster, or writer without the users, the network would be an empty space filled with empty forums, applications and chat rooms. This makes social network much more exciting and dynamic for internal users.

5.2. Interactive:

Another characteristic of modern Social networks is fact that they are so interactive. This means that a Social network is not just a collection of chartrooms and forums anymore. These social networks are quickly becoming a pastime that more people are choosing over television- because it is more than just entertainment, it is a way to connect and have fun with friends.

5.3. Community- driven:

Social networks are built and thrive from community concept. This means that just like communities or social groups around the world are founded on the fact that members hold common beliefs or hobbies; Social networks are based on the same principle. Within most modern online Social networks today, you will find sub-communities of people who share commonalities, such as alumni of a particular high school, or an animal welfare group. Not only can you discover new friends within these interest based communities, but you can also reconnect with old friends with whom you lost contact with many years ago.

5.4. Relationship:

The more relationships that you have within the network, the more established you are towards the centre of that network.

6. Advantages and Disadvantages of Social Networking:

Social networking is the recent innovation that has the internet still at the edge of its seat to it is popularly with people. This is mostly because if really is for the people. Bringing every kind of social group together in the one place & letting the internet is really a big thing indeed. Everything about it lies on the advantages & disadvantages of social networking & what it can do for you.

6.1. Advantages

6.1.1. Low costs

Definitely, it is cheaper to use online social networking for both personal and business use because most of it is usually free. in a social networking site, you can scout out potential customers and target makers with just a few clicks and keystrokes, adding a boost to your usual advertisement and promotional stregies. If you want to find tune your business, then this is the way to go, whether on a budget or not.

6.1.2. Builds credibility

You definitely can again the customer's confidence if you can connect to them on both a

personal and professional level. Despite having to do a bit of work, it definitely pays of as you can be tapped for an offer if some one caches wind of your products or services.

6.1.3. Connection

By using a social networking sites, you can do what you can and are connected with these people to form a web of connections that can be leverage if you play your cards right. As long as you give as well as you receive, then they will most likely stick with you. These connections are definitely valuable in the long run

6.2. Disadvantage

6.2.1. Lack of Anonymity:

You are putting out information about your name, location, age, gender and many other types of information that you may not want to let other know. Most people would say be carefully, but no one can be certain of any given time. As long as people can no whom you exactly are, then some kind find ways to do you in.

6.2.2. Scams and harassment:

There is a potential for failure of security in both personal and business context. While many sites apply certain measure to keep any of these cases of harassment, cyber-stalking, online scams, and identity theft to one absolute minimum, you still may never know.

6.2.3. Time consuming:

The key to social networking is that it is supposed to be fun, whether you are just doing it for kicks or clicking around for business purposes. That should be reasonable enough for any one, but there are those people who do not see the point. For them, it can be a disadvantage.

7. Media of social network sites

Social media has become a popular way to share information and content with others. Social networking sites are the sites that host social media. For those new to social media, it is good to know what types of social network sites there are and what each does.

7.1. Forums:

Probably one of the first to allow for social interaction, forums have been around for a while. Forums are typically comprised of people with a similar interest. Users have conversation around a particular given topical and built up relationship with each other. They provide a great deal of information about a topic and are a great way to share your knowledge.

7.2. Blogs:

People like to journal and with the internet, they wanted to share their lives more openly. Originally called web-logs, these personal journals have advanced. Some personal journals still exist, while other blogs discuss a particular niche or interest.

7.2.1. Micro-Blogging:

These sites can share what is going on in individual life or can be information the individual wants to share. Major news events are now breaking online via microblogs. The best-known microblog is twitter.

7.3. Photo Sharing:

Social networking sites are known for sharing of information, in these case photos. User uploads their pictures to photo sharing sites. Rather than having to send individual pictures to family, you send a single link. You can tag your photos with keywords related to the image and allow people to comment. Some popular photo sharing sites are Flicker and Picasa.

7.4. Video Sharing:

You tube is the video sharing sites that almost everyone has seen. Videos are shared online, keywords are added so people can search for those terms or for the video title, people con comment if the video owner allows. Like other forms of social media, it allows for a more personal look of the actual user.

7.5. Professional:

Networking has long been touted as an asset in professional circles. Professional media allows for that type of opportunity online. Thus if you move away from your hometown you can remain connected to your ex-coworkers and other in your profession.

7.6. Social:

Social networking sites are about being social, so there are sites purely for allowing users to stay in touch with people whom they know. While My space was the leader, the current leader is Face book. It is growing around the world.

7.7. Book marking:

The major purpose of the Social networking sites is the sharing of information. If you read a webpage that is interesting, informative or inspirational you may choose to bookmark it. Digg, Delicious and Stumble. Upon are very popular book marking websites.

7.8. Social Networking Sites:

There are many social networking sites for e.g.: twitter, my space, hi 5, face book, orkut, you tube, friendster, second life etc. the information of this are given below:

8. Types of social network sites:

- Profile based social networking sites – Face Book, My space.
- Content social networking sites – You tube, Flicker.
- Multiuse social networking sites – Second life.
- Mobile social networking sites – Twitter.

There are other types of social networking sites out there; some are very similar to the ones mentioned here. Many sites have a major form of socializing and then use the other types as an other ways for users to interact. Top 15 most popular social networking sites like face book, My space, Twitter, Ning, TAGGED, Classmates, Hi5, My yearbook, Meet up, Bebo, My life, Friendster, My heritage, Multiply, Orkut.

9. Social Networking in Librarianship

There is need for social interaction among LIS professionals to gear up professional activities, make aware of day to-day changing knowledge, discuss various issues on emerging technology among professionals, to make fit in their working capacity and to meet the challenges of

growing LIS professionalism etc. These social networking have become a tool for LIS professionals to acquire knowledge, update information, to solve their personal problems irrespective of costs, time and space factors, to modernize their library with consultation of higher expertise without any hesitation and to resolve their technical and academic pursuits. There are many social networking groups all over the world with the intension to express professional, intellectual, social, informational aspects of various professionalism in the library and information science. These various social networks help to exchange their innovative ideas and share their informational needs of concerned organization to a great extent. These Social networks play a drastic role for better management of resource sharing and professional enhancements of LIS.

- **How library vendors are using twitter:** As libraries are begging to use twitter with more frequency and more libraries are beginning to explore the usage of twitter for that library, library vendor are also using twitter.
- **Text a librarian**: Is your library using text messaging to communicate with your patrons? -free E-book with Book Boon.
- **Libraries and social media and social media marketing**: Various concepts are related to social networking in libraries:-

  Creating a useful library catalogue.

  Future of web services

  Library 2.0 technologies.

9.1. Enable librarians and users:

Social networking could enable librarians and users not only to interact, but to share and change resources dynamically in an electronic medium. Users concrete accounts with the library network, see what other users have in common to their information needs, recommend resources to one another, and the network recommends resources to users, based on similar profiles, demographics, previously accessed sources, and a host of data that users provide. And, of course, these networks would enable users to choose what is public and what is not, a notion that could help circumvent the privacy issues Library 2.0 raises and which Litwin(2006) well enumerates.

9.2. Sharing yourself: Librarian is to catalog books

Library thing enables users to catalog the books important to not automatically assume that the personal information and communication, which OSN is based on, is only a commodity for trading. Implicit in this interpretation is that to be under surveillance is undesirable. However, to participate in OSN is also about the act of sharing yourself – or your constructed identity – with others

10. Guidance for Research Scholars

Social networks provide a lens that facilitates the identification and exploration of information needs. Further more, the individual, social network, situation and context may help determine the information resources available to satisfy the need. For example, a major task for Ph. D. students is to identify a "good" research question and the resources required to explore, or address, the question. The individual student, their social network (e.g., their committee), the situation (doctoral dissertation task), and context (department, discipline, state of the art, etc.) help shape the question and available resources. In turn, the question and its answer may help shape the individual, social network, situation and context (Sonnenwald, 1999).

11. Conclusion

In present days, social networking plays an important role in societies as well as libraries. Various social networking sites help for the libraries and librarian. Social networking services are web based and provide means for user through internet, such as E-mail and instant messaging. The help of the social networking sites access the remote information in universal, but various advantages and disadvantages of social networking so the study of this also important. The study require for access to resources in library context is emphasized more in detail, with the technological support for social networking like increasing customer satisfaction, allowing customers to connect with experts, understand and visualize the communication path and sharing the knowledge with others. Some of the implications are enumerated in detail, with the consequences of social networking also. It may be concluded that in future, if the libraries adopt social networking techniques for the users, it would be more beneficial for better interaction with the users.

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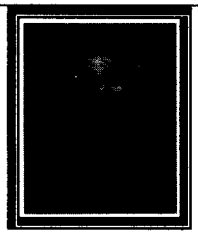
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Use of Open Access Resources: *An Overview*

Ravinder, D

Abstract

The paper discusses the reasons for the initiation of the open access movement around the world by academicians, what is open access and forms of open access literature. The paper also discusses the value of open access resources. FOSS applications useful for hosting and accessing OA resources are also discussed. The paper concludes that since most academicians, in general, publish without expectation of monetary gain it is up to them to support the cause of open access to scholarly literature.

Keywords: ICT, Open access, Free and Open Source Software (FOSS)

1. Introduction

Scholarly communication is a system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future use. Most of the primary scholarly literature is disseminated through journals and monographs. Scholars usefully develop and disseminate their research with little or no expectation of direct financial reward. But, more often than not, the publishers make huge profits out of the efforts of the researchers. Journal and book publishers have always priced their publications so high, that libraries end up cancelling the subscriptions and purchase of costly books. In the days of print the publishers claimed that the overlay of the text, the fees of the reviewers, the costs of printing copies, etc were the reasons for the exorbitant costs of their publications.

2. Information and communication Technologies (ICTs)

With the developments in information and communication technologies and the advent of the World Wide Web in the early 1990s, was seen as a boon for researchers. Because with easier and cost efficient publishing, made possible by internet technologies, the costs of research publications reduced drastically. The technologies which boosted the Open Access movement were.

- Internet and world wide web
- Publications could be made available 24x7
- Universal and remote access
- Instant access
- Immediate publication without any publication delays
- Free and open source software movement
- Reduced the costs of publications as most FOSS tools are available free-of-cost
- Preservation of publications is guaranteed as FOSS applications are not locked in by proprietary codes and licenses.
- Most FOSS applications are not prone to obsolescence as they are open to development by any community member, hence further assuring the preservation of publications over a long period of time.
- The FOSS movement has encouraged library professionals to become more independent in managing technology in their libraries, thus reducing their dependence on vendors.

3. Open Access Initiatives

Open Access in general terms means "Immediate and unrestricted online access to digital scholarly material, primarily peer-reviewed research articles in journals. "OA literature is digital, online, free of charge, and free of most copyright and licensing restrictions.

It was in December 2001, at a meeting of academicians, researchers that the Budapest open access initiative (BOA) statement of open society initiative (OSI), on open access was released. In April 2003, the Bethesda statement on open access publishing was released at the Howared Hughes medical institute in Chevy Chase. The Berliln Declaration on Open Access to knowledge in the sciences and humanities was issued in October 2003. The common definitions of open accesses given by these three statements have been termed as the BBB definition by an eminent Open access supporter peter Suber. The BOAI statement defines open access as "free availability of scholarly literature through internet, permitting users to download, copy, distribute print, search or link to the full text of these articles without financial, technical, legal barriers the only role of copyright in this domain should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited". The Bethesda and Berlin statements define open access as "For a work to be OA, the copyright holder must consent in advance to let users "copy, use, distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship.

4. Forms of Open Access Resources:

Open Access to scholarly literature is generally available in the following forms of publications:

- Open Access journals
- Open access institutional/Disciplinary Repositories, archives, or Digital Libraries
- Open Access Courseware

4.1. Open Access Journals:

Open Access Journals are characterized by the following attributes

- They are scholarly
- They use quality control mechanisms like those of conventional journals
- They are digital
- They are freely available
- They may allow authors to retain their copyrights and
- They may use Creative Commons or similar licenses.

A part from the above characteristics and contrary to popular belief, most of the OA Journals are peer reviewed. Though there are some high quality journals which do not meet all the criteria stated above, yet they have great impact on their fields. One such example is the DLib Magazine (http://dlib.org) in the field of Library & Information Science.

4.2. Open Access Institutional/Disciplinary Repositories, Archives or Digital Libraries

Disciplinary archives include e-prints by authors from all over the world covering one or more disciplines. Institutional repository includes e-prints by authors in a signal academic unit. Of

an institution. Institutional archives are generally more stable and permanent than disciplinary archi9ves as they are associates with initiations. These systems typically feature author submission, metadata creation, screenining of submitted articles by moderators, fielded as well as keyword searching, browsing by author, subject, publisher, data of publication, etc. and these usually adhere to standards like Open Access Initiative-Protocol for Metadata Harvesting (OAI-PMH) for interoperability with other archives of the same nature. These are usually maintained by institutions, associations, small groups or sometimes even by individuals. These archives are usually hosted using open source software like e-prints. Dspace etc. The e-prints on these archives are not peer reviewed.

4.3. Open Access Courseware

Open Courseware is a perfect example of open access courseware. Open courseware refers to "free and open digital publication of high quality educational materials, organized as courses". The open courseware consortium is a group of institutions heading this movement. All the subjects offered by MIT are available for free on this site (http://ocw.mit.edu/ocwweb/index.htm). Open courseware finder (http://opencontent.org/ocwfinder) has indexed course content from six universities/institutions including MIT. You can search for course content in your subject and also use filters to narrow down the searches.

5. Value of Open Access Resources:

Many readers/users still have doubts regarding the authenticity and value of scholarly resources available through open access. As these are free-of-cost, many feel that they may not be scholarly and authentic. It is important to dispel this misconception from the minds of the users. As mentioned earlier most of open access journals are peer-reviewed. Hence, a look into the editorial board members should assure the users of the authenticity of these journals.

5.1 Increased Impact Factors

Many studies have been made on the impact of open access scholarly literature. Studies by Zawacki-Richter, Anderson and Tuncay, N. (2010), Eysenabch (2006), Harnad(2005), Harnard and Brody (2004), Kurtz (2004), Lawrence (2001) and many other such studies have shown that the impact factors of open access literature are considerably more that the closed access literature.

6. Free and Open Sources Software (FOSS) for Open Access

The role of open source software in developing open access repositories has been very pivotal. Many of the open access journals and repositories available have been hosted using free and open source software. Some of the FOSS applications which are useful in hosting and accessing open access repositories are:

- For hosting OA digital libraries or institutional repositories
- DSpace (developed by HP and MIT in 2002 and now maintained by DuraSpace since 2009)
- E-prints (developed at the university of Southampton school of Electronics and Computer Science, UK)
- For OA journals
- Open journal system (developed by public knowledge project (PKP)
- Greenstone Digital Library (GSDL) developed at university of Waikato, New Zealand.

- Link resolving: GODOT (Developed at simon Fraser University)
- Consortia-based serials Management System: CUFTS (developed at Simon Fraser University)
- For Federated searching of OAI repositories: dbWiz (developed at simon Fraser University now stopped development), Master Key (developed by index data), Library find (developed by Oregon state university libraries).

7. Conclusion

The commercial publishers claim that open access model is not a sustainable one and that it affects the quality of the research work. But, the popularity of open access to scholarly literature is evident in the growing numbers of open access archives, digital libraries and institutional repositories in fact, 90% of peer-reviewed journals have endorsed some form of self-archiving and about 10% of peer-reviewed journals are now open access. Around 30+ Indian research institutions now have open access institutional repositories including Indian institute of Sciences (IISc), IIT-Mumbai, NIT -Rourkela, etc. University faculty members in India are still yet to catch up with the open access movement. As of now only Osmania University and university of Hyderabad have open access digital libraries. Library professionals and faculty members need to become more proactive and contribute to the open access movement. They can support the OA movement by continuing their research articles to the open access journals/repositories/digital libraries /archives. On the other hand computer savvy professionals and faculty can start an open access journal/repository/ digital library / archive in their respective subject(s). in fact the onus is on library professionals to develop open access repositories in their respective universities and institutions.

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Use of Social Networking Sites (SNSs) by the Research Scholars of Panjab University, Chandigarh: *A Study*

Har Singh **Anil Kumar**

Abstract

This paper attempts to study the activities and purposes for using Social Networking Sites (SNSs) by the research scholars of Panjab University, Chandigarh. The study was conducted through a questionnaire administrated among the research scholars pursuing their research at Panjab University, Chandigarh. It is found that majority of the respondents were found to be aware and making use of such applications in their research work and it was revealed that facebook is the most popular Social Networking Sites by all categories of research scholars.

Keywords : Social Networking Sites, Facebook, Twitter, Orkut, Research Gate

1. Introduction

Time flies quickly, a few years ago people tend to communicate using wired gadgets such as telephones or ham radios. Today, the internet has reshaped our world beyond our imagination. Part of the ever growing popularity of the World Wide Web as a new means of communication is the advent of social networking sites. These are proprietary websites that can be used by common people to post personal profiles, pictures, videos, music and messages. Social networking sites (SNSs) are publicly accessible virtual meeting spaces where users present information about themselves and view information about others. These sites have created a new medium for public self-expression that allows individuals to connect with others who share an area of interest, but also possess the power to potentially shape public opinion, drive commerce, and change society (Klaassen, 2008; Wortham, 2009). Facebook is one of the most famous social networking sites in these days. Social networking is an online service, platform, or site that focuses on building and reflecting of social networks or social relations among people. According to Boyd and Ellison (2007), as a "Web-based services that allow individuals to construct a public or semi public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system".

Social networking is the grouping of individuals into specific groups, like small rural communities or a neighbourhood subdivision. Although social networking is possible in person, especially in the workplace, universities, and high schools, it is most popular online. This is because unlike most high schools, colleges, or workplaces, the Internet is filled with millions of individuals who are looking to meet other people, to gather and share first-hand information and experiences about cooking, golfing, gardening, developing friendships professional alliances, finding employment, business-to-business marketing and even groups sharing information about baking cookies to the Thrive Movement. The topics and interests are as varied and rich as the story of our universe. According to Hindustan Times 'Facebook crosses one billion milestone – the social networking site now reaches one out of every seven people on earth'. Examples of SNSs are Facebook, Research Gate, Hi5 etc. History and establishment of major Social Networking Sites are given in Figure 1.

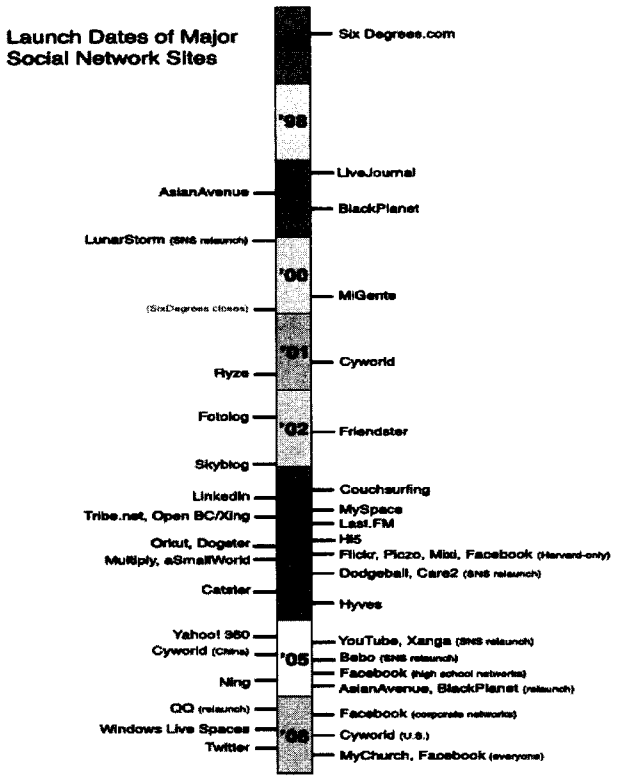


Figure 1. Timeline of the launch dates of many major SNSs and dates when community sites re-launched with SNS features

2. Literature Review

The studies which were found suitable were thoroughly reviewed along with their findings.

Boyd and Ellison (2007) described the comprehensive concept, definition and features of Social Networking Sites. They also presented the historical development of these sites and changes which had happened over the time. They discussed the recent scholarship on SNSs, highlighted key works and gave suggestions for further research in the concerned areas. Mahajan (2009) explored the usage, impact and problems related to social networking sites and their impact on the social and cultural values of India. She also described the top most social networking websites of India along with their bad and good factors. Mansour (2012) in his paper found that Facebook users in Egypt increased dramatically in 2011, from4.5 million users in August, 2010, to 5.2 million in January-February, 6.6 million in March, and 7.3 million users in August, 2011. According to Chan (2011) statistics showed that the advertisement was shown frequently to the targeted user group, and that the click through rate for the advertisement was high. Furthermore, the advertisement accounted for over half of the new connections made to the library's Facebook page during the campaign period. Daqing and others (2012) confirm that undergraduate students use different information resources for various academic tasks. In their tasks, online electronic resources including search engines are the most commonly used resources, particularly for complex academic tasks. Social networking sites are not used for the students' individual academic tasks, and traditional resources still play equal or more important roles in certain specific academic tasks. Students in collaborative tasks look for resources that make it easy to share documents. Participants from the two countries also exhibit interesting and important differences in their usage of information resources.

3. Objectives of the study

- To find out the role of social networking sites in creating awareness among the research scholars under study.
- To identify the age group of the research scholar for using social networking sites;
- To find out the most popular social networking sites among the research scholars;
- To find out the most used tools for accessing social networking sites;
- To know the purpose of using the social networking sites by the research scholars;
- To find out the frequency of using the social networking sites;
- To know the problems being faced by the research scholars while using social networking sites.

4. Scope of the Study

The scope of the present study is only confined to the scholars of Panjab University, Chandigarh who are pursuing their research in different disciplines. For the survey of the primary data, questionnaire method was used to collect data. The questionnaire was distributed among the randomly selected research scholars of Panjab University, Chandigarh. 50 questionnaires were received and analyzed for the present study. Research scholars from all disciplines of Panjab University, Chandigarh form the universe of study. The Panjab University has approximately 500 hundred research scholars. It was not possible to cover all the departments and entire population. Hence, the present study is limited to 14 Departments of Panjab University, Chandigarh as a representative sample. The representative sample was formed by taking 10% of respondents (i.e. 50) from several Departments of Panjab University, Chandigarh. Simple random sampling technique has been used for collecting the data.

5. Data Analyses and Interpretation

5.1 Specializations of the respondents

Table1: Department wise respondents

S.No	Departments	No of Respondents	Percentage (%)
1	Public Administration	2	4
2	Sociology	2	4
3	Maths	2	4
4	Economics	6	12
5	Political Science	4	8
6	Botany	4	8
7	Chemistry	6	12
8	Punjabi	6	12
9	Geography	2	4
10	Physics	4	8
11	Hindi	2	4
12	English & Culture Studies	2	4
13	Library and Information Science	6	12
14	History	2	4
	Total	**50**	**100**

Table 1 shows that 14 departments of Panjab University have been covered under the study. Respondents were from various schools includes School of Social Science (i.e. 6), Humanities (i.e. 3) and Science (i.e. 4) numbers. Majority of respondents were from Department of Economics, Chemistry, Punjabi and Library & Information Science which is 6 Numbers i.e.12% from each department.

5.2 Sex ration of the respondents:

Table 2 provides gender wise distribution of the respondents which shows that 30 respondents (i.e. 60%) were male and 20 respondents (i.e. 40%) female, who are found using Social networking sites.

Table 2: Distribution of respondents by Gender

S.No	Sex	No of respondents	Percentage (%)
1	Male	30	60
2	Female	20	40
	Total	**50**	**100**

5.3 Age group of the respondents

Table 3 presents the data related to the age of respondents. It shows that 48 respondents (i.e. 96%) fall between the age group of 20-30, whereas 2 (i.e. 4%) respondents are the age of 30-40, who used SNSs.

Table 3: Distribution of respondents by Gender

S.No	Age Group	No of respondents	Percentage (%)
1	20-30	48	96
2	31-40	2	4
3	41-50	NIL	NIL
	Total	**50**	**100**

5.4 Research Experience of respondents

Table 4 shows the research experience of the scholars. It indicates that 31 respondents (i.e. 62%) have 0-2 year's research experience, whereas 14 (i.e. 28%) respondents have 2- 3 years of research experience. Researchers who have 3-4 years experience are only 5 respondents i.e. (10%) respondents.

Table 4: Research Experience of respondents

S.No	Research Experience (Years)	No of respondents	Percentage (%)
1	0-2	31	62
2	2-3	14	28
3	3-4	5	10

5.5 Research Publications of respondents

From the table 5, it is clear 24 respondents (i.e. 48%) do not have not any research publications yet, 21 respondents (i.e. 42%) have 1-5 publications, 4 respondents (i.e. 8%) have 6-10 publications and only one respondent has more than 10 publications.

Table 5: Research Publications of respondents

S.No	Research Publications	No of respondents	Percentage (%)
1	Nil	24	48
2	1-5	21	42
3	6-10	4	8
4	More than 10	1	2
	Total	**50**	**100**

5.6 Commonly used SNSs by the respondents

Table 6 shows the commonly used SNSs among the researchers at Panjab University. It depicts that 43 respondents (i.e. 86%) are using facebook, 40 respondents (i.e. 80%) are using Orkut, 11 respondents (i.e. 22%) are using twitter, 17 respondents (i.e. 34%) are using Research Gate. 7 respondents (i.e. 14%) are using others like LinkedIn and HI5.

Table 6: Commonly used Social Networking Sites (SNSs)

S.No	Commonly used SNSs	No of respondents	Percentage (%)
1	Facebook	43	86
2	Orkut	40	80
3	Twitter	11	22
4	Research Gate	17	34
5	Others	7	14

5.7 Tools of using SNSs by the respondents

Table 7 depicts tools that are being used for accessing SNSs. It shows that 27 respondents (i.e. 54%) use PCs for accessing these sites, while 29 respondents (i.e. 58%) respondents use Laptops and 22 respondents (i.e. 44%) respondents use mobile as a tool for accessing Social Networking Sites.

Table 7: Tools of using Social Networking Sites (SNSs)

S.No	Tools of Accessing SNSs	No of respondents	Percentage (%)
1	Personal Computer	27	54
2	Laptop	29	58
3	Mobiles	22	44

5.8 Place of accessing SNSs by the respondents

Table 8 shows that majority of 40 respondents (i.e. 80%) are accessing SNSs from their hostel followed by 20 respondents (i.e. 40) are accessing SNSs from Cybercafes and other place. Few of SNSs are blocked in the University Library. Hence, 10 respondents (i.e. 20%) are accessing SNSs from the Library.

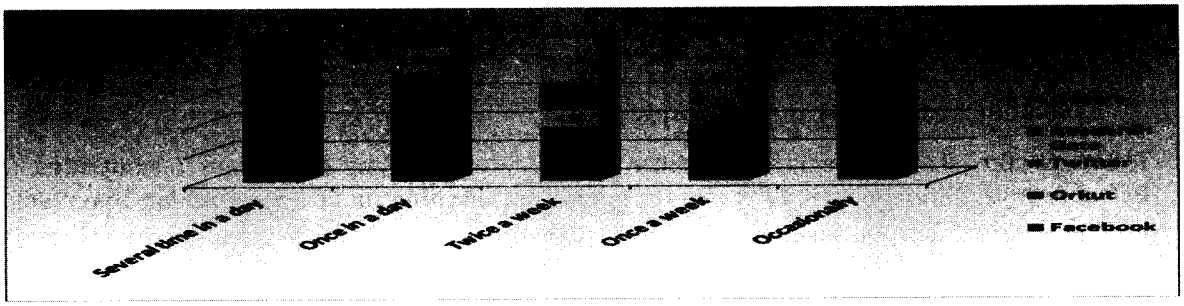
Table 8: Place of accessing SNSs

S.No	Place of Accessing SNSs	No of respondents	Percentage (%)
1	Library	5	10
2	Hostels	40	80
3	Cybercafés	10	20
4	Others	10	20

5.9 Frequency of using SNSs by the respondents

Graph 1 shows that Facebook is the SNSs which is highly used by 12 respondents (i.e. 24%) several time in a day, which is followed by Research Gate as 8 respondents (i.e. 16%). Again Facebook is used by 14 respondents (i.e. 28%) scholars once in a day, which is followed by Twitter as it is used by 5 respondents (i.e. 10%).

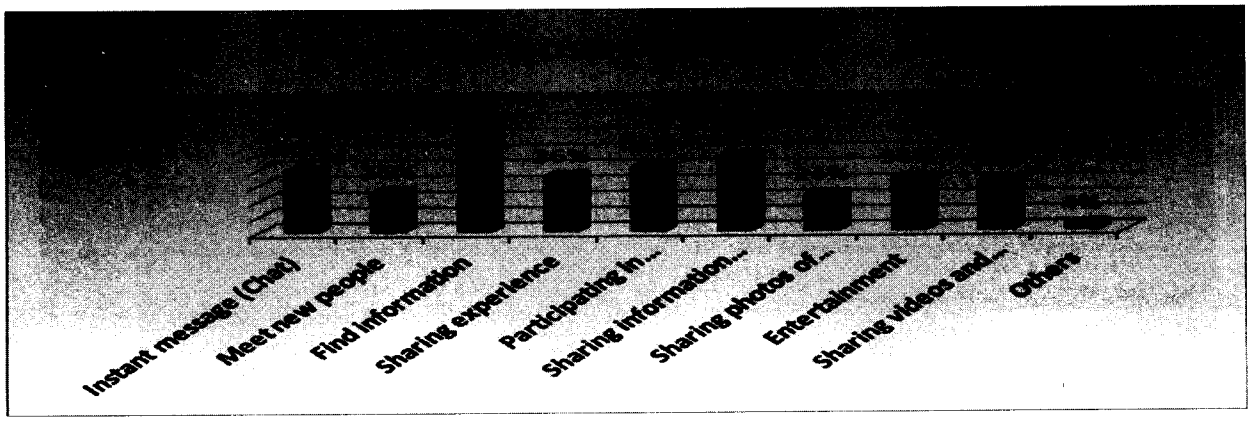
Graph 1: Frequency of using SNSs



5.10 Purposes of using SNSs by the respondents

The respondents were asked as the why they used SNSs. Graph 2 reveals that 20 respondents (i.e. 40%) used to such sites to instant message (chat), 13 respondents (i.e. 26%) to meet new people, 35 respondents (i.e. 70%) to find information, 13 respondents (i.e. 26%) to share experience, 22 respondents (i.e. 44%) to participate in discussions, 24 respondents (i.e. 48%) for sharing information regarding Seminars and Conferences, 17 respondents (i.e. 34%) to entertainment, 16 respondents (i.e. 32%) use such sites to share videos and picture.2 respondents (i.e. 4%) respondents used these sites for other purposes like making friends. The need and importance of these social networking sites is reflected from their interpretation.

Graph 2: Purposes of SNSs



5.11 Friends in SNSs of respondents

Table 11 shows number of contacts the research have on Social networking sites. In which 2 respondents (i.e. 4%) have less than 10 friends, 10 respondents (i.e. 20%) have between10-49 friends, 12 respondents (i.e. 24%) have from 50-99 friends, 10 respondents (i.e. 20%) have from 100-200 friends and only 16 respondents (i.e. 32%) have more than 200 friends.

Table 11: Friends in SNSs

S.No	No. of friends	Respondents	Percentage (%)
1	Less than 10	02	04
2	10-49	10	20
3	50-99	12	24
4	100-200	10	20
5	More than 200	16	32
		50	**100**

5.12 Ease of use of SNSs by the respondents

Table 12 shows that researcher have no difficulty while using social networking sites. It shows that only 2 respondents (i.e. 4%) feels it is moderately difficult, 18 respondents (i.e. 36%) found them average, 16 respondents (i.e. 32%) felt that it is moderately easy and 14 respondents (i.e. 28%) found it very easy to use social networking sites.

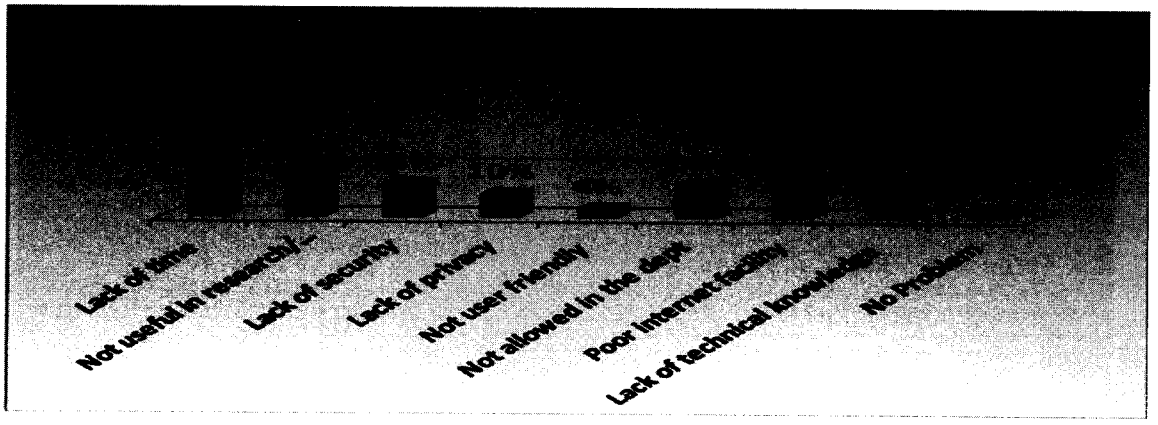
Table12: Flexible with SNSs

S.No	Flexibility in use of SNSs	Respondents	Percentage (%)
1	Very difficult	NIL	NIL
2	Moderately difficult	02	04
3	Average	18	36
4	Moderately easy	16	32
5	Very easy	14	28
		50	100

5.13 Problems in accessing in SNSs by the respondents

From graph 3 it is clear that various problems have been mentioned by the respondents among them 17 respondents (i.e. 34%) have no time for using SNSs, 10 respondents (i.e. 20%) feel that is is not used in research, 7 respondents (i.e. 14%) believed it to be less secure, 5 respondents (i.e. 10%) think such sites lack privacy, 2 respondents (i.e. 4%) said that it is not allowed in the departments, 24 respondents (i.e. 48%) pointed out poor Internet facility, 8 respondents (i.e. 16%) have lack of technical knowledge, but only 2 respondents (i.e. 4%) said that they do not have any problem in using the SNSs.

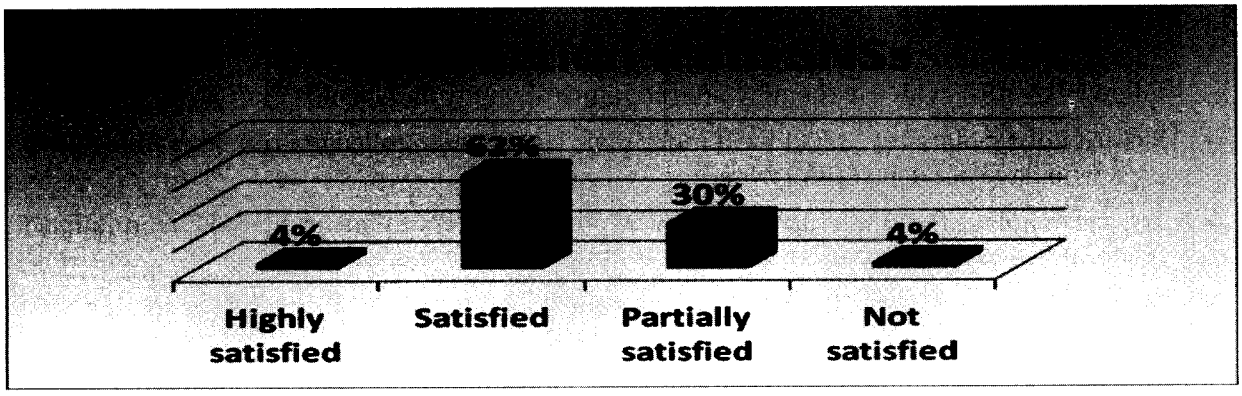
Graph 3: Problems accessing in SNSs



5.14 Satisfaction from SNSs of the respondents

Graph 4 shows that majority of the researchers are satisfied in the use of social networking sites. It indicates that 2 respondents (i.e. 4%) are highly satisfied, 31 respondents (i.e. 62%) are satisfied, 15 respondents (i.e. 30%) are partially satisfied and only 2 respondents (i.e. 4%) are not satisfied with it.

Graph14: Satisfaction from SNSs



5.15 Reliability on SNSs by the respondents:

Table 15 presents the data related to reliable of information on SNSs. It shows that 13 respondents (i.e. 26%) respondents believed that information on SNSs is reliable, 32 respondents (i.e. 64%) feel it is partially reliable, while 5 respondents (i.e. 10%) said that information on SNSs is not reliable.

Table15: Reliability of SNSs

S.No	Information on SNSs	Respondents	Percentage (%)
1	Reliable	13	26
2	Partially reliable	32	64
3	Not reliable	05	10
Total		50	100

Major Findings of the Study

The following are the major findings from the study:

- It is observed that majority of the scholars from all disciplines are aware of the SNSs and have accounts in them;
- Facebook is the most popular SNS (86%) being used by all categories of respondents followed by orkut (80%);
- Majority of the scholars (i.e. 96%) are between the age group of 20-30 years followed by these is the age group of 31-40 years (i.e. 4%);
- Majority of the respondents are new in research (i.e. 62%) and have only 0-2 year of experience followed by 28% with 02-03 year and 10% with 03-04 years of research experience;

- Majority of scholars (i.e. 48%) don't have any publications so far 42% researcher have 01-05 publications, followed by 8% who have 06-10 publications and only 2% have more than 10 publications;
- Majority of the scholars (i.e. 58%) use laptop for accessing SNSs followed by those who accessing such sites on their PCs;
- 46% researcher login SNSs once in a day, followed by 20% those who accessed them several time in a day;
- The main purpose of using SNSs is find useful information by 70% of the respondents followed by 48% who use them by interacting with family and friends though instant chat;
- Majority of scholars (i.e. 32%) have more than 200 friends/colleagues on SNSs followed by 24% who have between 50-99 friends;
- 36% of scholars faced average difficulty while using SNSs followed by 32% who found it moderately easy;
- Majority of the scholars (i.e. 48%) pointed out poor Internet facility while accessing SNSs followed by 34% who pointed out that they do not have time;
- Majority of the scholars (i.e. 62%) are satisfied from the use of SNSs followed by 30% who are partially satisfied;
- Majority of the scholars (i.e. 64%) believed that information on SNSs is not reliable followed by (26%) who consider it reliable.

7. Conclusion

SNSs are quite popular and being used by the research scholars at Panjab University, Chandigarh. The primary purpose of using SNSs is not the research, these are providing several ways to interact with friends, colleagues and family. Social networking sites are not used for the scholars individual academic tasks, and traditional resources still play equal or more important roles in certain specific academic tasks. Research Scholars keep themselves updated by surfing profile of each other, posting of messages, photos and videos, share professional and personal information. Today, SNSs have become one of the largest platforms in the world for sharing real time information. However, during the survey it was noted that Panjab University has blocked some of the SNSs including Youtube, which provides information including education videos. It is to high time that the Panjab University should consider none blocked of such sites.

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Web 3.0: *Possible Avenues for Future Libraries*

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Abstract

The term web 3.0 is best used to explain the next era of web computing and the new information age. Web 3.0 technology allows people to create, share collaborate and communicate. Web 3.0, the semantic web relies on highly structured metadata that allow computers to understand the relationships between objects. Semantic web offers solutions to many of the issues that plague libraries. This paper describes web 3.0 technology and its applications to libraries that we can call as library 3.0. Library 3.0 refers to Libraries using technologies such as the semantic web, cloud computing, mobile devices, RDA tags and re-envisioning use of established technologies such as federated search, to facilitate user generated content and collaboration to promote and make library collections accessible.

Keywords : Web 3.0, Library 3.0, semantic web, intelligent web

1. Introduction

We have been experiencing applications of vibrant and dynamic technologies in Web 2.0 generation which stimulated our expectations and demanding more computing and analyzing intelligence from next generation of the Web. Since, Web 2.0 has been working with the aim to give social synchronization through groups, wikis, blogs, communities, forums and social networks. It brings individual whether a professional or general in contact with known and unknown people. In this people are sharing their thoughts, comments, feedbacks and scraps to be remained in touch with each others. Therefore, in broader sense we can say that Web 2.0 is bringing Individuals together and information scattered all over the web. Whereas it is being expected that Web 3.0 will bring information together. Application of mashup technologies will give us the virtual world of Information in which web will be strengthened with more computing and analyzing powers through artificial intelligence. In Web 3.0 all created profiles and browsing history of an individual put together, on basis of analyzing the contents, computer will come out with the result needed by that particular individual. In this sense, two individuals will get different output while searching on a same query. Web will produce the result by knowing searcher's flavor of information through analyzing his/her profiles and browsing history. Web 3.0 will work with more web semantic technologies, today hidden web or invisible web is a matter of concern and it is also being expected that it will not be there in Web 3.0.

2. Concept of web 1.0, 2.0, and 3.0

The World Wide Web (WWW) is the most prominent part of the internet and largest transformable information construct that its idea was introduced by Tim Burners Lee in 1989 at first. Much progress has been made since the invention of web and related technologies in the past two decades. Web 1.0 as a web of cognition (cognition is the necessary pre-requisite to communicate and the precondition to cooperate), web 2.0 as a web of communication and web 3.0 as a web of co-operation.

Web 1.0 is the first generation of the web which according to Berners – Lee, could be considered the read-only web and also as a system of cognition. Web 1.0 began as an information place for business to broadcast their information to people. The web 1.0 provided a limited user interactions or content contributions and only allowed to search the information and read it. "The

goal of early website was to establish an online presence and make their information available to any one at anytime".

Web 2.0 was defined by Dale Dougherty in 2004 as a read and write web. A key element of this technology is that it allows people to create, share, collaborate and communicate. Web 2.0 allows assembling and managing large global crowds with common interests in social interactions. Web 2.0 applications include wikis, blogs, social networking, folksonomies, podcasting, & content hosting services.

Web 3.0 and semantic web are terms used synonymously to describe various evolutions of web usage and interaction along several paths. These include transforming web into a largest database, a move towards making content accessible by multiple non-browser applications, the leveraging of artificial intelligence technologies. Web 3.0 is a web where the concept of website or webpage disappears, where data is not owned but instead shared, where services show different views for the same web/the same data.

Sl no	Web 1.0	Web 2.0	Web 3.0
1.	Static one way publishing no real interaction between readers or publishers	Two way communication through social networking blogging, wikis, tagging user generated content	Artificial intelligence and the web learning what you want and developing you a personalized web experience (consolidating dynamic content)
2.	Information Sharing	Interaction	Immersion
3.	Connect information	Connect people	Connect knowledge
4.	Reading	Reading /writing	Portable personal web
5.	Focused on companies	Focused on communities	Focused on the individual
6.	The web	The social web	The semantic web
7.	Content management system	Wikis wikipedia	Semantic wikis, semantic media wiki, dbpedia, Rhizome

3. WEB 3.0 TOOLS

- **Unicode and URI:** Unicode is used to represent of any character uniquely whatever this character was written by any language and URI's (Uniform Resource Identifier's) are unique identifiers for resources of all types.
- **Resource Description Format (RDF):** RDF is a simple data model that uses URI's to identify web based resources and describes relationships between the resources in terms of named properties and values. Generally, the RDF family supports interoperability at the semantic level. RDF developments consist of the base web language so that agents are able to make logical inferences to perform functions based on metadata.
- **XML:** Extensible Markup Language: XML is used as the format for transferring data between the server and client and used as a base syntax for other technologies developed for the upper layers of the semantic web.
- **Ontology:** Ontology is a formal representation of knowledge as a set of concepts within a domain, and the relationship between those concepts. Ontology can be defined as a collection of terms used to describe a specific domain with the ability of inference. Ontology gives richer semantic relationships between terms and thoughts of knowledge and which

ensures more standardization in managing the web contents instead of merely indexing terms.

- **RDF Scheme:** RDF Scheme provides a predefined, basic type system for RDF models. It describes classes and properties of the resources in the basic RDF model. RDF schema provides a simple reasoning frame work to infer types of resources.
- **SPARQL:** A recent development for web 3.0 to make easier queries and searches within RDF. SPARQL is designed for use at the scale of the web, and thus enables queries over distributed data sources, independent of format.
- **Application Programming Interface (API):** API is a source code interface providing by an operating system, library or service to support requests made by computer programs. API is a software communication interface, which is a set of functions and procedures that allow different software to communicate with each other. This way software can be used to generate different applications, exploiting its functions without having to reprogram everything again.
- **Mashups:** Mashup is a hybrid of blogs, wikis, streaming media, content aggregators, instant messaging and social networks. Mashup in library environment remembers a user when they log in and it allows users to edit OPAC data and metadata saves the user's tags, IM conversations with librarians, wiki entries with other users. Where the users will be able to make all or part of their profile public; users can see what other users have similar items checked out, borrow and lend tags, and a giant user-driven catalogue is created and mashed with the traditional catalogue.
- **AJAX:** Asynchronous Javascript and XML is a combination of XML and Javascript that allows for the creation of dynamic web applications that are executed on the client, thus reducing data traffic and other server's work load.

4. Applications of web 3.0 technology to libraries (Library 3.0)

4.1. Federated search: federated searching is also known as meta searching, broadcast searching, cross searching and a variety of other names, is the ability to search multiple information resources from a single interface and return an itegrated set of results. Federated searching allows users to search simultaneously multiple web resources and subscription based bibliographic databases from a single interface. To achieve that, and retrieve results from each separate source. The return results are then grouped together and presented to the user in a unified way.

4.2. Cloud computing: Cloud computing is internet based computing whereby shared resources, software, and information are provided to computers and other devices on demand like electricity grid. The advantage of cloud computing for libraries is the possible reduction in the cost of computing and the ease of connectivity between library services encouraging greater collaboration as well as unlimited storage capacity. The move to cloud computing relies on improved internet speed and connectivity.

4.3. Semantic Web: Semantic web will provide us with the option to share, unite, search and organize the web information in easy manner. Sharing and organizing information available in every corner of the web, which is the main aim of this generation and expected to be achieved with the help of semantic web technologies.

4.4. OPAC: In library 3.0, Web OPACs of various libraries which are forming a part of visible or invisible web would be brought together. Metadata of contents (contents in any

format) would seamlessly accessible and searchable from single user friendly interface, just the way a 'Portal' provides one stop shop for various contents in present generation.

4.5. **Ontologies:** These are the techniques to give richer semantic relationships between terms and thoughts of knowledge. These give more standardization in managing the web contents instead of merely indexing the terms. Ontology aims at how the information is organized rather than organizing the information. Librarians can adopt various ontological techniques to define the web contents in more professional as well as personal manner.

4.6. **Ubiquitous contents or User Generated Content (UGC):** The ubiquitous computing offers various contents which can be used or re-used frequently and will also not get absolute in near future. The contents of this generation need to be created in various formats and can also be easily shared, transferred and accessible through all modes of communication. Ubiquitous contents are the personal contents of the people persistently stored on the web in form of movies, blog posts, RSS feeds, wikis, stories, articles, music, games, etc. These are always there on the web and accessible from everywhere over the Internet through all mobile and Internet accessible devices.

4.7. **GeoTagging:** This helps users to find specific information located at specific location. It is simply a marking of various media or digital contents like images, photographs, video, websites or RSS feed etc. Most of the cell phones and mobile devices have GPS (Global Positioning System) facilities, which allowing users to add metadata exactly where the data or image or video was created. So tagging helps users to mark their information in which they are interested for.

4.8. **Virtual Reference Service:** Since technology is developing very fast in all domains, librarians are more determined to serve the users who are away from the libraries. In virtual reference service, apart from helping the users in personal or telephonic way, librarians are now developing the contents which can easily be transferable and readable in cell phones and other mobile devices to help the users at any point of time.

5. Small steps towards Web 4.0

Web 4.0 is also known as "symbiotic web". It is still an underground idea in progress and we can't define it exactly how it would be. The dream behind of the symbiotic web is interaction between humans and machines in symbiosis.

Using web 4.0 it will be possible to build more powerful interfaces such as more controlled interfaces, machines would be clever on reading the contents of the web, and react in the form of executing and deciding what to execute first to lead the websites fast with superior quality and performances and build more commanding interfaces (Hemanth, 2010). Web 4.0 will be the read-write-execution-concurrency web. It achieves a critical mass of participation in online networks that deliver global transparency, governance, distribution, participation, collaboration into key communities such as industry, political, social and other communities (Morcus, cake 2008).

6. Conclusion

We are in the unorganized set of web contents these days but in library 3.0 to establish these unorganized web contents into a systematic and organized way. The most important sphere of library 3.0 is to establish a semantic relationship between all available web contents to ensure

seamless accessibility, search-ability, availability and usability. Librarians need to be more inclined towards the use of latest tools and technology to create virtual library system. But basic aim remains the same i.e. 'right information to the right user at the right time'.

All together, the use of these web 3.0 technologies and applications along with others not yet invented (web 3.0 and 4.0), will constitute a meaningful and substantive change in the history of libraries. The Library's collection will change, becoming more interactive, and fully accessible. The library's services will change focusing more on the facilitation of information transfer and information library rather than providing controlled access to it. Web 3.0 is still in its infancy stage, it is difficult to know just how it will affect libraries at this time. In some cases it might require librarians to be able to process and disseminate information in real time as well.

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Attitude of Users towards Library Services in a University Environment: *A Study of Gulbarga University Library, Gulbarga*

Farheen Fatima **Tadasad, P G**

Abstract

Based on a survey of 250 users – P G students and Research scholars of Gulbarga University Library, Gulbarga using questionnaire as a tool for data collection the study analyzes the awareness, use and satisfaction with the university library services. The researchers made some suggestions for improvement

Keywords : Library resources and services, Users attitude, University library.

1. Introduction

An academic library is generally located on the campuses of colleges and universities and serves primarily the students and faculty of that and other academic institutions. Academic libraries are libraries that are hosted in educational institutions, such as schools, colleges and universities. The main functions of an academic library are to provide resources and research support for students and faculty of the educational institution. Teaching, Research and extension services are the three major aims of a modern university. The main objectives of the University library are to support teaching-learning, the research and outreach activities. A number of studies have been reported on library services, facilities, different sections of library, library automation, IT applications in libraries etc.

The present study has been undertaken to find out the user's attitude comprising of all categories of users – PG students, research scholars and teaching faculty as study population identified using stratified sampling with variations. The primary objective of the present study is to know the attitude of users towards library services. The study is geographically limited to Jnanaganga, the main Campus of Gulbarga University, Gulbarga. The present study uses the survey method wherein a questionnaire has been developed as a tool for data collection. The hypothesis framed for the purpose was tested against ***"paired t-test and one way ANOVA test".***

2. Review of Literature

Ahmad and Haridasan [1] investigated the use of periodicals by the veterinary scientists. The study revealed that users were satisfied by the various services provided. Dash [2] through evaluative study on the quality of the periodical service of Smt. Hansa Mehta library of the Maharaja Sayajirao University of Baroda, found that the periodicals are used for research and the degree of benefits received from the service is low and the quality of the periodical service is relatively poor. Doraswamy and Reddy [3] analyzed the results of the use of the photocopying service offered by Sri Venkateshwara University, Tirupati, Andhra Pradesh. Siddiqui [4] study is a user's survey, at Jawaharlal Nehru university library, New Delhi, regarding their opinion on library location, library visit, frequency of visits to the library, purpose of visit, average time spent, adequacy of library staff, library collection, lending of books, borrowers cards, library services. Sahu [5] measured the perceptions of the Jawaharlal Nehru University (JNU) library users as they relate to quality service and to determine how far the JNU library has succeeded in delivering such service to its users. Panwar and Vyas [6] based on two women colleges of Delhi university, IP College and Laxmibai

College analyzed students approach towards the collection, library service, reading interest, initiation and reference service, library catalogue and shelf arrangement.

3. Characteristics of Study Population

A total of 250 questionnaires were distributed to P.G Students, Research scholars, and teaching staff in Jnanaganga campus of Gulbarga University, Gulbarga, Karnataka. In all 219 valid and complete responses were received and analyzed for discussion (Table-1). The data analysis by gender indicates that 68% (N=149) are male. Forty four percent (N=97) belongs to the age group of less than 25 years. 38.8% (N=85) belongs to the Faculty of Social Science. Forty one percent (N=91) of the population belongs to SC/ST category. Thirty eight percent (N=84) of the population's annual income is less than 40,000. Forty five percent (N=99) of the population has rural background. The study population consists of 42% (N=92) of P.G. Students.

Table - 1: Characteristics of the study population

Characteristics	Number (Percentage)	Characteristics	Number (Percentage)
Gender		**Domicile**	
Male	149 (68.0%)	Rural	99 (45.0%)
Female	70 (32.0%	Urban	120 (54.8%)
Faculty		**Category**	
Social Science	85 (38.8%)	General Merit	77 (35.2%)
Humanities	39 (33.8%)	OBC	51 (23.3%)
Science and Technology	95 (43.4%)	SC/ST	91 (41.6%)
Age		**Annual Income**	
< 25 years	97 (44.3%)	<40,000	84 (38.4%)
26 -35	64 (29.2%)	40,000 - 75,000	54 (24.7%)
36 - 45	22 (10.0%)	75,001 -2,00,000	30 (13.7%)
46 and above	36 (16.4%)	> 2,00,000	51 (23.3%)
Users			
P.G. Students	92 (42.0%)		
Mphil Students	32 (14.6%)		
Ph.D Scholars	39 (17.8%)		
Teaching Faculty	56 (25.6%)		

4. Analysis and Interpretation of Data

4.1. Awareness of library services

Table 2 shows the mean value of all the services. 2.70 indicates low awareness with regard to resource sharing service (Mean: 2.70), consultancy and advisory service (Mean: 2.89) and other services are falling mean in the range of 2.80- 2.96. Awareness about Internet and E-mail service is recorded high (Mean: 4.95) where as the other services like Reprographic service, Electronic information service, Literature Search Service, Reference and Referral service, Learning resource service, Information Consolidation, Access to online Databases service and Document delivery service ranges a mean value of 3.63-3.11.The application of t-test and one way ANOVA shows that the null hypothesis establishing the fact that frequency of visit has a bearing on awareness of services. The other variable have a non significant P value (P>0.05) to accept null hypothesis. It means that the factors gender, age, faculty, category, annual income, domicile, type of user and time spent in the library do not have any bearing on the awareness of services [Table-2(a)]. Hence it can

be interpreted that 'frequency of visit' has a bearing on awareness of services and that the null hypothesis is rejected in this case.

Table -2: Awareness of library services

Library services	SA	A	TA	TD	D	SD	Mean
Literature search service	38 (17.4)	55 (25.1)	19 (8.7)	2 (.9)	65 (29.7)	40 (18.3)	3.44
Document delivery service	30 (13.7)	39 (17.8)	19 (8.7)	15 (6.8)	70 (32.0)	46 (21.0)	3.11
Information consolidation service	35 (16.0)	39 (17.8)	27 (12.3)	10 (4.6)	56 (25.6)	52 (23.7)	3.22
Reference and referral service	39 (17.8)	45 (20.5)	16 (7.3)	9 (4.1)	70 (32.0)	40 (18.3)	3.36
Reprographic service	50 (22.8)	47 (21.5)	23 (10.5)	10 (4.6)	49 (22.4)	40 (18.3)	3.63
Resource sharing service	26 (11.9)	31 (14.2)	18 (8.2)	3 (1.4)	60 (27.4)	81 (37.0)	2.70
User education service	30 (13.7)	22 (10.0)	45 (20.5)	4 (1.8)	49 (22.4)	69 (31.5)	2.96
Internet and e-mail service	107 (48.9)	50 (22.8)	35 (16.0)	8 (3.7)	10 (4.6)	9 (4.1)	4.95
Electronic information service	38 (17.4)	58 (26.5)	23 (10.5)	19 (8.7)	32 (14.6)	49 (22.4)	3.56
Instructional material development service	39 (17.8)	20 (9.1)	14 (6.4)	24 (11.0)	54 (24.7)	68 (31.1)	2.91
Learning resource service	50 (22.8)	13 (5.9)	45 (20.5)	20 (9.1)	36 (16.4)	55 (25.1)	3.34
Consultancy and advisory service	25 (11.4)	26 (11.9)	39 (17.8)	9 (4.1)	52 (23.7)	68 (31.1)	2.89
Access to on-line databases service	37 (16.9)	39 (17.8)	19 (8.7)	27 (12.3)	35 (16.0)	62 (28.3)	3.22
Education and training service	29 (13.2)	30 (13.7)	14 (6.4)	21 (9.6)	46 (21.0)	79 (36.1)	2.80

Note: Figures given in the parentheses indicate percentages)

SA-Strongly Agree *A- Agree* *TA- Tend to agree TD- Tend to disagree D-Disagree SD- Strongly disagree*

Table 2 (a) Awareness of services: Statistical testing

Variable	Value	P	Remarks
Gender	t=-0.069	0.306	*
Age	F=0.596	0.618	*
Faculty	F=0.641	0.633	*
Category	F=0.632	0.532	*
Annual income	F=0.495	0.686	*
Domicile	t=0.101	0.138	*
Type of user	F=0.848	0.469	*
Frequency of visit	F=4.090	0.008	**
Time spent in the library	F=2.022	0.092	*

Note: * Accept Null hypothesis ** Reject Null hypothesis

4.2. Use of library Services

The mean use indicates Internet and E-mail services (Mean:4.60) is very high where in Information consolidation service (Mean:3.68), Document delivery service (Mean: 3.24), reference and referral service and electronic information services (Mean:3.12) is high. Table 3 (a) indicates except frequency of visit the other variables gender, age, faculty, category of users, annual income, domicile, type of user and time spent in the library no significant P- value (P value > 0.05) with regard to use of library services to accept the null hypothesis. Thus it can be interpreted that 'frequency of visit' has a bearing on use of library services and that the null-hypothesis is rejected in this case.

Table - 3: Use of library services

Library services	A	VO	O	S	R	VR	Mean
Literature search service	33 (15.1)	33 (15.1)	21 (9.6)	15 (6.8)	58 (26.5)	59 (26.9)	2.84
Document delivery service	52 (23.7)	27 (12.3)	17 (7.8)	13 (5.9)	47 (21.5)	63 (28.8)	3.24
Information consolidation service	15 (6.8)	23 (10.5)	36 (16.4)	22 (10.0)	50 (22.8)	73 (23.7)	3.68
Reference and referral service	40 (18.3)	34 (15.5)	14 (6.4)	18 (8.2)	52 (23.7)	61 (27.9)	3.12
Reprographic service	21 (9.6)	38 (17.4)	17 (7.8)	39 (17.8)	40 (18.3)	64 (29.2)	2.94
Resource sharing service	8 (3.7)	27 (12.3)	37 (16.9)	15 (6.8)	53 (24.2)	79 (36.1)	2.56
User education service	32 (14.6)	22 (10.0)	13 (5.9)	21 (9.6)	44 (20.1)	87 (39.7)	2.70
Internet and e-mail service	93 (42.5)	51 (23.3)	24 (11.0)	10 (4.6)	29 (13.2)	12 (5.5)	4.60
Electronic information service	25 (11.4)	40 (18.3)	34 (15.5)	26 (11.9)	27 (12.3)	67 (30.6)	3.12
Instructional material development service	13 (5.9)	19 (8.7)	23 (10.5)	43 (19.6)	43 (19.6)	78 (35.6)	2.96
Learning resource service	19 (8.7)	24 (11.0)	28 (12.8)	52 (23.7)	24 (11.0)	72 (32.9)	2.82
Consultancy and advisory service	21 (9.6)	12 (5.5)	23 (10.5)	43 (19.1)	36 (16.4)	84 (38.4)	2.57
Access to on-line databases service	25 (11.4)	33 (15.1)	24 (11.0)	12 (5.5)	42 (19.2)	83 (37.9)	2.80
Education and training service	22 (10.0)	25 (11.4)	14 (6.4)	15 (6.8)	29 (13.2)	114 (52.1)	2.42

(Note: Figures given in the parentheses indicate percentages)

A – Always VO-Very Often O-Often S-Sometimes R-Rarely VR-Very Rarely

Table 3 (a) Use of library services: Statistical testing

Variable	Value	P	Remarks
Gender	t=-0.064	0.342	*
Age	F=0.992	0.397	*
Faculty	F=1.017	0.399	*
Category	F=0.517	0.597	*
Annual income	F=1.463	0.226	*
Domicile	t=0.024	0.719	*
Type of user	F=1.121	0.342	*
Frequency of visit	F=5.767	0.001	**
Time spent in the library	F=1.260	0.287	*

Note: * Accept Null hypothesis ** Reject Null hypothesis

4.3. Satisfaction with library services

The mean satisfaction value lies between 2.47 (Instructional material development service) and 4.07 (Internet and E-mail service). It indicates that users have better satisfaction rate compared to others [Table 4]. The application of t-test and one way ANOVA indicates [Table 4(a)] that the factors age and frequency of visit have bearing on the satisfaction level with the services ($P<0.05$). Hence, null hypothesis is rejected for the variables. The other variables gender, faculty, category, annual income, domicile, type of user and time spent do not have any bearing on the satisfaction level ($P>0.05$). Hence, null hypothesis is accepted.

Table – 4: Satisfaction with library services

Library services	SA	A	TA	TD	D	SD	Mean
Literature search service	30 (13.7)	35 (16.0)	23 (10.5)	10 (4.6)	56 (25.6)	65 (29.7)	2.98
Document delivery service	19 (8.7)	37 (16.9)	16 (7.3)	36 (16.4)	49 (22.4)	62 (28.3)	2.74
Information consolidation service	23 (10.5)	16 (7.3)	10 (4.6)	16 (7.3)	63 (28.8)	91 (41.6)	2.38
Reference and referral service	27 (12.3)	35 (16.0)	38 (17.4)	10 (4.6)	55 (25.1)	54 (24.7)	3.11
Reprographic service	18 (8.2)	34 (15.5)	27 (12.3)	15 (6.8)	46 (21.0)	79 (36.1)	2.74
Resource sharing service	27 (12.3)	31 (14.2)	26 (11.9)	13 (5.9)	55 (25.1)	67 (30.6)	2.90
User education service	15 (6.8)	31 (14.2)	32 (14.6)	21 (9.6)	40 (18.4)	80 (36.5)	2.72
Internet and e-mail service	74 (33.8)	45 (20.5)	38 (17.4)	12 (5.5)	33 (15.1)	17 (7.8)	4.29
Electronic information service	20 (9.1)	55 (25.1)	13 (5.9)	18 (8.2)	33 (15.1)	62 (28.3)	3.14
Instructional material development service	15 (6.8)	16 (7.3)	25 (11.4)	24 (11.0)	61 (27.9)	78 (35.6)	2.47
Learning resource service	20 (9.1)	23 (10.5)	47 (21.5)	21 (9.6)	28 (12.8)	80 (36.5)	2.85
Consultancy and advisory service	20 (9.1)	18 (8.2)	28 (12.8)	14 (6.4)	54 (24.7)	85 (38.8)	2.54
Access to on-line databases service	23 (10.5)	28 (12.8)	45 (20.5)	10 (4.6)	37 (16.9)	76 (34.7)	2.91
Education and training service	11 (5.0)	25 (11.4)	38 (17.4)	17 (7.8)	42 (19.2)	86 (39.3)	2.57

(Note: Figures given in the parentheses indicate percentages)

SA-Strongly Agree A- Agree TA- Tend to agree TD- Tend to disagree D-Disagree SD- Strongly disagree

Table 4 (a) Satisfaction with services: Statistical testing

Variable	Value	P	Remarks
Gender	t=-0.096	0.159	*
Age	F=2.652	0.05	**
Faculty	F=0.724	0.576	*
Category	F=0.768	0.465	*
Annual income	F=2.071	0.105	*
Domicile	t=0.039	0.565	*
Type of user	F=2.436	0.066	*
Frequency of visit	F=6.882	0.000	**
Time spent in the library	F=0.813	0.518	*

Note: * Accept Null hypothesis ** Reject Null hypothesis

4.4. Library services needs improvements

The mean improvement value lies between 2.70 (Resource sharing service) and 4.07 (Internet and E-mail service) [Table 5]. The application of t-test and one way ANOVA test indicates that improvement in services has no bearing on any of the factors and hence the null hypothesis is accepted completely.

Table – 5: Library Services needs improvements

Library services	SA	A	TA	TD	D	SD	Mean
Literature search service	30 (13.7)	39 (17.8)	18 (8.2)	10 (4.6)	65 (29.7)	57 (26.0)	3.03
Document delivery service	35 (16.0)	44 (20.1)	15 (6.8)	13 (5.9)	46 (21.0)	66 (30.1)	3.13
Information consolidation service	26 (11.9)	32 (14.6)	16 (7.3)	10 (4.6)	46 (21.0)	89 (40.6)	2.69
Reference and referral service	30 (13.7)	35 (16.0)	14 (6.4)	30 (13.7)	43 (19.6)	67 (30.6)	2.98
Reprographic service	23 (10.5)	59 (26.9)	16 (7.3)	18 (8.2)	38 (17.4)	65 (29.7)	3.15
Resource sharing service	25 (11.4)	21 (9.6)	26 (11.9)	9 (4.1)	69 (31.5)	69 (31.5)	2.70
User education service	33 (13.7)	18 (8.2)	24 (11.0)	13 (5.9)	55 (25.1)	76 (34.7)	2.78
Internet and e-mail service	81 (37.0)	52 (23.7)	40 (18.3)	12 (5.5)	14 (6.4)	20 (9.1)	4.52
Electronic information service	25 (11.4)	47 (21.5)	38 (17.4)	5 (2.3)	25 (11.4)	79 (36.1)	3.10
Instructional material development service	16 (7.3)	46 (21.0)	20 (9.1)	24 (11.0)	36 (16.4)	77 (35.2)	2.86
Learning resource service	30 (13.7)	19 (8.7)	34 (15.5)	36 (16.4)	27 (12.3)	73 (33.3)	2.94
Consultancy and advisory service	23 (10.5)	21 (9.6)	30 (13.7)	19 (8.7)	38 (17.4)	88 (40.2)	2.66
Access to on-line databases service	33 (15.1)	50 (22.8)	15 (6.8)	18 (8.2)	35 (16.0)	68 (31.1)	3.19
Education and training service	29 (13.2)	32 (14.6)	21 (9.6)	26 (11.9)	33 (15.1)	78 (35.6)	2.92

Note: Figures given in the parentheses indicate percentages)

SA-Strongly Agree A- Agree TA- Tend to agree TD- Tend to disagree D-Disagree SD- Strongly disagree

Table 5 (a) Improvements in services: Statistical testing

Variable	Value	P	Remarks
Gender	t=-0.103	0.128	*
Age	F=1.129	0.338	*
Faculty	F=0.530	0.714	*
Category	F=0.569	0.567	*
Annual income	F=0.881	0.452	*
Domicile	t=0.055	0.414	*
Type of user	F=1.060	0.367	*
Frequency of visit	F=1.798	0.149	*
Time spent in the library	F=1.898	0.112	*

Note: * Accept Null hypothesis ** Reject Null hypothesis

5. Major Findings and Suggestions

The users are better aware of Internet and e-mail service, while a rather poor awareness for resource sharing, user education, resource material development services, consultancy and advisory services, and education and training service. Internet and e-mail service is the highly used service by the users. Information consolidation service, document delivery service, reference and referral service and electronic information services are the other services used. Literature search service, resource-sharing service, user education service, instructional material development service and learning resource service are very poorly used. Users are highly satisfied with Internet and e-mail service. Except electronic information service and reference and referral service, the other services have been rated very poorly. Users feel that Internet and e-mail service does not require much improvement; where as the all other services need improvement.

The following are some of the suggestions to improve the services of the library so that users can make best use of the library.

- The library has to design outreach programs like – book exhibitions, participation in important festivals, programs and days, arranging awareness programs, to attract those visiting the library not so frequently
- Conduct user studies regularly to assess the their requirements
- Organize User education programs leading to information literacy programs regularly
- Bring out 'List of additions' quite regularly.
- Develop user focused and user–centered culture in designing and developing information services;
- Provide appropriate technology based services to users;
- Develop user instructional programmes to extend basic information literacy competencies and life long learning skills;
- Disseminate information services as a pro-active service;
- Provide outreach programmes and market information services to attract and cultivate knowledge consumers;
- Evaluate the service, resources at regular intervals for improving the efficiency of user services.

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Digital Literacy for Librarians in Changing Environment

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Abstract

The technology is changing the nature of libraries and Librarians. The library services are transitioning from local traditional collection to global resources provided on demand via the most advanced networking technologies. So it is very necessary and inevitable to create and manage digital resources of information and make them easily accessible to the users. The traditional Librarians should change to the needs of its users. In this changing information environment the role of information professionals is becoming crucial and challenging. This paper explains the need of digital literacy for Librarians to survive and equips to face competitions from others.

Keywords: ICT Information Literacy, Digital literacy

1. Introduction

The Information Communication and technology (ICT), has revolutionized everything that has touched it, so also the higher education, and university libraries in particular. The world is witnessing great advances in educational, social and technological fields. The developments have directly influenced the growth in size and variations in library and information science activities. In addition to traditional practices in librarianship, increased attention and effort has been given to extend new services, to the users by using technological applications. Then the changing concept of libraries requires new dimension in all facets of its management.

The computer with other electronic gadgets and the internet play an important role and has made a great impact on library services. There is also crisscross of subjects like Management Science, statistics, Mathematics, and Behavioral Sciences. The use of the principles, techniques and methodologies of these disciplines have greatly influenced the management of library and information services, particularly through these disciplines, Bibliometric Analysis, User study and Planning library systems and Net works.

Technology is changing the nature of libraries and librarians. Today, the library services are transitioning from local traditional collections to global resources provided on demand via the most advanced networking technologies. Now it is possible to retrieve information independent of time, geographical location and to obtain the most updated information from the library without walls, or the virtual library.

Horrocks and Haines (2004) opines that "to operate effectively in an information world, they need to develop skills for searching, evaluating and managing information, in addition to a wide range of ICT, information retrieval and management skills, such a bibliographic and full-text database search skills, internet searching, and the full range of Microsoft applications." According to Muthula and Wamukoya (2007), "The widespread use of emerging technologies both at work and at home demands flexible workers who are self directed, able to keep pace with technology and knowledgeable about the world and cross cultural communications." As a result professional librarians must be computer literate and knowledgeable about internet technologies to fully participate in the planning, design, and implementation of future library services.

Libraries occupy a key position in the educational program in the formal education. Only a fraction of accumulated knowledge is imparted through teaching. Even methods of teaching are

rapidly changing and shifting to library- centered teaching. The real importance of libraries in education is that, they are places where one is brought into us contact with a good library throughout his whole period of tuition that he is to use it until it becomes second nature to him to do so and that he carries this characteristic through with him into later life.

The university library occupies a place of prominence in higher education. It is not only essential for coaching and study but is equally important for research programme without which no further addition to human knowledge is possible. Lyle had the same in mind when he said "the true university of these days is a collection of books. The chief aim of higher education should to inflame the minds of youth with the romance of books and enable them not only to realize their academic ambition with distinction but a habit of reading in their life.

University library acts as a conserver of knowledge, dissemination of knowledge through variety of services and as a power transformer produces more power or another form of power. The clientele, having benefited by their reading, themselves profound new theories, suggests innovation and all these are again made available in the form of books, journals/periodicals, articles and research publications. The university library helps faculty members and students to attain high academic dimensions. The success of the student's performances in various examinations is directly proportional to the success with which they explain the resources of the library. It is in this context it may not be an exaggeration if higher studies is defined as art of acquiring the know ledge of using a modern library to the best advantage.

2. The role of INFLIBNET in Promoting Digital Literacy

The university grants commission has set up an autonomous Inter -university Centre in 1991 called INFLIBNET (Information and Library Network). INFLIBNET is a computer-communication net work of libraries and bibliographical information centre. It is a major national effort to improve capability in information transfer and access that provide support to scholarship, learning, research and academic pursuits. INFLIBNET is a cooperative net work and will contribute to pooling, sharing and optimization of resources, facilities and services of libraries and information centers in the university system as well as in the R&D complexes. It is involved in modernizing university libraries in India and connects them through a nation-wide high speed data network. It promotes automation of libraries, develops standards, creates union catalogues of serials, theses, books monographs and non-book materials; provides access to bibliographic information sources; creates database of projects, institutions, specialists; provides training, etc. Almost all academic libraries, especially university libraries, are members of INFLIBNET. It also subscribes to e-Journals on behalf of university libraries called "UGC-INFONET Consortia"

The explosion in the amount of literature that is available in electronic form such as e-journals, data bases, and internet publishing forcing libraries to construct and participate in networks. Retrieval through telecommunications networks and access to international databases are available for searching for information on various subjects. The advent of networks, remote transmission of texts and graphics, video clips and animated clips are made possible and convenient.

The UGC having understood thoroughly, that the technology is the driving force in the contemporary education system, has launched an ambitious programme to bring about a qualitative change in the academic infrastructure, especially for higher education. UGC decided to modernize the University Campuses with state-of -the-art campus wide networks and setting up its own nationwide communication networks named UGC-Infonet.

3. Digital Literacy: A Conceptual Framework

Digital literacy is skill relatively new and difficult to define because of the constantly changing nature of ICT. However, digital literacy may be best understood in the context of information literacy. Information literacy is defined in different ways in the literature, but the most comprehensive definition is perhaps that provided by the Association of College and Research Libraries (2000). It defines information literacy as a set of abilities requiring individuals to determine the extent of information needed, access the needed information effectively and efficiently; evaluate information and its sources critically, incorporate selected information into one's knowledge base; use information effectively to accomplish a specific purpose; understand economic, legal and social issues, surrounding the use of information ethically and legally; manage and maintain information; provide means of access to information; search for information; and gather, evaluate and use information.

4. Digital Literacy Competencies

Computers and productivity tools help library patrons to access information, generate insights, structure results into a useful formal, and produce knowledge. The use of these productivity tools by patrons requires librarians to alter their traditional professional role, which was primarily to provide information access for patrons, so that they can also provide expanded services and support to these patrons.

The traditional role of librarians was viewed as one of making information accessible to patrons using various tools and processes in the library. Yet the emergence of technology has significantly changed the role of librarians (Gottesman, 2001). There is a paradigm shift; librarians now are expected to assist patrons in integrating materials into their research processes at the time of information access.

In discussing the current state of affairs in libraries, McFadden (2001) argues that there is a critical distinction to be made between librarians' competencies with productivity tools and their level of information retrieval skills. The American Library Association (ALA) stated that it is becoming an essential part of library services to help patrons develop the competencies that they need to function effectively and efficiently in the emerging digital culture of the 21st century (ALA, 2001).

5. Digital Literacy Competencies and Librarians

The global society does not recognize nor respect boundaries. Areas that were once the domain of the librarian have been encroached upon by other sectors, groups and professions. Library and information staff will need to have experience expertise and proficiency in traditional, electronic and transferable skills. The key skills required in the twenty-first century include strategic thinking, managing change, financial management, customer satisfaction, communications, decision-making, as well as understanding the role of ICT and digital literacy competencies.

6. Changing Characteristics of Digital Librarians

- To select, acquire, preserve, organize and manage digital collections.
- To Design the technical architecture of digital Literacy
- To Describe the content and attributes of items
- To Plan, implement, and support digital services such as information navigation, consultation and transmits services

- To Establish friendly user interface over network
- To Set up relative standards and policies for the digital library
- To Design, maintain and transmit add-valued information products
- To Protect digital intellectual property in network environment, and insure information security

7. Digital Literacy in Changing Environment

The digital Librarians should acquire latest techniques to meet the needs of the users. He should have the following qualities and capabilities. The knowledge of the digital librarians should not confine to a single field. He should cover varied subjects such as Library Science, Computer Science and some specific technologies, communication science etc. The digital librarian should have the following information literacy qualities to disseminate right information at the right time.

- He should be quick to respond to outside source
- He should be good at finding useful information
- He should have the consciousness to offer information service actively
- He should have the consciousness to add value to the information
- He should have the ability to filter information and evaluate its usefulness.
- He should have the ability to acquire information in the best manner
- He should have the ability to process, organize and manage information
- He should have the ability to disseminate information to right user at right time and at right place
- He should have the innovation intention
- He should have team spirit
- He should have high flexibility
- He should have good imagination and foresight

8. Digital Literacy Skills for Librarians

Sl. No.	Literacy skills	Out come
1	Tool Literacy	Understanding and using IT tools, including hardware, software and multimedia
2	Resource Literacy	Understanding the forms and access methods of information resources, especially network resource
3	Social-Structural Literacy	Understanding the social situation and production of information
4	Research Literacy	Use of IT tools for research and Scholarship
5	Publishing Literacy	Ability to communicate and publish information
6	Emerging Technology Literacy	Ability to understand innovations in IT and to make intelligent decisions about new technologies
7	Critical Literacy	Ability to evaluate critically the benefits and cost of information technologies

9. The role of Information Literate

- Recognises that accurate and complete information is the basis for intelligent decision making
- Recognises the need for information
- Formulates questions based on information need
- Identifies potential sources of information
- Develops successful search strategies
- Access sources of information including computer based and other technologies
- Evaluating information
- Organizes information into an existing body of knowledge
- Uses information in critical thinking and problems solving

10. Information Skills

- Simple Information Skills: Using a single information tool e.g. a Library Catalogue
- Compound Information Skills: Combining simple information skills/tools e.g. Preparing a bibliography by searching sever databases
- Complex Integrated Information Skills: make use of a variety of information networks evaluating and repackaging information.

11. Conclusion

Digital Literacy is relatively new and difficult to define because of the constantly changing nature of ICT. Digital Literacy may be best understood in the context of information Literacy. The global society does not recognize nor respect boundaries. Areas that were once the domain of the Librarians have been encroached by other sectors, group and professions. Hence, the library and information staff needs to have experience expertise and proficiency in traditional, electronic and transferable skills.

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Enabling the Differently Abled with Effective Library Services in India

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Abstract

This paper describes the information services available, the innovative techniques adopted and the new technologies used in the academic and research institutes in India to provide effective information and library support services to the people with disabilities.

Keywords : Disability service; library service; information service; Assistive Technology

1. Introduction

"I am neither an optimist nor pessimist, but a possibilist". These famous words by the American journalist and educator Max Learner, are very appropriate in describing the effective Information and Library Support Services available in India for the people with special needs. Today Library and Information Centres are very much concerned with the information services to all those groups within the community who for whatever reasons are unable to make use of conventional library services. These groups include people in hospitals and prisons, the elderly in nursing homes and care facilities, the house-bound, the deaf and blind, the physically and mentally challenged, learning disabled and persons with autism.

2. What is Disability?

A 'disability' means an inability to perform a normal bodily or mental process. According to National Sample Survey Organization (NSSO), India, the disability means: any restriction or lack of abilities to perform an activity in the manner or within the range considered normal for human being. Defining disability is difficult to accommodate the expectations of all disabled groups. There are hundreds of different disabilities and there are, as many causes for these disabilities. Some people are born with disabilities; others become disabled later on in their lives. Some disabilities can be controlled and cured while others still baffle the experts. Thus, finding a consensus on the different and frequently varying definitions of disabilities, whether sophisticated or practical, has never been easy.

3. Types of Disabilities

Disabled people do not form a homogenous group. They may be, the physically disabled, mentally retarded, the visually, hearing and speech impaired, those with restricted mobility or with so-called "medical disabilities" and learning disabilities. They can broadly be classified as Physical and Communication, Mental, Learning and Medical disabilities.

- **Physical and Communication Disability:** Physical and Communication disabilities involve either loss of vision, physical movement, communication skills or a weakness or change in normal motor control.
- **Visual impairment:** 'Blindness' refers to a condition where a person suffers from any of the following conditions, namely -total absence of sight; or visual acuity not exceeding 6/60 or 20/200 (snellen) in the better eye with correcting lenses; or limitation of the field of vision subtending an angle of 20 degrees or worse.
- **Hearing Impairment:** Whose sense of hearing is non-functional for ordinary purposes in life? They do not hear/understand sound at all, even with amplified speech. The cases

included in this category will be those having hearing loss of more than 60 decibels in the better ear (profound impairment) in the conversational range of frequency or total loss of hearing in both ears.

- **Locomotor Impairment:** Locomotor impairment is disability of the bones, joint or muscles leading to substantial restriction of the movement of the limbs or a usual form of cerebral palsy and autism.
- **Leprosy:** Leprosy means any person who has been suffering from:
  - Loss of sensation in hands or feet as well as loss of sensation and paresis in the eye and eye-lid but with no manifest deformity;
  - Manifest deformity and paresis but having sufficient mobility in their hands and feet to enable them to engage in normal economic activity;

4. Mental, Psychological illness and Mental Retardation

- **Mental, psychological Illnesses:** These encompass Schizophrenia, anxiety disorders and depressive disorders. Schizophrenia is a highly complex disorder, which is caused due to a series of chemical changes in the brain. It usually occurs between the age groups of 15-25 years and is characterized by fragmented thoughts followed by an inability to process information. The condition affects the individual's family, professional and social life making him incapable of functioning normally.
- **Mental Retardation:** The definition includes 'any person who is unable to ensure himself/herself, wholly or partly, the necessities of a normal individual or social life including work, as a result of deficiency in his/her physical or mental capability'. A condition characterized by abnormal brain development in the womb not corresponding with normal physical growth.
- **Learning Disabilities:** It is a disorder, which affects the basic psychological processes of understanding or using written or spoken language. This disorder affects development of language, speech, reading and associated communication skills needed for social interaction. Conditions such as brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia are examples of learning disabilities
- **Medical Disabilities:** A medical disability can be defined as a condition that requires intervention such as medical treatment, prescription drugs, and/or accommodation to help a person participate in life's activities. . Medical disabilities may be acute or chronic, visible or invisible, and the type of support needed is diverse.

5. Education and the Disabled: Indian Scenario

India has about 80 million persons with disabilities. With better education and more access to jobs, people with disabilities can become an integral part of the society, as well as help generate higher economic growth that will benefit the country as a whole. In India, the government has been providing number of facilities and services to the disabled so that they can lead a normal life. Under the Disabilities Act 1995, the people with disabilities have the following educational facilities and services.

- Every child with disability shall have the right to free education till the age of 18 years in integrated schools or special schools.

- Appropriate transportation, removal of architectural barriers and restructuring of curriculum and modifications in the examination system shall be ensured for the benefit of children with disabilities.
- Children with disabilities shall have the right to free books, scholarships, uniforms and other teaching material.
- Special schools for children with disabilities shall be equipped with vocational training facilities.
- Non-formal education shall be promoted for children with disabilities.
- Teachers training institutions shall be established to develop requisite manpower.
- Parents may move to appropriate Court for a redressal of grievances regarding placement of their children with disabilities.

6. Organizations working for the welfare of the people with disabilities in India

A number of organizations are working for the welfare the people with disabilities in India. Following is the list of some of the prominent organizations.

6.1. Statutory Bodies

1. Office of the Chief Commissioner for Persons with Disabilities, New Delhi
2. National Trust for the Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities, New Delhi
3. Rehabilitation Council of India (RCI), New Delhi

6.2. National Institutes

- Ali Yavar Jung National Institute for the Hearing Handicapped (AYJNIHH)
- Pandit Deen Dayal Upadhyaya Institute for the Physically Handicapped (IPH), New Delhi
- National Institute of Mentally Handicapped (NIMH), Secundrabad
- National Institute of Visually Handicapped (NIVH), Dehradun
- National Institute for Orthopaedically Handicapped, Kolkata
- National Institute for Rehabilitation Training and Research (NIRTAR), Cuttack
- National Institute for Empowerment of Persons with Multiple Disabilities (NIEPMD), Chennai
- Indian Sign Language Research & Training Centre (ISLRTC)

6.3. Public Sector Undertakings

1. Artificial Limbs Manufacturing Corporation of India (ALIMCO)
2. National Handicapped Finance and Development Corporation (NHFDC), Faridabad.

6.4. Composite Regional Centres for Persons with Disabilities (CRCs)

6.5. Public Private Partnership

Indian Spinal Injury Centre

7. Library Services to the People with Disabilities

The needs of the people with disabilities are similar to those who are not disabled. They often strive hard for a high quality of life as other individuals. Unfortunately, because of some misconceptions, the disabled are forced to lead a poor quality of life. But, when provided with a quality community based services, the people with disabilities can perform normal activities of living. Libraries, being the community based information centers, have a huge responsibility of enabling the disabled with effective information and library support services.

8. Effective Library Services

- Providing these special users with high demand reading materials and reference books for home use for a limited period.
- Extending loan periods or modifying other lending rules on an individual basis.
- Manipulating the physical environment of the library to provide adequate service to the physically disabled. Libraries need to consider the problem of access to the library.
- Providing the users with disabilities the special equipments like Amplified Listening Devices, Talking Book Machines, Text Magnifiers etc.

Apart from these routine library services, the libraries need to provide some specialized services to the people with disabilities. Different types of disability require different types of library services.

9. Special Library Services

- The library services provided to the blind include enabling them to use the equipments such as Braille Printers, Braille Embosser and Tape Duplicators, Kuzweil Reader, Closed Circuit TVs for magnifying regular texts, PCs with CD ROMs, Powermacs with CD ROMs, Large Print Tape Writers, Special Track Tape, Computers that are having adaptable equipments like Voice Eyes, Internet Protocol Phone Access Systems (AIM, Relay Services, NTS) etc.
- The library services provided to the people with hearing impairment and the individuals who are unable to discriminate speech over phone comprise teaching them to use the Telecommunication Devices for the Deaf (TDD), Relay Service Systems etc.
- The library services provided to the Deaf-Blind people include facilitating such people with the use the assistive technology tools like Deaf-Blind Communicator (DBC), Braille Sense Plus, Pac Mate, etc
- The library services provided to the children with Learning Disabilities comprise training them to use Electronic Math Worksheets, Talking Calculators, Talking Spell Checkers, Electronic Dictionaries, Word-prediction programs, Abbreviation Expanders, etc.
- The library services provided to the people with Intellectual Disabilities include assisting them in using Video Based Instruction Materials. The library services to such people also include helping them locate and retrieve library materials.

10. Conclusion

The major component of any library system is the quality of the service which it provides. Special adaptations are required as standard procedures for the service of people with disabilities. In India, the library and information services provided by some Special Libraries are really

excellent. Even the libraries attached to the general education institutes are also providing admirable services to the people with disabilities. Together with the provision of new and innovative technologies in the libraries, the librarians should develop the skills of a psychologist and the service mindedness of a social worker to enable the differently abled with effective library support services.

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Information Literacy and the Role of Librarians in ICT Environment

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Abstract

Information literacy is the vital process in modern changing world. Information technology is taking a new shape day by day. Information is greatly generating. For that, people should be enabled to interpret and make informed choice as user of information sources. Information literacy makes the person capable to recognize when information is needed and how to locate, evaluate, and use effectively of the needed information. Here, is discussed the information literacy programmes in academic libraries. Now, India has become the Information Technology Powerhouse and to become the people enabled, there is the need of information literacy in India.

Keywords : Information Literacy, Information Literacy Competencies

1. Introduction

Information Literacy is the process of knowing when and why information is required, where to find it, and how to evaluate, use and communicate it in an ethical way. It is the combination of all the skills that are required for the effective and maximum use of information. The term information literacy has been used as collective term covering all or several of literacies, viz., computer literacy, digital literacy, hyper-literacy, information technology literacy, interactive literacy, internet literacy, library literacy, media literacy, multiple literacy, network literacy, oral literacy, and visual literacy etc. These literacies need to be developed and maintained through ought life, not only by information users, but also by librarians and other information workers.

Information Literacy is the vital process in the modern changing world which is mostly used for higher education particularly, at the university level education. In our information-centric world, students must develop skills early on so they are prepared for post-secondary opportunities, whether in the workplace or in pursuit of higher education .Information literacy "enables people to interpret and make informed judgments as users of information sources, as well as to become producers of information in their own right. Information literacy means information awakening in person about the needed information. Information literate people are able to access information about their health, their environment, their education and work, empowering them to make critical decisions about their lives, e.g. in taking more responsibility for their own health and education". Government of India has planned to run many programmes to make people information literate. There are projects like e-government project playing a amazing role in information literacy and the socio-economic and cultural relevance and its immense potential to improve the society in which it functions.

2. Use of Information and Communication Technology

The modern world is known as Information Technology. Information technology skills enable an individual to use computers, software applications, databases, and apply related technologies to achieve a wide variety of academic, work-related, and personal goals. Among these are information literacy focus on content, communication, analysis, information searching, and evaluation; whereas information technology "fluency" focuses on a deep understanding of technology and graduated, increasingly skilled use of it. For the effective teaching and learning we use demos, tutorials, course materials in electronic form as interactive and ordinary CDs, animated

and multimedia programmes running on cable TV network, FM, All India Radio, local Newspapers that attract the learners.

From Farming and Horticulture to Business and Commerce, from Aviation to Shipping, from Banking to Life Insurance, from Health Care to Court of Law, Information Communication Technology (ICT) has made its effective presence in almost all sphere of human life. Libraries and information centers are also not untouched with wide spread impact of ICT. It has drastically transformed the way for collection, processing, storage, retrieval and communication of information in libraries. Particularly the Internet has completely transformed the traditional method of processing information from collection to communication. It has emerged as the most powerful medium for storage, retrieval and communication of information. "With an unprecedented growth in the quantum of knowledge worldwide and the easy accessibility, Internet has become an unavoidable necessity for every institution of higher learning and research". The World Wide Web (www), because of its ability to work with multimedia and advance programming languages, is the fastest growing component of the Internet. "The amount of publicly available information on the web is increasing consistently at an unbelievable rate". It has turned into "a gigantic digital library, a searchable 15 billion-world encyclopedia" and is still growing every minute of a day.

Information is available from many sources and in many formats, such as printed text, television, videos, library databases, web sites, and more. To be "information literate" one needs to know why, when, and how to use all of these tools and think critically about the information they provide. One can't become information literate overnight. His abilities will improve over time as he gains expertise in the topics he chooses to investigate and as he practice searching for, selecting, and evaluating the information and ideas he encounter. In nutshell Information literate students are supposed to:

- Be competent, independent learners;
- Actively engage in the world of ideas;
- Confidently solve problems;
- Know what is relevant information;
- Use technological tools to access information and communicate;
- Operate comfortably in situations where there are multiple answers or no answers;
- Have high standards for their work and use information ethically;
- Create quality products;

3. Need for Information Literacy

Information is the basic requirement for every human activity and it is important as food, air, and water. Information in itself has no value lies in its communication and use. The need of information literacy may be essential due to the following reasons.

- Rapid increase in the stream of information due to information revolution;
- Advent of information and communication technologies;
- Vast variety of information sources;
- Changing shape of libraries;

- Wide dispersal of information;
- Increase in number of users; and
- Research on complex and interdisciplinary topics.

4. Objectives of the Information Literacy

The Ministry of Education, science, Sports and Culture, Japan has defines the following objectives of information literacy (Anonymous,1991);

- Capabilities of judgment (evaluation), selection, organization, and processing of information as well as of information creation and communication;
- Understanding of characteristics of information society, effect of information user society and human beings;
- Recognition of importance of and responsibility for information; and
- Understanding of foundation of information science, learning of basic operation skills of information and information device, particularly computer.

5. Role of Librarians

Information and communication technologies have changed the complete scenario in libraries. Now days, library has become the centre point of resource-based learning and the role of librarian is changing radically with shifts of education paradigms. The impact of moving from text-based learning to resource-based learning will involve heavier use of library materials and a demand for more and varied media resources, including print and non- print. Today information has become a major economic commodity. The librarian is responsible for locating, acquiring, disseminating and tracking information resources of many types. It might include database searching, interlibrary loans, monitoring internet newsgroups, or maintenance of a computerized library information system. All these tasks involve managerial expertise and information literacy. Every citizen needs to be educated for productive information use. Libraries and Librarians play an important role in the education of people for effective and efficient information use by teaching them information skills at all levels of education to enable to be informed citizens of the country.

Librarians have to identify and select good age-appropriate and age-specific literature. They have to look more too online and other electronic sources to meet the information needs. Acquisitions and selection criteria take on entirely new meaning when considering access to online services. Traditional materials evaluation measures have little meaning when applied to internet sites. New paradigms of selection and evaluation evolve with new technologies and their application to the classroom and resource centre. Librarians are key personnel in the implementation of resource-based programmes. They can design an information literacy curriculum, which matches readers' capabilities, because they have the expertise and knowledge to teach these skills. They are leaders in new information technologies as well as extended resources across many disciplines. Their experience with information-finding tools gives them a context for the application of new tools such as World Wide Web. They must accept that they are good educators and knowledge managers. Today, librarians are really in the most favorable position to be the leaders in developing an information literate community.

Thus, LIS professionals have to play a significant role to promote information literacy in society. There exists a gap between Librarians and the users' information needs. To bridge this gap

they need to educate and re-educate themselves to acquire new skills and competencies for a new role and need to cultivate the concept of lifelong learning of information literacy skills. LIS professionals need to play an important role in the education process by making people aware of a need and motivating the use of information, a new knowledge and a new ability. Some short-term courses or user-orientation programmes may be organized in the libraries for the purposes. There may be two components of the course for information literacy:

- One is orientation, which is primarily concerned with the way of introducing the users to the general techniques of library usage and services available and to the organization layout and facilities of a particular library. During orientation library staff delivers a lecture, which introduces the program, demonstrates the use of the catalogue and shows readers how to access the self-paced on-line tutorial. Readers work through the library catalogue unit of the tutorial and also complete an exercise. They are able to create a network account and configure and e-mail account during one of their orientation week sessions.
- Other is instruction that is concerned with learning to make use of the information resources available with specific subject disciplines. It consists of library staff demonstrating CD-ROM network and web based databases, and searching the internet using search engines and subject gateways. A lecture by library staff called researching a topic is another great motivation for readers to appraise critically the material they find, especially information found on the Internet.

To undertake this core activity effectively the Librarians needs to be:

- Strongly committed from the institutional and library administration,
- Educate and reeducate them and acquire knowledge, skills and competencies.
- Cultivate the concept of life-long learning through information literacy skills, acquired and developed in the library.
- Make a library staff proficient in instruction and able to work effectively with faculty/readers to implement institutional change, and
- To develop a faculty or other staff, who cooperatively team with them and other information-handling professionals involved in the institutions/organizations. The institutions of higher education should also pay attention to promote information literacy in a way by developing statement of mission or goals.

6. Role of Information Literacy in India

In the recent decades India has tried to increase the population of information literate and educated citizens through organizing different programmes like, *Sarva Shiksha Abhiyan* (SSA), District Primary Education Programme (DPEP), National Literacy Mission and so on and established the community information centre and village knowledge centers are the recent additions to this effort that would transform India into an information society, where information and knowledge resources are considered as critical ingredient for development. Here, information literacy can play a vital role in educating the users of libraries on various information and documentary resources, where to start searching of information, what where and how to access them, how to assess and compare retrieved information, how to communicate their information or findings to the general masses and experts, and so on. To provide right information to the users, public librarians should be trained to develop information literacy competency and should able to educate the user that will make user information literate. In the Indian context, it has been noticed

that libraries have well-trained information professionals who are increasingly ICT-literate and can work with government to create content and provide information services to the masses.

- Implementing Information Literacy programs to users of the all types of libraries
- Integrating Information Literacy across the Curriculum at all levels of education
- University Grants Commission (UGC) may take the proper steps to induct the component of Information Literacy in higher education, so also the related bodies in engineering and other profession courses. In addition, the professional societies, academics and associations like ILA, SIS, IASLIC and IATLIS can make efforts to bring together the professional expertise along with academic and media experts to design and develop the viable Curriculum for various levels of education.
- Collaborating teachers, librarians and media experts to design and promote Information Literacy programs
- Carrying out surveys and studies on the usefulness of Information Literacy at Regional, State and National levels.
- Forming a National Information Literacy Forum to enable people from all walks of life to interact, discuss and bring out policy guidelines to strengthen the Information Literacy movement across the country.
- Frequently conducting workshops/seminars/ symposia in order to enable broader and thorough discussion on the concept of Information Literacy and bring out more literature of national importance

7. Conclusion

Information Literacy concept has been widely discussed and implemented in national curricula as well as in tertiary non-formal and lifelong learning in developed countries. The librarians are well equipped to teach such skills, but the major obstacle in promoting information literacy programme in developing countries like India is the lack of public awareness of the problem created by information literacy. The other obstacles in promoting information literacy are:

- Lack of cooperation among professional organization and lack of well articulated and/or promoted information literacy policies and programs;
- Under developed library and information systems and networks;
- Expensive telecommunication infrastructure services;
- Shortage of information and library educated and trained professionals who would give the necessary impetus to the information literacy promotion and implementations.

A few suggestions, which can be considered for the induction of information literacy programmes at various levels, may include:

- Government should make efforts in preparing policy guidelines and standards at national level and should come out with the national information literacy programme and establish the National Task Force to monitor these information literacy programmes.
- The concerned controlling and funding bodies must design and develop the information literacy curriculam at different levels of initially at institutions of higher education.

In the last it could be concluded that even if information seekers are able to find out the sources, they will not be in a position to form the search strategies, which are necessary to make

the relevant searches. They would not be able to understand what is appropriate to the situation and with lack of information literacy concept, one would not be able to present and communicate the data and findings effectively. The successful implementation of the network services will depend to a large extent on the willingness of the participants to co-operate with each other with a sense of 'give and take'. Besides, in order to bring the concept of information literacy as a whole, one must not forget the rural community of India. Efforts should be made to develop the villages' community library and information centers with collaboration with rural public libraries and full assistance should be given to them to make the villagers information literate.

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Role of Libraries in Promoting the Reading Habits in the Information Society

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Abstract

Reading habits are a vital part of the lifelong learning concept. The new technologies (ICT) and librarians influence more in promoting a reading culture among users. One should read books and other materials to acquire knowledge. Unless one inculcates reading habit and get in touch with the ICT, it is difficult to know what is going around us. This article covers various aspects of reading habit like reading and learning, higher education, ICT services, internet and its focus on the role of libraries.

Keywords : Reading habit, Reading and Learning, Higher Education, ICT

1. Introduction

Reading is the process of using one 'eyes' and mind to understand the literal as well as the hidden meaning of what writer is attempting is convey. It is an integral part of human life. As food is necessary for our body so is the reading for our mind. To read, in common parlance means, going through a book or paper, printed or otherwise, for deep understanding or just for pleasure. A person who is not able to read and write may be compared to a blind person. But today, the technology has enabled even a blind person to learn how to read and understand the subject in the book.

With an increasing amount of time spent reading electronic documents, a screen-based reading behavior is emerging. The screen-based reading behavior is characterized by the long duration of time spent on browsing and scanning, keyword spotting, one-time reading, non-linear reading, and reading more selectively, while less time is spent on in-depth and concentrated reading. Decreasing sustained attention is also noted. Annotating and highlighting, while reading, is a common activity in the printed environment. However, this "traditional" pattern has not yet migrated to the digital environment where people read electronic documents. The advent of electronics and the growing collection of electronic documents have had a profound impact on reading. It was argued that the development of digital libraries "is participating in a general societal trend toward shallower, more fragmented, and less concentrated reading".

2. Reading: A Gateway to the World Knowledge

Human beings are the supreme creations of God as they are endowed with the power of thinking. All the scientific and technological developments, attainments and achievements are the outcome of the intellectual capacity of human beings. Despite this inborn capacity, they cannot attain intellectual perfection without involving themselves in the intellectual activities like reading. In the acquisition of knowledge, psychological and sociological factors play pivotal roles. In human beings, psychological learning takes place in different ways and by different methods of learning, for different age groups of learners, based on emotional factors, availability of means and guidance, etc. Reading is one of the important natural processes of psychological learning.

Reading is a gateway to the world of knowledge. It not only helps in updating our knowledge but also in the overall development of our personality. Gone are the days when reading was considered just as a means for getting the required information. But today, it has become a multi-faceted mental activity which paves the way for the overall development of

human personality. Reading and writing are the two fundamental skills that every citizen is expected to possess.

The basic reading skills involve LSRW (Listening, Speaking, Reading and Writing) which are imparted at the school level by language teacher. Effective reading requires a great deal of mental effort and concentration, as it is necessary for retention and comprehension.

Faster reading requires:

- Quicker grasping of information,
- Screening the material,
- Reading for aggressive comprehension,
- Gisting of the information to get the essential idea,
- Improving the vocabulary for better presentation of ideas

Reading techniques or skills could be improved through faster reading, skimming, scanning and reading slowly. Skimming results in pre-selected sections of the text to gain a general overview. Scanning helps in finding the specific piece of information. Faster reading could be adopted while reading the novels or literature pertaining to entertainment aspects. Difficult texts should be dealt with by slow reading for comprehension.

Text book reading does not amount to reading habit. In fact reading is hobby. So reading a book, a novel, poetry, biography or fiction a book, gardening any other entertainment would come under the limit of reading habit. Overall "Reading habit is the art of personal investigation and self study. It should be followed by self thanking and analysis and only this kind of self study on one's own accord can develop good reading habit.

Reading habit is an act of interpreting printed and written words; it is a basic tool of education and one of the important skills in day-to-day life. We live in the world of print and electronic media of communication. Reading helps in acquiring new ideas in providing the needed information. It also helps to seek support for ideas and also adds to personal pleasures besides broadening our mental horizon.

If healthy reading habit is developed, benefits come in many ways. The purpose of reading coincides with the purpose of good institution. It prepares students to live in society and functions. It introduces them to the civilization of which they are a part. In a sense, reading has the same goal as the highest achievements of human thoughts to seek answers to the most fundamental question about the nature of the world, about human society, and about life's purposes. Reading with such questions in mind, widens the horizon of the mind that helps a person to grow in many ways.

3. Libraries: A Potential Force of Reading and Learning

Library plays an important role, wherein the reader can develop reading habit. It is the library which creates the congenial atmosphere required to intensify the raeding habit. Readers devote much of their time after enrolling themselves as members.

"Without Books, God is silent, justice dormant, natural science at standstill, philosophy lame, letters dumb and all things involved in Cimmerian Darkness", so wrote Thomas Bartholin a Danish Librarian in 1672. But books themselves fail to serve any purpose unless they are put to effective use. Herein, therefore, arose the need for providing a channel through which such accumulated wealth of knowledge as is contained in books may be disseminated. And it is a

library which can provide such a channel. It also fosters idealism and strengthens the struggling aspirations of the human spirit. The place it provides for reading, the material and the equipment to handle and make them accessible and the trained personnel to manage the tool operation in library bring about the awakening of thought. Nevertheless such activities and their effectiveness succeed or fail according to the personality of the librarian that is according to his leadership and his readiness for undertaking such a program.

The Progress of our country depends largely upon the education of its citizens. The education can be of two types formal and informal. The formal type of education is strictly restricted to textbooks. But now the concept of educational sphere has demanded a network of libraries. Libraries play a vital role in the development of education and with the dawn of freedom of our country, the national government has become library conscious. Libraries, which are primarily educational institutions for intellectual advancement, have a vital part to play by disseminating facts and ideas in the community. Libraries are regarded as a means of universal and perpetual self education by an individual. Keeping this view in mind, reading habit has to be developed and encouraged among the people in their early life. It should commence with the school library; it should be continued by college and university libraries and sustained by the public libraries. The reading habit must be part and parcel of the nature of an individual.

4. Role of Librarians in Reading Habit:

Bringing students to the library is not sufficient. Something more is necessary to make the student to come to the library on his own accord. Till an appreciation of the value of books blooms in him, transforms him into a willing beneficiary of the library, makes him come back to the library, quite often he must be attended by a library host. Each library should provide an adequate number of information officers to function as library hosts and human converters. Documentation service is the essential human process of establishing contact between the right reader and the right book by personal service. Its character varies with every reader and book context. Documentation service is vital in the promotion of the reading habits in students.

Reading habits differ from gender to gender. It also depends on age and intellectual growth of a person. Library contributes to the creative enhancement of this skill and helps the society to become a learned society. Looking into the changing user behavior the librarian has adopted many electronic services to keep them attached to the library and these services also affect their reading habits.

5. Technological Impact Factors on Reading Habits

The Services which influence reading habit are:

5.1. Online Public Access Catalogue (OPAC):

The OPAC is the gateway for the library's collection. OPAC is an electronic database that contains the same information: that is; author, title, and subject information about the materials that a library owns. Some OPACs are union catalogs meaning that several libraries share the same database. The OPAC reflects an organized collection of databases and web. The third generation of OPAC is what exists today with its computer/ web interface and advance searching abilities.

5.1.1 Web OPAC

It is programmed to facilitate the library's members to access the WEB OPAC, through their own search, for the ease of borrowing, instead of searching through the card catalog. In

addition, members would also be able to request for the information about borrowing, reservation, etc, related to their own library profile, as well as to make automatic reservations. With the advent of webOPAC user can get his/ her book through various resources.

5.2. Library Portals and Subject Gateways and:

A Subject Gateway facilitates access to networked resources for anyone who is looking for resources on that subject. A Portal, whilst also normally facilitating access to networked resources for anyone looking for resources on that subject, in addition offers a variety of additional services aimed largely, though not exclusively, at the relevant subject community. With this user can identify the books which motivate the reading habit.

5.3. E-News letter services

A **newsletter** is a regularly distributed publication generally about one main topic that is of interest to its subscribers. Newspapers and leaflets are types of newsletters. Additionally, newsletters delivered electronically via email (e-Newsletters) have gained rapid acceptance for the same reasons email in general has gained popularity over printed correspondence.

5.4. Institutional Repositories

An **institutional repository** is an online locus for collecting, preserving, and disseminating - in digital form - the intellectual output of an institution, particularly a research institution. For a university, this would include materials such as research journal articles, before (preprints) and after (post-prints) undergoing peer review, and digital versions of theses and dissertations, but it might also include other digital assets generated by normal academic life, such as administrative documents, course notes, or learning objects.

5.5. Digital Library Services

A **digital library** is a library in which collections are stored in digital formats (as opposed to print, microform, or other media) and accessible via computers. The digital content may be stored locally, or accessed remotely via computer networks. A digital library is a type of information retrieval system. Since it is it is very convenient for users to access the material, this will directly accelerate reading habit.

5.6. Electronic Books and journals:

Electronic journals are periodicals available through electronic media. Today most of the journals appear as parallel versions of their print counterpart user can search. An e-book is essential the contents of books distributed in the form of an electronic file. Any file that holds text can be used as an e-book. These directly promote reading habit.

5.7. Digitization and Automation of Library:

Digitization and Automation programs of the Library are highly encouraging the users to find out their own interested book. Users are attracted by the instant access to the material which they want. Hence, the automate also helps in promoting reading habits

6. Internet

The internet is a store of information. It is secure for electronic publishing and delivery. The web is categorised into:

- Open web
- Gated web
- Performal web

The open web includes corporate web service, personal web pages etc. They do not require users to regular before accessing the site. Nonprofit organization post information about activities and material published by them. Gated sites require identification and sometimes also requiring payment to view information. The material is not indexed by any of the major search engines. Many gated sites have much of the information within databases using a search box to retrieve information. The professional web or professional online services are high powered online services accessible through the web

6.1. Internet Reading: Advantages

- Easy to locate: It is extremely easy to search and find the reading material.
- Interactive: Provision of comments or voice opinion.
- More Information: There enormous reading material from general to spectator.
- Faster reading: Internet allows to reader faster by the way information is organized.
- More quicker information : We can read events immediately after they happen
- Wider topic: Internet links to wider topic which never thought of reading.
- Finding the date: Extremely easy to locate the date through different search engines.

6.2. Internet Reading Disadvantages:

- Less Quality: Reading material exists more content but less quality.
- Lack of comfort ability: Eyes may get more tired watching a computer screen than reading a book.
- Hard to navigate: There is a lot irrelevant information.
- No computer or device or internet facility available.
- Power problem: Unless the computer or device has a good battery.
- Commercial advertisement: The commercial advertisement cropping on all web pages create uneasiness for reading.

Book reading habits declining day by day due to internet and computer culture in our society. It is true that reading habits have been replaced by reading books online. It has become regular books on the internet without wastage of time & money. But overall books are best trends. Book readers always in search of good books. But unfortunately books are being sold at very explosive prices, which is reason for decreasing day by day as compared to the past.

7. Conclusion

Information sources in various kinds have a major role to play in the growth and development of any country, especially of a country like India where we find the people having different religious, cultural and language backgrounds. Such nations can make progress only if their citizens are educated and knowledgeable. The basic activity to gain knowledge is reading. Books and other reading materials offer entertainment, education, information, inspiration and recreation to the readers. Books have survived in spite of facing a tough competition from the

electronic media of communication. The Electronic Media, despite its plenty of useful features, could not replace printed books. They are forced to remain just as the supplementary sources to the books. Thus, both Print and Electronic Media are equally essential for the successful communication, education and research activities.

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Understanding an Information Literacy level of Undergraduate Science Students in Academic Science Colleges affiliated to University of Pune: *A study*

Vandana R. Shelar **Neela J. Deshpande**

Abstract

The present paper is based on the PhD research based on the survey conducted in 32 Science colleges affiliated to University of Pune in academic year 2010 using the ACRL Information Literacy Standards for Higher Education as a conceptual frame work. This study miner part of Ph.D. research work. The investigator like to bring into the notice the information Literacy level of Undergraduate students and also suggest a Module to be implemented to enhance the IL level of UG students.

1. Introduction

In today's information prone society the relevant, accurate, authentic, timely precise and effective information has considerably influenced education sector and Under Graduate (UG) education is not an exception to it. The students at this stage have to cope up with the everyday information needs for their academic purposes for the project in the curriculum and assignments given by the teachers etc. also the society expects lots of merits from them. The institutes offering placements in industries and other sectors prefer various qualities such as practical application of knowledge, confidence, willingness as well as ability to learn new things, appropriate use of the amount of information, they are exposed to and lastly to work efficiently with fewer instructions. In other words society expects them to be 'Information Literate' to stand out in life. . The increasing volume of information and ever more sophisticated information technology has created a gap . A tool to bridge the gap is not just technology but the ability to understand, filter, evaluate and use information. Therefore, information literacy rather than the technology must become a priority for sustainable development of the society. **Bowden, Russell etal (2003).**

It is observed from experiences, discussions with peers and referring to many studies and also the findings of this study that UG students hardly go to the library for their information purpose. They usually select popular text books of certain publisher and usually depend on the teachers notes given in the class to appear for the examination, their requirement is highly focused sometimes it goes till the further reading lists issued to them in syllabus and they hardly go to the scholarly journals reviews and databases. Information Literacy Module delivered by the librarian will acts as remedial activity for the students. This will also enhance the use of the library resources and services. **Palmer C and Ford C (2000)**.

2. Objectives of the study

- To study how undergraduate science students acquire and use information.
- To understand the Information literacy level of the undergraduate students in science colleges affiliated to University of Pune.
- To design IL module for undergraduate science students.

3. Research Methodology

The **Descriptive Research** was conducted by the investigator using the survey technique and the tool questionnaire. The data was collected from 32 science colleges affiliated to University of Pune located in Pune District. The sample for the present study were 928 students,

4. Major Findings of the study

- **Library Awareness and Use**

It is observed from the study that majority of the students i.e. 91% visit library for the purpose of borrowing books followed by study in reading hall(49%), scholarly journals (38%), refer reference books given in the syllabus (27%), browse internet (16%), read light reading material (16%). Only 3% students visit the library to consult CDS and Audio Visual material. Hardly 1% student visits the library to refer data bases available in the library.

The UG student must be made self sufficient to locate the information source available in the library. It is observed that 58-63% students rely on teachers and friends to know about the resources available in the library. Only 27% students depend on the library catalogue for knowing the resources available in the library. It is demonstrated from the study that majority of the students i.e. 93% students use only the text books, Only 24% students use Scholarly Journals. Hardly 11-12% students use e-resources and reviews. There a need to promote and motivate the students to refer the various sources of information.

- **Information Technology**

Majority of the students i.e. 95% are browsing the Internet, from which 72% students browse internet to retrieve information for the academic purpose. It is observed that majority of the students i.e. 75% have not done any IT course. The study explored that 34% students use Google Books.19% students use Wikis, 17% You Tubes, 16% use Social net working, 14% use instant messaging, etc .Tools like Blogs , Slide share, iPods, Google scholar and RSS are hardly used by the students.

It is found that only 11% students rates their IT Proficiency skill as good. There is a need to enhance the IT proficiency of UG student by providing appropriate training to them.

5. Learning Pattern

Maximum students i.e.**76%** depend only on teachers notes given in the class for the study purpose. Only 27% students refer syllabus and use various library resource to prepare their notes for studying. It is observed that only 9% of students say that their teachers encourage them to use library resources however **91%** students feel that teachers do not motivate student to use library.

6. Information Literacy level of the students.

It indicates that on an average 30% students are aware of the various information literacy skills, whereas majority of the student i.e.70% must be made competent in handling the information. Thus the implementation of ILP will help the UG student to acquire relevant IL skill. The pedagogies and the teaching methods adapted by the teachers are very important to enhance the information literacy level of the students.

7. Tool used in locating library resources

The catalogue is considered as a mirror of library collection. It is the basic tool which should be known to the students. The **twenty fourth** questions related to the awareness of the process locating library resources.

Table 1: Tool used in locating library resources

Locating library resources	Rural	Urban	Total
Internet	34(22%)	119(78%)	153(16%)
Library catalogue	125 (37%)	213(63%)	338(36%)
Bibliography	1(4%)	22(96%)	23(3%)
OPAC	12(15%)	66(85%)	78(8%)
Can't say	66(35%)	270(84%)	336(36%)

It is observed from the table 1 that **44%** (416) students were aware of the locating tool the library catalogue. Only 8% (78) students are aware of modernized form of Library Catalogue OPAC. 56% students need to be made aware of the function and use of library catalogue.

8. Knowing Book Arrangement

Book Arrangement in the shelves makes the availability of the document as per the user's convenience.

Table 2: Knowing Book Arrangement

Book Arrangement	Rural	Urban	Total
Author	18(30%)	42(70%)	60(6%)
ISBN number	14(40%)	21(60%)	35(4%)
Title	55(30%)	127(70%)	182(20%)
Subject	98(31%)	222(69%)	320(34%)
Can't Say	53(16%)	278(84%)	331(36%)

It was observed from the table 2 that only **34% (320)** of the students were aware of the subject wise book arrangement in the library. However 66% (597) students need to be oriented in this regard.

Twenty seventh questions were asked to know the awareness of various documents available in the library which document contains the latest information.

Table 3: Knowing latest Information Source

Latest Information Source	Rural	Urban	Total
Periodicals	86(35%)	162(65%)	248(27%)
Thesis	15(36%)	27(64%)	42(5%)
Text books	49(48%)	53(52%)	102(11%)
Encyclopaedias	17(14%)	103(86%)	120(13%)
Can't Say	71(17%)	345(83%)	416(45%)

It is observed from the table 3 that **27%(248)** students were aware about the latest information source. It indicates that 83% (345) students did not give the correct answer. Thus they need to be made aware of the information sources.

9. Knowledge of different information source

According to Brown Cecelia (1999) an individual must be able find, use and evaluate a range of information sources including, but not limited to technology and computers.

Table 4: Knowledge of different information source

Astronomy	Rural	Urban	Total
A Journal	73(47%)	81(53%)	154(17%)
An Encyclopedia	46(19%)	191(81%)	237(26%)
A Database	14(16%)	73(84%)	87(9%)
A Library Catalogue	43(35%)	81(65%)	124(13%)
Can't say	62(16%)	264(84%)	326(35%)

It is indicated from the table 4 that only 26% (237) students were aware however remaining 73% (676) students need to know the scope and contents of encyclopedia by making them aware of the information sources and its features.

10. Knowing search Tools

The Twenty nineth question was asked to know from where the students can find scholarly periodical on a particular subject.

Table 5: Knowing search Tools

Scholarly article	Rural	Urban	Total
Library catalogue	67(47%)	76(53%)	143(15%)
Periodical index	47(34%)	90(66%)	137(15%)
Online newspaper	28(17%)	139(83%)	167(18%)
Internet search engine	96(20%)	383(80%)	479(52%)
Any other	0	2(100%)	2(0.2%)

The table 5 indicates that only **15% (137)** students were aware of periodical index. Rest of the **85%(791)** are unaware of the relevent tool for geting authentic information. All the students needs to be taught the types of information sources with its feature.

11. Applying Knowledge

Thirty Number question was asked to if the students have applied theoretical knowledge for any of the practical academic purpose. It is observed that very few students only 12% (112) student had applied their theoretical knowledge practically. The findings are similar to the study conducted by Seamans, Nancy H (2001). The sub question was related to the type of academic taks in which the students had participated .

Table 6. Applying theory into practice.

		Rural	Urban	Total
1	Debate Competition	10(18%)	47(82%)	57(51%)
2	Science Olympiads	20(46%)	24(54%)	44(39%)
3	Project Exhibition	2(19%)	9(81%)	11(10%)
	Total	**32(29%)**	**80(71%)**	**112**

Table 6 indicates that amongst the 112 students appling theory into practise it is found that 57 (51%) students had participated in debate.44(39%) students participated in Science Olympiads competition.10%(11) students had participated in "Aavishkar" a project exhibition conducted by University of Pune. However remaining 88% (816) students need to be motivated to participte in different academic acitivities.Where they can apply their therotical knowledge.

12. Experiences of applying Knowledge

Thirty One questions was open ended question and students were asked to share their experiences of handling the information efficiently. Only 0.6% (6) students shared their experiences. Amongst which all the students were from urban region. They said they scored good marks, win prices in various competitions and seems very happy applying their knowledge in studies.

13. Effectively browsing internet

Students often use internet for the academic purpose. They browse internet for hours together, but are they efficient browsers? Do they have efficient skills to retrieve relevant information without wasting time? To know this question Thirty Two was asked. It is found that 55 % (511) knew the basic keyword framing step for searching the web. Remaining 45 % (417) students need to be taught to frame the appropriate key words for retrieving information. The study also indicated that 30% (282) students agreed that the information on web comes from varied sources. Remaining 70% (646) students have misconceptions regarding information on internet. These misconceptions need to be changed by training them by ILP.

14. Evaluating authenticity of information internet

Voluminous information is available on net. It is coming in unfiltered form. Therefore one needs to check its credibility while using it for academic purpose. Evaluation is important in order to get authenticity of information it was seen that while evaluating the information on website which criteria the students use. To see this **question number thirty four** was asked regarding the need for evaluating authenticity of information internet The finding indicated that only **22% (207)** students felt the need for evaluating information on internet however 78**% (721)** students are ignorant with the appropriate criteria. These misconceptions regarding authenticity of information on internet needs to be rectified.

15. Search engines

Search engines are the efficient tools for retrieving necessary information. There are different search engines available on internet. Some are subject specified and other general search engines. To see the popularity in the use of these search engines **question thirty four** was asked. Findings shows Google is the most popular search engine. It is used by **93%** (867) students amongst which maximum i.e. 77 %(663) students are from urban region and remaining 23% (204) are from rural region. **33%** students are using yahoo search engine. Out of which maximum i.e. 79 %(242) students are from urban region and remaining 21% (63) students are from rural region. MSN search engine is used by only **5% (48)** students.

The students have not mentioned in 'any other' Column , about any other search engine.

Google is the popular search engine amongst UG students. The reason behind wide usage of Google is its simplicity and efficiency. The Google tools like Google scholar, Google books etc are

helpful for the UG students. Use of Google tools and use of subject specified search engines like Space time , Kosmix etc. could be introduced to the students in ILP.

16. Search Techniques Used

Search Techniques are important to save time of students in retrieving relevant information. In order to know the search techniques used by the UG students question number Thirty Six was asked. It indicates from investigation that only **41% (381)** students are using search techniques. Remaining **59% (547)** are not using any search strategy. Amongst the **41% (381)** students who are using search techniques the sub question was asked giving them options of various search techniques.

It was observed from study that amongst the **41% (381)** students who use search techniques, maximum i.e. 88% (337) students use simple key word search. Only 10% (36) students are aware about 'Boolean Search'. Hardly 1% (3-5) students use Limiting search and Range search. Out of which almost all the students are from urban region. It is made known that 59% (547) students do not use the search techniques. There is a strong need to help these students to effectively retrieve relevant information without wasting time and energy. ILP will be the very effective media to provide this training.

17. Open Access Journals:

The next question was asked about the awareness of Open access journals freely available on internet. It indicates from the present research that only **15%(138)** students are knowing the meaning of the Open Access Journals. However 79**% (728)** students were not aware about it. 85% (790) students need to be made aware about the Open access Journals so they can enhance their perceptions about the particular subject which will help them in further education .Thus there is a need of ILP.

18. Ethical use of information

It reveals from the study that Only **10% (94)** knew the correct meaning of the term "Plagiarism". Maximum students 677 (80%) could not say the meaning of Plagiarism.90% (834) students need to understand the meaning of plagiarism. In order to promote the ethical use of the information one need to inculcate the habit of ethically using information right in the beginning stage higher education. Thus this aspect should be taught to the UG students.

19. Copyright

It was observed that majority i.e.**85 %(785)** students are aware of the symbol for copy right. However regarding a**pplications of Copyright** only the **105 (11%)** students were aware of applicability of Copy write symbol remaining **89% (823)** students are unaware of correct answer. This unawareness emphasizes the need of ILP for the student.

20. Information Technology impact on learning

IT has affected all the aspects of human life. Education sector is also one of it Thus **Forty one question** was asked to know about the impact of IT on learning. It is observed that all the respondent agreed on the impact of IT on learning process. It stimulates and helps for better understanding.

21. Conclusion and recommendations:

The students emerging from UG educations are facing higher education challenges of research skills and career changes that require flexibility in the thinking and the ability to solve problems. If academic institute has to succeed in the goal of creating information literate graduate and capable productive lifelong learners then the education system has to revamp, where student gets ample opportunities to assess, evaluate and use information for the academic task. The projects, assignments etc are such opportunities, where students can independently search information. ILP acts as a tool to build the competency amongst the UG students.

As information literacy programme is a continuous process which needs to be frequently updated as per the demand of the academic environment. Faculty play a significant role in successfully implementing the ILP (Information Literacy Programme) by having a better sense of the apparent contents of it.

A new approach with use of IT specifically web 2.0 tools will help in development of ILP that focuses on sustainability and capacity-building, enhancing student's capacity to participate fully in their academic and social life. Even though ACRL standards are fundamental skeleton for Under Graduate (UG) education, still there is a need to establish a specific component (module) in accordance to the local variation, environment, physical infrastructure, the resources available, pedagogies followed at that particular academic level. Hence the investigator has made an attempt to design the IL module for UG science student at University of Pune.

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Agencies Involved in Disseminating Information to Rural Women in Karnataka State: *Where do Rural Libraries Figure?*

Shoabha Patil **Tadasad, P.G.** **Deepthi**

Abstract

This paper discusses the different agencies of Karnataka state involved in disseminating information to the rural women. The channels of information available to them are both formal and informal. The paper deals with the study of different channels like radio, television, newspaper, periodicals, human sources, institutional sources, internet and other sources of information and their usefulness in disseminating information as a supporting agency are discussed.

Keywords : Information dissemination, rural libraries, rural women, Karnataka

1. Introduction

Women an important component of a society – at least beneficiary in view of their illiteracy, limited exposure to the outside world, poor communication and expression abilities and very limited or no access to information sources find it very difficult to use the information they require. The most essential step under the circumstances is to understand completely the information seeking behavior of economically weaker women in their socio-economic and cultural contexts. Women are mainly reached by indirect methods, usually through extension services. Even if the information is made available to the woman, the willingness of her to change, her ability to interpret and use information and the credibility of information are the key factors in making any impact of information on their well being.

Access to information would certainly enhance the capability of the individuals to make better use of the resources at her command, take considered decisions and improve her quality of life. But women suffer from certain inherent problems viz., poverty, illiteracy, locational remoteness, male dominated families where she is denied exposure and access to information, which is crucial for her development as well as her family. Women lag behind in every sector. Obviously the nation cannot move ahead keeping the major portion of its population in dark. As a result, International organizations, various state and central Governments, NGO's and many corporate sectors are making efforts to provide information support to economically weaker women. Considering the vastness of the country and enormity of the task, the efforts are not sufficient. These are only sporadic and piece meal works. As such information support is awfully inadequate (Chatterjee, Amitabh, 2003).

2. Karnataka at a Glance:

Karnataka state covers an area of 191,976 square kilometers (74,122 sq mi), or 5.83% of the total geographical area of India. It is the eighth largest Indian state by area. Karnataka is the ninth largest state by population, comprising 30 districts. Kannada is the most widely spoken and official language of the state [2]. The population of Karnataka State as per 2011 is 61,130,704. The population comprises 31,057,742 males and 30,072,962 females. The literate population is 41,029,323.

Literacy rate in Karnataka has seen upward trend and is 75.60 percent as per 2011 population census of that, male literacy stands at 82.85 percent while female literacy is at 68.13

percent. Out of total population of Karnataka, 38.57% people live in urban regions. Out of the total population of Karnataka State, around 61.43 percent live in the villages [3].

To identify various agencies that provide information support to economically weaker women an explorative study was undertaken in Karnataka State. Study population was chosen adopting multistage sampling that combines cluster method with stratified technique. For the spatial coverage the selection of sample respondents have been made from thirty districts of Karnataka State. From each district one taluka (block), from each taluka (block) two villages have been selected for this study. From each village 30 respondents have been selected. Thus total 60 villages and 1800 respondents were selected. Using questionnaire as a tool data was elicited and analyzed.

3. General Information

Table .1: Characteristics of Study Population

Characteristics	No Income N= 616 (34.2%)	200 to 500 N= 505 (28.1%)	501 above 679 (37.7%)	Total
Age				
Less than 25	106 (17.2)	45 (8.9)	71 (10.5)	222 (12.3)
26 to 35	309 (50.2)	184 (36.4)	258 (38.0)	751 (41.7)
36 to 45	148 (24.0)	185 (36.6)	244 (35.9)	577 (32.1)
46 above	53 (8.6)	91 (18.1)	106 (15.6)	250 (13.9)
Educational qualification				
Illiterate	96 (15.6)	253 (50.1)	291 (42.9)	640 (35.6)
Primary Education	128 (20.8)	162 (32.1)	214 (31.5)	504 (28.0)
Secondary Education	284 (46.1)	75 (14.9)	137 (20.2)	496 (27.6)
Diploma, Degree	108 (17.5)	15 (2.9)	37 (5.4)	160 (8.8)
Social Category				
GM	261 (42.4)	172 (34.1)	274 (40.4)	707 (39.3)
OBC	146 (23.7)	145 (28.7)	200 (29.5)	491 (27.3)
SC/ST	209 (33.9)	188 (37.2)	205 (30.1)	602 (33.4)
Occupation				
Farmer	0 (0)	93 (18.3)	207 (30.5)	300 (16.7)
Business	0 (0)	17 (3.4)	54 (7.9)	71 (3.9)
House wife	614 (100.0)	0 (0)	0 (0)	614 (34.1)
Labour	0 (0)	397 (78.3)	418 (61.6)	815 (45.3)

(Note: Figures in the parentheses indicate percentages)

Table 1 reveals that large number of women under study belong to the age group of 26 to 35 years (41.7%, N=751) and 36 to 45 years (32.1%, N=577). More than one third of women under study are illiterates (35.6%, N=640), while a very small proportion (8.8%, N=160) have diploma or degree to their credit. 28% (N=504) of women have completed their primary education and 27.6% (N=496) have completed their secondary education. The study population comprises of 39.3% of GM (N=707), 27.3% of OBC (N=491) and 33.4% of SC/ST (N=602) women. Women labours (45.3%, N=815) constitute a larger proportion of the study population. More than one third of the women (34.1%, N=614) are housewives.

4. RESULTS

4.1 Use of Library:

Table 2: Use of library

Use of library	Income			
	No Income	200 to 500	500 above	Total
Yes	52 (8.4)	10 (2.0)	35 (5.2)	97 (5.4)
No	564 (91.6)	495 (98.0)	644 (94.8)	1703 (94.6)
Total	**616 (34.2)**	**505 (28.1)**	**679 (37.7)**	**1800 (100.0)**

(Note: Figures in the parentheses indicate percentages)

From table 2, it can be analyzed that a greater majority of economically weaker women (94.6%, N=1703) do not use library.

4.2 Use of Radio:

Table 3: Radio as an information supporting agency

Response	Income			
	No Income	200 to 500	501 above	Total
Yes	136 (22.1)	70 (13.9)	154 (22.7)	360 (20.0)
No	480 (77.9)	435 (86.1)	525 (77.3)	1440 (80.0)
Total	**616 (34.2)**	**505 (28.1)**	**679 (37.7)**	**1800 (100.0)**

(Note: Figures in the parentheses indicate percentages)

From table 3, it can be analyzed that nearly 20% (N=360) of users assertively say that radio is an information supporting agency. It means that 80% (N=1440) of the economically weaker women feel that radio is not an information supporting agency.

Table 4: Usefulness of radio as information supporting agency

Usefulness	Income			
	No Income	200 to 500	501 above	Total
Mediocre	54 (3.0)	34 (1.9)	36 (2.0)	124 (6.9)
Good	76 (4.2)	34 (1.9)	99 (5.5)	209 (11.6)
Excellent	6 (0.3)	2 (0.1)	19 (1.1)	27 (1.5)

(Note: Figures in the parentheses indicate percentages)

From table 4, it is found that hardly 1.5% (N=27) of women feel that radio programmes are excellent information supporters and 11.6% (N=209) of women feel that radio programme are good as far as usefulness concerned. Another 6.9% (N=124) of women rate radio programme as mediocre.

4.3 Use of Television:

Table 5: Television as an information supporting agency

Response	Income			
	No Income	200 to 500	501 above	Total
Yes	568 (92.2)	389 (77.0)	545 (80.3)	1502 (83.4)
No	48 (7.8)	116 (23.0)	134 (19.7)	298 (16.6)
Total	**616 (34.2)**	**505 (28.1)**	**679 (37.7)**	**1800 (100.0)**

(Note: Figures in the parentheses indicate percentages)

The results of table 5 indicates that 83.4% (N=1502) of women under study accept television as an information supporting agency. Further 16.6% (N=298) of women do not feel that television supports their information requirements.

Table 6: Usefulness of television as information supporting agency

Usefulness	Income			
	No Income	200 to 500	501 above	Total
Mediocre	268 (14.9)	206 (11.4)	213 (11.8)	687 (38.2)
Good	259 (14.4)	147 (8.2)	271 (15.1)	677 (37.6)
Excellent	41 (2.3)	36 (2.0)	61 (3.38)	138 (7.7)

(Note: Figures in the parentheses indicate percentages)

From table 6, it is found that 7.7% (N=138) of women rate television as an excellent agency that supports their information requirements. 37.6% (N=677) of women rate television as good for supporting their information requirements. Surprisingly 38.2% (N=687) of women rate television as mediocre agency to support their information requirements.

4.4 Use of Newspapers:

Table 7: Newspapers as an information supporting agency

Response	Income			
	No Income	200 to 500	501 above	Total
Yes	221 (35.9)	64 (12.7)	111 (16.3)	396 (22.0)
No	395 (64.1)	441 (87.3)	568 (83.7)	1404 (78.0)
Total	**616 (34.2)**	**505 (28.1)**	**679 (37.7)**	**1800 (100.0)**

(Note: Figures in the parentheses indicate percentages)

From table 7, it is found that more than three fourth of women under study i.e. 78% (N=1404) of them feel that newspapers do not support their information requirements.

Table 8: Usefulness of newspapers as information supporting agency

Usefulness	Income			
	No Income	200 to 500	501 above	Total
Mediocre	79 (4.4)	22 (1.2)	37 (2.1)	138 (7.7)
Good	131 (7.3)	40 (2.2)	60 (3.3)	231 (12.8)
Excellent	12 (0.7)	4 (0.2)	16 (0.9)	32 (1.8)

(Note: Figures in the parentheses indicate percentages)

It is found from Table 8 that very small percentage i.e. 1.8% (N=32) of women rate newspapers are excellent agencies to supports their information requirements. Another 7.7% (N=138) of women feel that it is a mediocre information supporting agency that caters to their information requirements. Further, more than 12% (N=231) of women feel that newspapers are good in supporting their information requirements.

4.5 Use of Periodicals:

Table 9: Periodicals as information supporting agencies

Response	Income			
	No Income	200 to 500	501 above	Total
Yes	117 (19.0)	31 (6.1)	68 (10.0)	216 (12.0)
No	499 (81.0)	474 (93.9)	611 (90.0)	1584 (88.0)
Total	**616 (34.2)**	**505 (28.1)**	**679 (37.7)**	**1800 (100.0)**

(Note: Figures in the parentheses indicate percentages)

From table 9, it is found that 88% (N=1584) of economically weaker women feel that women related periodicals do not support their information requirements.

Table 10: Usefulness of periodicals as information supporting agency:

Usefulness	Income			
	No Income	200 to 500	501 above	Total
Mediocre	60 (3.3)	13 (0.7)	27 (1.5)	100 (5.6)
Good	56 (3.1)	14 (0.8)	37 (2.1)	107 (5.9)
Excellent	1 (0.1)	4 (0.2)	4 (0.2)	9 (0.5)

(Note: Figures in the parentheses indicate percentages)

From table 10, it can be analyzed that very small percentage of women i.e. 0.5% (N=9) rate the usefulness of women related periodicals as excellent in supporting their information requirements. 5.9% (N=107) of economically weaker women rate women related periodicals for their usefulness as good and another 5.6% (N=100) rate the periodicals as mediocre.

4.6 Use of Human Sources

Table 11: Human resources as information supporting agency

Response	Income			
	No Income	200 to 500	501 above	Total
Yes	544 (88.3)	410 (81.2)	595 (87.6)	1549 (86.1)
No	72 (11.7)	95 (18.8)	84 (12.4)	251 (13.9)
Total	**616 (34.2)**	**505 (28.1)**	**679 (37.7)**	**1800 (100.0)**

(Note: Figures in the parentheses indicate percentages)

From table 11, it is found that 86.1% (N=1549) of economically weaker women feel that human resources support their information requirements.

Table 12: Usefulness of human resources as information supporting agency: Income of women

Usefulness	Income			
	No Income	200 to 500	501 above	Total
Mediocre	321 (17.8)	277 (15.4)	342 (19.0)	940 (52.2)
Good	221 (12.3)	125 (6.9)	239 (13.3)	585 (32.5)
Excellent	2 (0.1)	8 (0.4)	14 (0.8)	24 (1.3)

(Note: Figures in the parentheses indicate percentages)

It is found from Table 12 that 52.2% (N=940) of economically weaker women rate human sources as moderately useful in supporting their information requirements. Nearly one third of economically weaker women i.e. 32.5% (N=585) rate human sources for their usefulness as good. While a very small percentage of women i.e. 1.3% (N=24) rate them as excellent.

4.7 Institutional Sources

Table 13: Institutional resources as information supporting agency:

Response	Income			
	No Income	200 to 500	501 above	Total
Yes	276 (44.8)	162 (32.1)	276 (40.6)	714 (39.7)
No	340 (55.2)	343 (67.9)	403 (59.4)	1086 (60.3)
Total	**616 (34.2)**	**505 (28.1)**	**679 (37.7)**	**1800 (100.0)**

(Note: Figures in the parentheses indicate percentages)

From table 13, it is found that 60.3% (N=1086) of economically weaker women feel that institutional resources do not support their information requirements.

Table 14: Usefulness of institutional resources as information supporting agency

Usefulness	Income			
	No Income	200 to 500	501 above	Total
Mediocre	211 (11.7)	120 (6.7)	184 (10.2)	515 (28.6)
Good	65 (3.6)	41 (2.3)	86 (4.8)	192 (10.7)
Excellent	0 (0)	1 (0.1)	6 (0.3)	7 (0.4)

(Note: Figures in the parentheses indicate percentages)

Institutional resources are rated moderately useful by 28.6% (N=515) of economically weaker women (Table 14). While 10.7% (N=192) rated institutional resources as good, a very few people (0.4%, N=7) rate institutional resources as excellent.

4.8 Use of Internet

Table 15: Internet and E-resources as information supporting agency:

Response	Income			
	No Income	200 to 500	501 above	Total
Yes	6 (1.0)	1 (0.2)	3 (0.4)	10 (0.6)
No	610 (99.0)	504 (99.8)	676(99.6)	1790 (99.4)
Total	**616 (34.2)**	**505 (28.1)**	**679 (37.7)**	**1800 (100.0)**

(Note: Figures in the parentheses indicate percentages)

Only 0.6% (N=10) of women claim that Internet and E-resources support their information requirements (Table 15). This could be analysed in the light of low penetration of Internet usage. Further among fourteen economically weaker women who use Internet 10 women claim that it supports their requirements. Hence internet as an information supporting agency has not reached all the women.

Table 16: Usefulness of Internet and E-resource as information supporting agency

Usefulness	Income			
	No Income	200 to 500	501 above	Total
Mediocre	3 (0.2)	0 (0)	0 (0)	3 (0.2)
Good	3 (0.2)	1 (0.1)	3 (0.2)	7 (0.4)
Excellent	0 (0)	0 (0)	0 (0)	0 (0)

(Note: Figures in the parentheses indicate percentages)

0.2% (N=3) of women (Table 16) rate Internet and E-resources as moderately useful while 0.4% (N=7) rate it as good.

4.9 Sources of Information

Table 17: Sources of information to know the Government programme (N=1800)

Sources of Information	Income							
	No Income	Rank	200 to 500	Rank	501 above	Rank	Total	Rank
Radio	92 (5.1)	10	46 (2.6)	12	111 (6.2)	8	249 (13.8)	10
Newspapers	154 (8.6)	7	49 (2.7)	11	89 (4.9)	10	292 (16.2)	8
Government Office	51 (2.8)	13	24 (1.3)	13	45 (2.5)	13	120 (6.7)	13
ZP/ZP Members	2 (0.1)	16	2 (0.1)	14	8 (0.4)	15	12 (0.7)	15
Neighbours	396 (22.0)	2	310 (17.2)	1	411 (22.8)	2	1117 (62.1)	2
Family Members	282 (15.7)	4	206 (11.4)	4	264 (14.7)	4	752 (41.8)	4
Gramsabha Members	109 (6.1)	9	58 (3.2)	8	127 (7.1)	7	294 (16.3)	7
Social Workers	178 (9.9)	5	172 (9.6)	5	239 (13.3)	5	589 (32.7)	5
Television	377 (20.9)	3	240 (13.3)	3	329 (18.3)	3	946 (52.6)	3
Friends	408 (22.7)	1	298 (16.6)	2	414 (23.0)	1	1120 (62.2)	1
Gram Panchayat Office	87 (4.8)	11	53 (2.9)	10	89 (4.9)	10	229 (12.7)	11
Public Library	9 (0.5)	14	2 (0.1)	14	10 (0.6)	14	21 (1.2)	14
Academic Library	5 (0.3)	15	2 (0.1)	14	3 (0.2)	16	10 (0.6)	16
Associations / Institutions	160 (8.9)	6	110 (6.1)	6	182 (10.1)	6	452 (25.1)	6
Concerned Staff	70 (3.9)	12	56 (3.1)	9	85 (4.7)	12	211 (11.7)	12
Teachers	110 (6.1)	8	71 (3.9)	7	111 (6.2)	8	292 (16.2)	8

(Note: Figures in the parentheses indicate percentages)

Human sources like friends, neighbours, family members have a major role. 62.2% (N=1120) of women claimed that they have come to know about Government programmes through their friends, while neighbours with 62.1% (N=1117) of women to make them aware of Government programmes. 52.6% (N=946) of economically weaker women also claimed that they aware of Government programmes through television. Friends, neighbours and television are the three most preferred sources of information to know the Government programmes. 41.8% (N=752) of women also claimed family members are sources of information while nearly one third of women

identify social workers as sources of information. More than one fourth of women identify associations and organizations as sources of information. 16.3% (N=294) of women became aware of Government programmes through gramsabha members. 16.2% (N=292) came to know about Government programmes through newspapers and teachers. 13.8% (N=249) became aware of Government programmes through radio, 12.7% (N=229) of women became aware of Government programmes through gram panchayat office. 11.7% (N=211) claim concerned staff as sources of information. 6.7% (N=120) of women also claim Government office as the source of information.

5. Discussions and Conclusion

Public libraries and academic libraries are totally negligible sources, including zilla panchayat and zilla panchayat members. Hence it can be interpreted that economically weaker women totally depend on human sources like friends, family members, neighbours, social workers as their first choice. Among the mass media, television is the major source of information about Government programmes. Whereas newspapers and radio have totally limited role, institutions like gram panchayat office, zilla panchayat, Government office, public libraries, academic libraries have been approached by a very few women. This clearly indicates that institutions have failed in their role to reach economically weaker women.

The library as information provision instrument is however comparatively recent phenomenon. There is a very weak women member base in rural libraries. This implies that unless the acceptability of the rural libraries increases, the libraries cannot act as a successful agent of change. Hence it needs more interaction between rural libraries, and other developmental agencies and carrying the information to the rural women within the framework of standard library services. These calls for identifying different roles of the rural libraries – supplementary role, coordinators role, role of a friend, and role of input provider to the Government. Awareness of rural libraries has to be created through various outreach programs, the Department of Public Libraries, Government of Karnataka has to take vigorous and integrated programs jointly with NGOs in developing multipurpose rural library system.

LIS and IT professionals have changing roles and responsibilities in the context of rural development. They have to adapt themselves with the forthcoming digital society and also adopt newer methods for identifying, location, collecting, organizing, handling, managing, storing and presenting information to the rural community. It is necessary to develop well-equipped public library system in the country as this alone can help in providing effective information services to the rural population. It is also necessary that the central and state governments provide sufficient financial and manpower support to establish library.

The government produces a good amount of information, which often does not percolate at different levels. Such information should be quickly brought to the notice of the users through the proposed facilities. This is only possible when the government officials and other concerned people become more alert in this matter. A nation can never go ahead keeping a section of its citizens lagging behind. Hence every effort should be made to improve the condition of our rural folk and for that proper information infrastructure has to be build up at any cost.

Libraries and other information centres, media, educational/ Research institutions in the urban sector and the NGOs, government departments and recently the ICT managers in the rural sector prepare information capsules and disseminate for use. There is a strong case for bringing together the expertise of library / information professionals, Government department officials who deal with women's problems, health workers, child care workers, NGOs and the ICT managers to

envision communication centres in both urban and rural sectors to deal with the information requirements of urban and rural poor (Dasgupta, Kalpana, 2003).

Keeping in view the plight of rural people, who are more unaware of new technologies than their urban counterparts, government is providing special packages for them, who are involved in home based or small-scale activities related to handloom, handicraft, sericulture, etc. From identification of projects to the marketing of products, these packages are helping women entrepreneurs to a great extent. Government of India is in the process of establishing Community Information Centres (CIC) at all block levels, which are designed as the prime movers of ICT in the most economically backward and geographically difficult terrains. CICs are supposed to provide multipurpose information (on health, education, social welfare and small-scale industry, etc) (Dasgupta Misra, Kinkini, 2003).

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Community Information Services to the Rural Populace: *An Overview*

Lokaraja V S **Purshothama Gowda**

Abstract

The article highlights the basic information services in the rural area and stresses the role of information in the rural development. The rural information centers take major role as a community information centre in the development of rural populace by providing the basic information services such as health, education, legal information, agricultural advices etc. The authors have given an overview of information services for the rural community.

1. Introduction

Information is powerful and value based. Value of information includes both its present and the potential value. Information has been considered as the fifth need of man ranking after air, water, food and shelter by subject experts. In fact, in view of the vital role played by information in daily life, it should be considered as the first need in terms of survival. Without information, it is difficult to go through the challenging process of life. As a matter of fact, every organisation knows or needs to know about its surroundings, availability of food and probable potential dangers for its life. Information is so basic that it is a part and parcel of nature. This is evident from the fact that every organism is endowed with certain amount of knowledge or knowledge-base by nature itself (for example, migration and imitation of natural groups) and it tries to add to its knowledge-base through sensory perception or experience. Without information, the survival of mankind would be impossible.

India has been a land of village communities since time immemorial. The villages are considered as the back bone of the nation. Most of the Population lives in rural areas. If proper action is not taken for the development of rural communities, the dream of a developed India may be far from fulfillment. Information about new innovations, new technologies new research, infrastructure, policies rights and the constitutional affairs of the nation should be made available for the rural citizenry. Though India is independent, rural areas have not been treated well in many sectors. All know the situation regarding education, unemployment, illiteracy, reduction of female education, health issues and poverty at the bottom of the pyramid. Greater scope of education, more resources, knowledge, information, employment, technology and better health care facilities should be mobilized for the betterment of the population lives at the bottom of the pyramid.

Community services have been in existence since the inception of Gram Panchayath (GP) in India but the term Community Information Service (CIS) is of recent origin. In the late 1980s community information services were established feature in Britain, the United States, Canada, Australia and New Zealand. In the Indian context, the large gaps exist between information required by the different sections of the society and actual availability of information either from government, non- government and local self government organizations. To bridge the information gap, community information centers play a significant role acting as a nodal agency to provide right information to the different sections of population at a right time and right place.

Generally "Community refers to a group of people having common interests". In other words, according to Giggey, S. (1988) it means "a group of people in the same locality or a body of people leading common life or having common rights or common possession or enjoyment". Michael Edwards (1977) says "Community Information is considered to be that information required by members of the public (or those acting on their behalf) to make effective use of the

resources potentially available to them in the communities in which they live. Such information may be needed to help solve problems in the fields of housing, disability, household finance, marriage, employment, and so on." Thus, he opines that CI is information in the community for the community.

2. Need for community information

Information is an essential ingredient in community development; and community development is an essential factor in working towards participating democracy. Community information services help in the development of rural community by reducing barriers to information access such as economic, geographic, technological, search skills, cognitive, psychological language etc. And also it will help to create social balance between haves and have not by informing about the changes around themselves and to improve their standard of living in all respects. Therefore there is high need for study of CIS in the rural area.

Access to global information especially in rural areas is still a dream in developing countries like India. Rural areas today are lacking basic minimum infrastructure facilities and resources as compared to urban areas in spite of developmental programme by government of India to raise standard of living of society at large. The major obstacles in rural areas regarding the upliftment of poor political upheaval, illiteracy, apathy of government functionaries or institutions and languages. Besides, local information needs of villagers are also varied in nature.

Community information is the basic need of the masses and lacks of access to information both public and private information is one of the major drawbacks for community development. Therefore community information services are very much needed for the people so as to be informed about the changes around themselves and to improve their standard of living in all aspects.

Rural community people required to be made information literates to effectively access and evaluate information for problem solving and decision making .CIS plays a major role in improving the information capability of people and develops them as Information literates by providing information services.

The identification of information needs is a prerequisite to design and develop any information system to provide need based information service to the rural community. The people are happy when they get the needed information to meet their necessities. It is the obligation of the information providers to deliver such information and to satisfy them.

3. Studies on community information services

A review of literature provides current concept and back ground for the problem of research. It also gives historical perspective of the research published by the scholars.

Francis Adesoji Fabunmi (2011) in his study, he declares that, the provision of information needs and library services for rural community development, its challenges for democratic government in Nigeria. The study identifies the information needs for rural community development. Research gives recommendations and role of democratic government of Nigeria in information needs and library services for rural community development. According to Biradar B S and Sujjin Butdisuwan (2010) libraries should extend their service and outreach programs to the rural dwellers in real sense. Department of public libraries need to plan about capturing of local skill knowledge for extensive utilization by rural dwellers. This paper concentrates mainly on

community building what? Why? How? And also role of community information centers in community building.

Zala, Laviz N and Patel, Niraj R (2009) observed the role of an information centre/library in the uplift of rural people in various areas such as education, health agriculture, and employment. Use of Information Communication Technology (ICT) at the bottom of pyramid to enable the rural citizenry to access the resources available at the Rural Information Centre (RIC). In this paper they also examine how the RIC can help the government, NGOs and Self Help Groups (SHG) to alleviate poverty, eradicate illiteracy, awareness about health, self employment and the benefits of e-governance for sustainable development at the bottom of the pyramid. According to Biradar, B.S and Dharani Kumar, P. (2008) rural communities face new challenges of information needs for their betterment of lives. The study mainly concentrates on Holehonnur rural community and its information needs. The rural populace of Holehonnur depicts that they need information on agriculture, science and technology, sports and entertainment etc. the same is obtained through magazines/news papers, books and various other channels. They also suggested that concerned authorities must introduce integrated model in collaboration with other departments to serve all sections of the rural community.

According to Khan, Noor Shed and Bawden, David (2005) the study which investigates the role of libraries for community informatics provision in Pakistan. They found that most of the libraries provide traditional community information services but few libraries are providing communication technology based services. Funding for provision of equipment, training and awareness rising in the community are the essential factors.

Uhegbu, A. N. (2001) in his study discusses the impediments to rural information services for community development in Nigeria. He highlights the nature and characteristics of a community as well as community information needs and services. Major components and obstacles of community information service were discussed and also recommended effective utilization of community information service. Islam Md. Anwarul and Keita Tsuji (2011) discuss the different kinds of attempts that have been made to bridge the digital divide in Bangladesh, with special focus on the Community Information Centers (CICs), which are playing a unique and innovative role in reducing the digital gap. They also suggested some measures for upgrading CICs in Bangladesh to reduce digital gap. If the CICs in Bangladesh successfully overcome the constraints, it will certainly bring new opportunities for the rural people to enrich their lives as well as create revolutionary changes in rural societies. Madan and Sahay (2002) conducted a case study on slum dwellers about NGO`s and Community issues. Jana sahayog is an urban resource centre of samuha, organizes several programs towards slum dwellers issues like land titles, basic amenities and other community issues. Amudhavalli A (1999) overviewed means and implication of community information service on the role of library and information center. And also it attempts to examine how a cooperative venture of interagency network can lead to an effective community information service suitable for the local population.

According to Kumaresan SC (2003) rural areas are the back bone of any developing country. A productive, effective and meaningful service of Rural Information Center (RIC) is very much essential in view of high rate of illiteracy and poverty in rural areas. Adebambo (2010) observed the establishment of libraries and information centers in rural areas and stocking and staffing where they already exist is essential to make a reality. Another critical need is improved research and communication relationships between librarians and agricultural extension workers. ICT public access points in rural areas can provide effective means for ensuring universal access to the

infrastructure and services of the information society. Libraries must also promote professional and public awareness of information services for achieving Millennium development goals.

According to Dent, Valeda Frances (2006) in his studies how the Kitengesa Community Library in rural Uganda serves as both a community library and a school library, might be seen as a model for other similar libraries in developing countries. Findings of the indicate that the Kitengesa Community Library is a successful working model that might be used in other similar rural villages to serve both schools and the community. Siriginidi Subba Rao, (2004). Discussed the role of information and communication technologies (ICTs) for rural communities. And also highlights the factors preventing rural communities from reaping the benefits of information and communication technologies (ICTs) and technological innovations to access them. Defines community information systems and lists selected successful models outside India. Williams E. Nwagwu, (2010) conducted study on Information and learning needs of youth in a rural community in Nigeria. in his openion youth want to remain healthy to develop their personal efficacy through education and then be usefully integrated into wider social and economic life. Meanwhile, they are concerned about how to participate in generating income to achieve this ultimate aim, and to assist their families and community.

4. Types of Community Information Services

The needs of a community can be classified into general and specific needs. General information needs are those which are felt by all people in a community. These relate to information regarding government welfare programs, agriculture information, raitha mithra yojane, health information services, ambulance services, nursing homes, medical practitioners, transport facilities, employment services, communication facilities, shopping guides, lawyers etc.

These information needs of the rural community can be grouped into following categories:

4.1. Community Health Information:

Under the constitution, health is a state subject. The recommendations of the Bhore Committee, Mudaliar Committee and other Committees of India have been taken into consideration in providing comprehensive health care at the door steps of the community. During the previous Five Year Plan periods a large net work of Primary Health Care infrastructure institutions covering the entire State has been established. Wide range of communicable diseases namely Malaria, Filaria, Tuberculosis, Cholera and several other vaccine preventable diseases like Diphtheria, Tetanus, Polio, Measles and Hepatitis B & C are given due importance for under the IDSP, NCD risk factor survey in urban and rural areas is an important component. Several important non-communicable diseases like Iodine Deficiency Disorder, Blindness, Cancer, Diabetes are also given due importance. Hence, rural people need information regarding, community health services, emergency health services, hospitals, nursing homes, specialist medical practitioners, etc.

4.2. Agriculture Information

Farmers need updated information on crop production options, weather forecasting, practices markets, site provision of critical inputs like seeds, bio-fertilizers, micro-nutrients, primary seed and soil testing facilities. And to provide a forum for on-farm demonstration about new technologies developed by both public and private sector agencies to meet the growing demands of farming community engaged in the pursuit of latest technologies.

4.2.1. ***Raitha Mitra Yojane*** is a new demand driven Agricultural Extension System of the Karnataka state. The Agricultural Extension Centres opened under this new

programme at Hobli level are called ***Raita Samparka Kendras***(RSK). Accordingly, 745 *RSK* have been established one at each *hobli* (sub-blocks) levels.

4.2.2. Krishi Vigyan Kendra (KVK) is a project supported by Indian Council of Agricultural Research (ICAR), New Delhi, and government of India. The mandate of KVK is to promote the transfer of technologies in agriculture and allied sectors through technology assessment and refinement, organizing vocational courses to create self employment for rural youths, organizing front line demonstrations to generate production data and to impart training to extension personnel of development departments.

4.2.3. Employment news: Employment opportunities, self-employment opportunities, training opportunities, etc.

4.3. Educational information:

Rural people need information about schools, colleges, different professional Courses, admission procedures, information about technical education etc.

4.3.1. Legal information: People living in the rural areas, obviously face obstacles in obtaining law and family violence information because of geographic distances and isolation. Basically they need citizens' rights and duties, legal aid and information about lawyers.

4.3.2. Housing information: Finding a house for rent, landlord-tenant relations, repairs, buying and selling, security and related matters.

4.4. Consumer Forums: Consumer rights, standards, how to complain, etc.

4.5. Family matters: Marriage, adoption, maternity rights, will making, etc.

4.6. Money matters: Personal finance, how to obtain loans, how to claim welfare benefits, how to file tax returns, etc.

5. Agencies of community information services

Following agencies provide general needs of the rural community.

5.1. Non- Governmental Organisation (NGO):

Following are some of the self financed voluntary non – governmental organizations.

5.1.1. Rotary Club: The Rotary Foundation is to enable Rotarians to advance world understanding, goodwill, and peace through the improvement of health, the support of education, and the alleviation of poverty. The foundation is a not-for-profit corporation supported solely by voluntary contributions from Rotarians and friends of the foundation who share its vision of a better world.

5.1.2. Lions Club: Lions clubs motto is "We Serve." Lions are part of a global service network, doing whatever is necessary to help our local communities by conducting vision screenings, equipping hospitals and clinics, distributing medicine and raising awareness of eye disease, Lions work towards their mission of providing vision for all. They have extended their commitment to sight conservation through countless

local community projects and through their international sight first program, which works to eradicate blindness. Lions serve youth community to support local children and schools through scholarships, recreation and mentoring. And also helping communities following natural disasters by providing for immediate needs such as food, water, clothing and medical supplies and aiding in long-term reconstruction.

5.1.3. **Junior Chamber International (JCI):** Indian Jaycees is a voluntary organization, membership based NGO working in India for developing the leadership skills of young men and women of this country. The mission is to contribute to the advancement of the global community by providing the opportunity for young people to develop the leadership skills, social responsibility, entrepreneurship and fellowship necessary to create positive change.

5.2. Government Welfare Schemes:

Government of India and Government of Karnataka are implementing a number of welfare schemes for the benefit of the rural people for their development and up-liftment of weaker section.

5.3. Mass Media:

Following mass media providing information

5.3.1. **News Paper:** News paper is today regarded as a powerful source of knowledge. It plays a very important role in enlightening and educating the people for their rights and liberties.

5.3.2. **Radio:** Radio is the older forms of electronic media. It has an enormous potential for entertainment and enlightenment as well as mere news, weather, traffic and sportive events.

5.3.3. **Visual Media:** Today mass media, specifically the visual media, plays pivotal role in creating an atmosphere of awareness among the society. It refers to different communication is conveyed to the viewers through knowledge, television, cinema, posters etc. whatever is supplied through the visual media have fast and long lasting effect on the minds of the viewers.

6. Grama Panchayath Library

The Grama panchayath is one of the most grass root levels of government authorities which communicate directly to the people. To provide information and to educate the rural people the government started Public library. These libraries are the centers of learning for the people of the village. In addition to these general information needs of all people, there are specific information needs of special groups of people in the community. Often these groups cannot be articulated. They are full of disadvantages and cannot even identify and express their information needs. They are not aware of the agencies that offer welfare services and special programs to improve their living conditions. Sarada (1999).

7. Conclusion

Dissemination of information makes people aware of accessible resource to retrieve and use in their projects /programs. Most of the times, disseminating information to the rural

community helps to bring the societal change. Development of society fundamentally depends on access to information. rural areas and the rural populace have been the primary concern of the economic planning and development process of the country. There is no effective and comprehensive system for providing this information to the villagers to update themselves. In order to meet all the information requirements of rural people, the creation of well-organized information centers in rural areas is necessary. Such Rural Information Centers can be social institutes of change and can effectively contribute to the welfare of the rural people.

There is a need for general awareness among the villagers in approaching the appropriate authorities to make their demands and express their grievances; however the greatest barrier to them in making their representation is the procedure and preparing a memorandum explaining their deprived conditions. In this regard an agency that can help them in preparing such memorandums is very much crucial to the rural populace.

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Evaluation of Various Dimensions of Public Library Act of Kerala: *A Study*

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Abstract

The library movement in Kerala is historical and dynamic in its evolution. In the era of British Raj onwards there is an established public library system in Kerala. But the state implemented the public library act only on 1989 on itself. This article examines the various facets of the Public library act of Kerala, and its various dimensions and limitations of the Act.

Keywords : Public Library, Kerala State Library Council, Library legislation

1. Introduction

The public library movement in Kerala is unique in origin, development and magnitude. It started from people, nurtured by them and being looked after by them, even now, which has no parallel in any part of the country. From 1945 onwards there were much attempts were made by various personalities for passing the library bill. It was Shri. K. Chandrasekharan, Minister for Education, presented the bill on 25th January 1989. After long discussions, assembly gives unanimous approval to the bill on 23rd February 1989. The act received presidential assent on16th may 1989.The library act of Kerala is different from that of other states[1]. There is a three tier system of administration, viz. the state library council, district library council and taluk library council. The name of the act is Kerala public libraries act or Kerala Granthasala Sanghom (KGS) Act, 1989.The newly constituted state library council assumed charge on 27th April 1994.

2. Special Features of the Public Library Act of Kerala

The Kerala State Library Council functions directly under the control of the Kerala state government, ministry of higher education. There is a three tier system of administration, Viz. the State Library Council, the District Library Council and the Taluk Library Council[2].

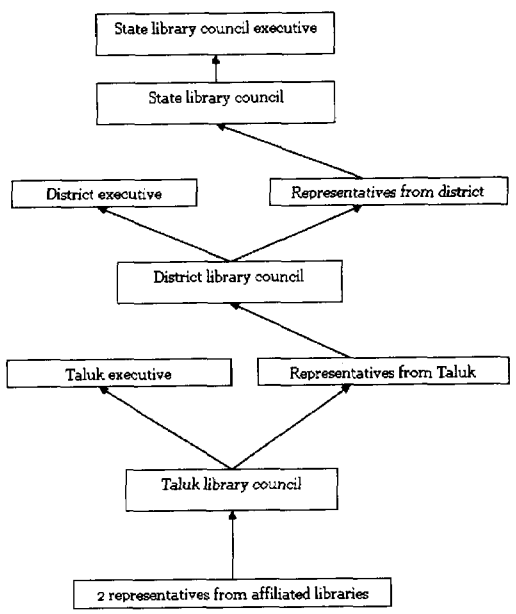
- Members of all these councils are democratically elected from the affiliated libraries which are the basic units.
- They functions as corporate bodies having common seal of powers.
- The Trivandrum public library shall be the state central library of the state.
- The act gives provision to elect women as well as SC/ST representatives to all levels of controlling set up.
- State central library maintains a fund called state library fund, from this all expenses of unions shall be met.
- Reading materials at all levels are provided directly.
- The board of control provides responsibility for making arrangements for conducting elections.
- The act provides provisions to merge Kerala Granthasala Sanghom with its staff, assets and liabilities in state library council.
- Not more than one percentage of the education budget should be spending for the development of libraries in the state.

3. Structure of the Public Library System in Kerala

3.1 State Library Council

Every district library council shall consists of

- It consists of one member each from a taluk elected by the general body of district library council and five members, of whom one shall be a librarian, another a person belonging to SC/ST and another a woman nominated by the government.
- The executive committee for state library council consists of 25 members of whom 15 shall be elected by members of state library council themselves, five nominated members and five ex-officials.
- The ex-officials are higher education secretary, general education secretary, cultural department secretary, finance secretary, local self government secretary.
- They should elect a president, vice- president, secretary, joint secretary from among themselves.



3.2 District Library Council

Every district library council shall consists of

- The president and secretaries of the taluk library unions in the district.
- Seven persons to be elected by the general body of the taluk unions in the district, of whom one shall be a woman; one shall be a person belonging to SC/ST
- They should elect an executive committee of council consisting a president, vice- president, secretary, joint secretary from among themselves.

3.3 Taluk Library Council

Every district library shall consists of

- Each taluk library council shall consist of two representatives of each affiliated libraries in the state.

- The executive committee of taluk library union consists of 9 members including the office bearers, which can be extended to 11, if there is no representation of SC/ST member or women member.
- They should elect an executive committee of council consisting a president, vice- president, secretary, joint secretary from among themselves.

4. Categories of Public Libraries in Kerala

The public libraries can be divided into four categories. They are:

Grant-in-aid Libraries affiliated to Kerala State Library council:

There are about 7000 libraries affiliated to Kerala State Library council. But all these libraries are not able to come up with the standards set by the library council. The council distributes government grants to the libraries affiliated to it according to its grades.

- **Libraries run by local bodies:** In Kerala, municipalities and panchayaths run their own libraries in order to cater to the need of the respective population these libraries are also affiliated Kerala State Library council.
- **Libraries run by local library authority:** With the enactment of the first public library law in the country by the Madras state, the government created three district libraries. And about 200 branch libraries.
- **Libraries run directly by the government:** The Trivandrum public library is the only public library runs directly by the government. The library is under higher education department and is managed by a committee called Trivandrum public library committee constituted by the government once in three years.

5. Present Library Setup In Kerala

Affiliated libraries are categorized into 6 grades viz. A, B, C, D, E and F[3] Library grand and librarians allowances are fixed based on the grade of the library. From 2008-09 onwards, the enhanced rates are recommended to this libraries. Amount granted to different grades of libraries are:

GRADE	YEAR		
	FROM 1996-97	FROM 2005-06	FROM 2009-10
A	6000	9000	12000
B	6000	9000	12000
C	6000	9000	12000
D	3600	6000	9000
E	3600	6000	9000
F	3600	6000	9000

5.1 Sources for finance

Expenditure of State Library Council is met by the grant sanctioned by the state government and the amount collected through the Library Cess. The act provides for a government grant of not more than 1 % of the education budget of the state. The act contains provisions regarding empowering the state, district and taluk library councils to accept any endowment or gift for any

purpose connected with its activities. This provision can be used effectively to strengthen the library movement in the state or the involvement of the masses is already ensured to this system since its inception.

5.2 Gradation of libraries

Gradation of Public Libraries is done in every year on the basis of the recommendations made by the concerned officials, who visit the library, verify relevant records and make an assessment of the activities going on. The total number of libraries under different grades to which library grant is being received during 2007-08 & 2008-09 are:

Grade	Number of books	Issues of books/year	News papers	Periodicals	Building
A	8000+	12000	5Malayalam/2 English	20	Own
B	5000-8000	8000	5Malayalam/2 English	15	Own
C	4000-5000	6000	5Malayalam/2 English	12	Own
D	3000-4000	5000	5Malayalam/2 English	10	Own
E	2000-3000	4000	5Malayalam/ 1English	10	Own
F	1000-2000	2000	5Malayalam	7	Own/rented

6. Programmes and Activities of KSLC

6.1 Establishment of modal village libraries, taluk libraries and district libraries

Three public libraries have been identified and raised to the status of district libraries. They will get special block grants for their developments. As part of modernization activities, one library was selected from every district and 14 modal village libraries were established. kallara panchayath library was selected in Trivandrum district as modal village library.

6.2 Academic study centres[4]

Students undergoing non-formal education in various subjects do not get any library support for their academic pursuits. To cater their needs, the council launched 14 libraries covering all districts. A good collection of academic books and reference books was built up in these centres.

6.3 Career information and guidance centres

The centre is intended to collect, organize and disseminate information on job opportunities to the educated youth in the villages. They procure good collection of books and other reading materials to appear for competitive exams and also provide necessary guidance to start self employment programmes etc. come under the activities of this centres. Presently there are 63 such centre are functioning at each one in a Taluk.

6.4 Children's activities

Balavedhi, a special unit for the children were launched in selected 175 libraries during 1998-99.this selection focuses on the special unit launched by the state library council for children in selected libraries.

6.5 Student's corner

In selected libraries which are functioning near the schools, student's corners were established. They provide good collection of reference books, academic books and related materials to be used by students in the schools. They are aimed mainly to supplement the school libraries which are in a poor state in the absence of full-time librarians.

6.6 Home distribution of books by women volunteers

This service is conducted as a mobile library scheme, in which women are engaged in delivering books to house wives by visiting their homes once in a week. A monthly subscription ranging from Rs.5/- to 10/- is collected from each member for home delivery of books.

6.7 Sevana-rural information centres

The intention of these information centres was to make available the fruits of information technology among the rural masses.

6.8 Establishment of women's unit

The decision of establishment of these units is to motivate women to make use libraries for their overall development. This will ensure the use of libraries by their children's also. This result in the establishment of women's unit called 'Vanitha Vedhi'

6.9 Gazette Extracts

Certified & Non Certified extracts of Kerala Government Gazette will be issued on written request from the Kerala State Central Library, Trivandrum.

6.10 Auditorium

An Auditorium is available in the State Central Library which is being rented out as per the rates prescribed by the Government for various functions except those organised by political parties and individuals.

6.11 Certificate Course in Library & Information Science

The State Central Library is conducting a certificate course in Library and information Science. The duration of the course is 6 months. There are 40 seats for this course. The Government's scheme of Earn While You Learn has been successfully implemented during the year 2005.

6.12 Date Conversion Certificate

Date Conversion certificate from Malayalam era to Christian era & vice versa is issued on written request. This service is chargeable @ Rs.25/- per certificate.

6.13 Library awareness programmes.

Volunteers functioning as libraries in the public libraries in the state are in untrained hands;

therefore books in the library are not processed and arranged scientifically. So workshops are conducted by Kerala State Library Council to give training for library secretaries.

6.14 Training programme

The next and most important phase of the programme is the training on library techniques to be given to the working librarians numbering above 5000. Experienced teachers were engaged to impart training. However the above training programme could not be continued for various reasons.

6.15 Library automation

About 600 libraries have computer facility. Some of these libraries have more than one system with internet search facility. Most of the libraries use computers for DTP work and CD-ROM search. These activities help them to generate a fraction of their income. It has already taken up the issue of customizing E-Granthalaya in Malayalam which helps in library automation because most of the documents in public libraries are in Malayalam. Digitization of old and rare books are also under taken by library council.

6.16 Other activities:

- Reading competition
- Jail library service
- Juvenile library service
- Orphanage library service
- Publication of Grandhalokam-official monthly journal of State Library Council
- Publication of information guides
- Book exhibitions
- Book banks
- Binding units
- Reading surveys.
- Conferences/seminars

7. Limitations of the Act

- It has no provision for a separate directorate and for direction for library council.
- No representation of library experts in state library council executive and no representation for professional librarian in district and taluk library council.
- The fund allocation should not exceed 1 % of education budget.
- Lack of accessibility
- Duplication of records
- No uniform membership
- No uniform standards.
- Lack of professional development activities
- Limited participation for LIS experts.
- Lack of connectivity between the member libraries.
- No recruitment policy.

8. Conclusion

Now Kerala State Library Council is organizing various developmental activities for the improvement of public libraries. Kerala State Library Council has taken up an ambitious programme of rejuvenating & modernizing all rural libraries, to a have a network of public libraries, i.e. to bring together all the public libraries in closer relationships. But it has to travel with more to achieve a knowledge society.

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Information support to civic body representatives: *Role of Grama Panchayat libraries*

Shantadevi, T **Tadasad, P G**

Abstract

In India Local government refers to specific entity created by national constitutions. Local governance is defined as "the formulation and execution of collective action at the local level. The rural library is major source of information for the local level administration. The government of Karnataka established rural libraries in all villages of the state under the public library system to provide necessary, required, informative and recreational information to the people of the village. But most of the rural/village library systems are badly shaped. They are suffering from the infrastructure facility, lack of financial assistance, maintenance, trained staff, sources, media facilities. So the rural libraries have to provide by all facilities like sufficient sources of information, human resource, technically trained staff, application of information and communication system, media and internet facilities. This article describes how the rural public libraries helps in providing information support to women administrator in the rural administration.

Keywords : Public library- rural library, information support, civic body reperesentatives, women grama panchayat members

1. Introduction

Importance of education in national development has been highlighted and published since many decades. **Chesterson's** opinion "Education is simply the soul of a society as it passes from one generation to another." In the context of education, libraries are heart and soul of every educational institution. Sagan, describes the role of libraries in education "The library connects us with the insight and knowledge, painfully extracted from Nature, of the greatest minds that ever were, with the best teachers, drawn from the entire planet and from all our history, to instruct us without tiring, and to inspire us to make our own contribution to the collective knowledge of the human species. I think the health of our civilization, the depth of our awareness about the underpinnings of our culture and our concern for the future can all be tested by how well we support our libraries." Public libraries have been described as Peoples University. Mahatma Gandhi says "India lives in its villages".

Karnataka State Government has initiated development programs by establishing village libraries called as "Grama Panchayat Libraries" in every village. These libraries serve general and specific information needs of people and authorities. Authorities are also called as representative of people i.e. "Civic Body Members" or "Grama Panchayat Members". Information is required in every aspect of planning; purchase; policy; executive decision; education etc. These civic body members included both male and female representatives as per reservation policy to empower women participation in political arena.

Women's role in the political process has virtually remained unchanged since independence. Broad based political participation of women has been several limited due to various traditional factor such as caste, religion feudal attitudes and family status. As a result women have been left on the periphery of political life. Observing this dark picture 73rd constitutional amendment Act came to provide them an opportunity to ventilate their grievances and take active part in decision making process in the local level.

The 73rd constitutional amendment has created space for women in political participation and decision making at the grass root level by providing that 33% of the seats are reserved in all over the country. 73rd constitutional amendment Act 1992 provides reservation for women in PIRs set up in two ways; for the office of the members and for that of the chairpersons as per the clause(2) and (3) of article 243(d) not less than one third of the seats for direct election of members at each tier of the panchayats are to be reserved for the women.

By implementing this clause now all the Grama panchayats have the women members because of the reservation policy. But these women members of Grama panchayats are characterized by

- Educational backwardness
- Financial backwardness
- Lack of administration knowledge
- Lack of awareness about social problems
- Lack of political awareness

Therefore it is necessary to study how these members will use the information for their as well as development and their behavior in information seeking from various sources like libraries and other systems. Prerequisite for above study is to know the role of Grama Panchayat Libraries towards women civic body representatives.

In light of this the present article describes the role of "Grama Panchayat Libraries" towards information support to civic body representatives particularly to women members.

2. Importance of local government system in the development of nation

In India Local government refers to specific entity created by national constitutions. Local governance is defined as "the formulation and execution of collective action at the local level. Thus, it encompasses the direct and indirect roles of formal institutions of local government and government hierarchies, as well as the roles of informal norms, networks, community organizations, and neighborhood associations in pursuing collective action by defining the framework for citizen-citizen and citizen-state interactions, collective decision making, and delivery of local public services"1.

India had one of the oldest traditions of strong self-governance at the local level. In the pre-Moghul period, local government was in operation more extensively in India than anywhere else in the world. Small villages and towns were regulated by custom and community leadership, with authority normally vested in an elders' council headed by a sarpanch or numberdar. The apex institution was the panchayat, with responsibilities for law and order, local services, land management, dispute resolution, administration of justice, provision of basic needs, and revenue collection. These institutions enabled each village and town to function harmoniously.

Later same was named as panchayat Raj system and in Karnataka state a separate department is established. One of the major responsibilities of the Department is in the realm of implementing the provisions of the Karnataka Panchayath Raj Act, 1993 to achieve democratic decentralization in the governance of the State's rural areas. The Department coordinates the process of the establishment of Panchayat Raj Institutions under the above legislation and monitors their functioning in order to ensure that Panchayat Raj Institutions in the State function as viable and vibrant institutions of Local Self Government.

Three tier structure of Panchayat Raj Institutions

30 Zilla Panchayats.

176 Taluk Panchayats.

5628 Grama Panchayats.

Local governance, therefore, includes the diverse objectives of vibrant, living, working, and environmentally preserved self-governing communities. As per Stigler's menu. Stigler (1957) Local governance is based on below principles:

- The principle of subsidiary
- Democratic decentralization
- Delineations of functions
- Convergence
- Citizen centricity

Governance is characterized mainly by eight major characteristics

- Transparency
- Accountability
- Participation
- Consensus oriented
- Equitable and inclusive
- Responsive
- Rule of law
- Efficiency
- Citizen-centered local governance
    - Responsive governance
    - Responsible governance
    - Accountable governance

Hence strengthening of local bodies with information at right time and to right people will be valuable input for success and need of the hour; which is also basic objectives of Grama Panchyat Libraries.

3. Powers, Athorities, Responsibilities of Grama panchayats

According to the provision of the legislature of state may by law endow the panchayats with such powers and authority as may be necessary to enable them to function as institution of self government and such law may contain provisions for the evolution of powers and responsibilities upon panchayats at the appropriate level subject to such conditions as may be specified therein with respect to;

The preparation of plans for economic development and social justice and the implementation of schemes for economic developments and social justice as may be entrusted to them including those in relation to the matters listed in the eleventh schedule

4. Eleventh schedule article 243 G

- Agriculture including agricultural extension
- Land improvement, implementation of land reforms, land consolidation and soil conservation
- Minor irrigation, water management and watershed development
- Animal husbandry, dairying and poultry
- Fisheries
- Social forestry and farm forestry
- Minor forest produce
- Small scale industries, including food processing industries
- Khadi village and cottage industries
- Rural housing
- Drinking water
- Fuel and fodder
- Roads, culverts bridges ferries waterways and other means of communication
- Rural electrification including distribution of electricity
- Non-conventional energy sources
- Poverty alleviation programmes
- Education including primary and secondary schools
- Technical training and vocational education
- Adult and non-formal education
- Libraries
- Cultural activities
- Markets and fairs
- Health and sanitation including hospitals, primary health centers and dispensaries
- Family welfare
- Women and child development
- Social welfare, including welfare of the handicapped and mentally retarded
- Welfare of the weaker sections and in particular of the scheduled castes and scheduled tribes
- Public distribution system
- Maintenance of community assets

The inherent of democratization in the decentralized federal system is the proper empowerment of people at the grassroots level. The 73rd amendment is a legal recognition to the three-tier system of governance with panchayat Raj Institutions at the district, intermediary and village levels and a three tier structure of the panchayats except in those states whose population is

less than 20 lakhs. For them a two-tier system is prescribed. Most of the states modified their acts and went for panchayat elections following the seventy third amendment.

5. Public library system in Karnataka

An Act to provide for the establishment and maintenance of public libraries and the organisation of a comprehensive rural and urban library service in the State of Karnataka Whereas it is expedient to provide for the establishment and maintenance of public libraries and the organization of a comprehensive rural and urban library service in the State of Karnataka and for matters connected therewith; be it enacted by the Karnataka State Legislature 'public library' means,-

- a library established or maintained by a Local Library Authority, including the branches and delivery stations of such library;
- a library established or maintained by the State Government and declared open to the public;
- a library established or maintained by any local authority and declared open to the public;
- a library declared to be eligible for aid and receiving aid from the State Government; and includes, any other library notified by the State Government as a public library for the purposes of this Act;

UNESCO Manifesto defines a public library as:

- Which is established under mandate of law
- Which maintained wholly from public fund
- Which has no direct charge from its service
- Which has open access system for free and equal use by all members of the community regardless of race, color, caste creed, religion, age, nationality, language, status or level of education attainments
- Which houses learning materials giving reliable information freely and without partially or prejudice on as wide a variety of subject as will satisfy the interest of reader.

6. Rural level public library system

The rural library is major source of information for the local level administration. The government of Karnataka established rural libraries in all villages of the state under the public library system to provide necessary, required, informative and recreational information to the people of the village. But most of the rural/village library systems are badly shaped. They are suffering from the infrastructure facility, lack of financial assistance, maintenance, trained staff, sources, media facilities. So the rural libraries have to provided by all facilities like sufficient sources of information, human resource, technically trained staff, application of information and communication system, media and internet facilities.

Establishment of community learning center which provides information support to the rural people is another solution for this problem because most of the women leaders in local government are illiterate so they need different type of sources of information. Providing information literacy programmes to women leaders in local governments is another possibility which can be taken by the public library system to educate the rural women.

7. Information Needs of Women in local politics (Grama panchayat)

Women's participation in the political process is necessary for strengthening the democratic fabric of any country as women are reshaping in the public agenda and changing the way how politics is conducted and the way government works. Women's development should be made an integral part of a government's policies of national development as well as a party's ideology. The process can be made easier if political parties encourage women at all levels of decision making. Women are today no longer to remain peripheral actors and want to play their rightful role in all spheres of life. In this context political emancipation and social and economic empowerment are very important from the perspective of equity democracy and development this denotes political participation and development of women. Their educational, social and political status. Needs of information for their development may be broadly categorized as below:

- Know the recent developments in political process
- Study government policies
- Know democratic aspects of the state
- Study the conditions/ needs of the public of their area
- Study the necessity of strengthening the democracy in grass-root level.

8. Role of Grama panchayat libraries in support of civic body members

- **Promoting Literacy:** Grama Panchayat Libraries primary role will be to work over direct educational resources, human and material, in the libraries of the country toward helping every resident, women, and child to learn to speak, read, write and compute—in brief, to learn how to learn... to develop a community-wide literacy system. To achieve this legacy of literacy training, libraries have had several tasks:

- to provide services, materials, and opportunities for those who need them to develop literacy skills;
- to become part of the educational system;
- to extend traditional library functions (support and resources) to patrons with developing literacy skills;
- to try non-traditional ways of serving newly literate populations;
- to interpret resources;
- to be proactive in education, dissemination of information, and promotion of resource use; and
- To collaborate with other agencies in literacy programming.
- Provide resources for entertainment of people
- Self-learning skills
- Life-long learning
- Promoting literacy through providing information support
    - It facilitates informal self-education of all member in the community;

- Enriches and further develops the subject on which members are undertaking formal education;
- Meets the informational needs of all members;
- Creates and further develops civic sense and habits of the members;
- Supports educational, civic, and cultural activities of local government;
- Encourage wholesome recreation and constructive use of leisure time among members.
- Provides children, young people, men and women opportunity to:
  - educate themselves continuously,
  - keep abreast of progress in all fields of knowledge, and
  - Maintain freedom of expression and constructively provides a critical attitude to all public issues and world affairs.
  - Provide e- governance information to women members.

9. Conclusion

Women empowerment is an important tool for social development and this can be achieved when society recognizes women as one among the social partners provided them equal opportunities, rights, facilitate them with equal education, health and out of all these allow them to participate equally and effectively in the decision-making system with political participation. For this they required information support from various information sources. Rural library and community learning centers are major sources to provide informative information to women leaders in local level government. But in the rural library system suffering with many problems like: trained staff, own building, less collection, financial support, technical support, latest ICT infrastructure, and user. As the libraries are the only places where the civic body representatives particularly women members can get the required information support, the authorities as well as the public should support for the development of rural library development.

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Mobile Library Service: *Pillars of Rural Public Library Governance*

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Abstract

The major objective of a mobile library service is to promote equity of service provision by enhancing the opportunity of access to library services. To improve rural public library service we have to link with enthusiastic people, head of government for better performance and revitalising ML conditions in our society. The aim of this paper is to give an overview of Mobile library services to people who are not geographically close to a library building. It enabling library system to reach and serve isolated communities and provide library services to children and older adults who lack transportation. MLS are very versatile and flexible and adapt to the needs of the community. They are geographically isolated from libraries, and most do not have the ability to drive to a library.

Keywords : IFLA, enthusiast, chassis, molly, elephant library, NLB.

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Public Library System and ICT Environment

Mahesh D. Horakeri **Mallikarjun N. Mulimani**

Abstract

The public library has its overall objective to serve the public. Standards have been developed in order to assist people in deciding how best the public library tries to meet the ends of users by employing certain modern techniques and communication tools. The professionals, the governments, and the library's users all want to know how good the service is. The efforts to develop and implement standards for public libraries go a long way in helping determine the answer to that question.

Keywords : ICT, Public library system

1. Introduction

Public libraries have evolved to become literary 'bridge builders' in providing access to learning and skills development for hard to reach user groups. Every library provides learning and support in basic skills, family learning and education for one and all. Libraries provide training in a high trust, less formal learning environment than a college. These initial learning experiences are often informal rather than accredited which is critical in providing accessible learning for people who have a negative experience of formal education.

Public libraries also provide knowledge-based services to internal and external partners as intermediate inputs in the production of final service outputs, which are seen as 'core' services in the domains of skills and learning, enterprise and economic well-being. However, this 'intermediate' value added by libraries is hidden and underestimated. The traditional social inclusion role of libraries has always been a basic feature of the knowledge economy. Today, this role needs strengthening and up-dating as Britain 'divides' into a nation of 'knowledge haves' and 'knowledge have-nots'. The public library service reaches into just about every community and, as a result, is increasingly recognised as important for neighbourhood renewal in urban areas and as a means of overcoming the isolation of many rural ones. The role that public libraries can play in improving the quality of the daily life of citizens is now being celebrated by both practitioners and policy makers.

The physical availability of the public library building in the neighbourhood plays a vital role in its ability to promote this kind of community identity and strengthen civil society. Symbols of civic identity like public libraries provide an area with a sense of character and can inspire a mutual sense of satisfaction and common ownership. They also provide space, access to everyone, which can nurture cohesion and solidarity. Without spaces in which social interaction can take place, the links, relationships and networks which make social systems work effectively are unlikely to occur.

Public libraries also act as the 'information hubs' of the local community providing a range of information and services that promote quality of life in the area, including information on public health, environmental issues, crime and tourism.

2. The mission of public libraries

It shall be the duty of every library authority to provide a comprehensive and efficient library service for all persons desiring to make use thereof. It is generally accepted that information

in published material made accessible to the right person at the right time in the right place has beneficial effects, whether cultural, economic or social, much greater than the cost of its provision and therefore is in the interest of a democratic society. This requirement for equality of access to all is at the heart of the mission of the public library service.

3. Public libraries and Information and Communication Technology

"The use of information and communication technologies, and particularly the internet, as a tool to achieve better government." (OECD, 2003, p. 23). The rapid development of new telecommunication and computerized technologies in the last decades has an enormous impact on how we are living and working. New information and communication technologies (ICT) are changing our society completely.

In this changing world, government authorities face at the same time another challenge: they must weigh the fulfilment of the new needs and expectations of the citizens with their reduced budget. The new service delivery must give more satisfaction but must simultaneously enable more efficiency. Libraries are the ideal places to offer public access to ICT resources as they are found in nearly every community and they are equipped with professionals whose job is to help users meet and manage their information needs. The public library can be understood as the public toll free check post to the "Information highway". Any serious government it cannot ignore a sector that provides free public access to these services if it were thinking about breaking down the digital divide.

It is to be hoped that, with the help of the relevant technologies, public libraries will foster partnerships throughout the country to promote sharing of resources. People need to understand how to locate and evaluate the information sources available to them. The objective is to promote the free flow of information and ideas in the interest of all citizens, thus creating a thriving culture, economy and democracy. ICT-driven public libraries should act as an intermediary centre with suitable awareness programs for improving literacy, awareness, welfare and cultural awakening. It is the intention that public libraries could offer a single integrated environment for the dissemination of information concerned with all aspects of human life. "Public libraries can act as an offline relay by downloading and sending network available information to those out of network reach, or by attracting people to nearby libraries to access internet" (Miao, 1998).

4. Factors Affecting the Public Libraries' Growth

Access to ICT for many in India continues to be marginal due to the high cost of connectivity, which results in the exclusion of many from the emerging global information system. So despite advances in ICT, its benefits have not reached the majority of the population, particularly the economically backward classes. The main reason why the public library movement has not yet reached take-off stage is merely due to paucity of funds, lack of prioritisation for it on the part of government, and absence of an integrated approach to social welfare and community development.

5. National Policies Promoting ICT as A Tool for Development

The Government of India has started framing its IT policy but it may take time to put these policies into action. One thing is sure, early indications are that the involvement of public libraries is very small. It may be that there is concern about the inertia in the system and the huge investments which would be required to rejuvenate public libraries. But, because library IT creates a multidimensional service facility, ICT introduction here will benefit the community in the long run, unlike many other single purpose service arms of the government.

6.1. Policy matters

We are living in a highly politicized time and democracy is a "numbers game" in which all political parties try to tailor their social commitments to suit their own interest groups. In many cases, high profile decisions aim to woo a particular part of the electorate - they are taken with vested interests in mind and may not be for the benefit of the people for whom the underlying policy has been designed.

6.2. Diversity

There are many languages in India, and even in one place more than one language may be spoken. Any information required might not be available in the language in which one is proficient. We need fast and good translation mechanisms to get over this problem.

6.3. Want of resources

The need of the hour is the compulsory provision of free public library services. In the wake of the slogan Education for All" follows the complementary battle cry of "Books for All". As a consequence of making education a fundamental right, free, unhindered, easy access to books and libraries also becomes essential and should be ensured. In the case of public libraries resources should be sufficient to cover print and non-print, text and pictorial, multimedia sources, films, and so on to attract all types of persons in the vicinity.

6.4. Inadequacy and problems in accounts

The funds required for undertaking developmental projects and forming consortia of public libraries need to be pooled from government, charitable societies, public trusts, and individual donations, as well as from subscription charges from the member libraries. However, this can be problematic, as Jagdish Arora, the national coordinator of Indian National Digital Library of Engineering Science and Technology (INDEST) Consortium has noted: "administrative problems are involved in transfer of funds from various participating libraries to the consortia" (Arora, 2001).

6.5. Shared Responsibility Approach

Public library authorities must develop strong and sustainable working relationships with other information centres, special and academic libraries in the region in order to develop collaboration for promoting and modernizing public library services in the country.

7. Possible Solutions

There are many challenges facing those committed to the implementation of ICT in public libraries in India, a country of one billion people where millions of Indians are connected to the internet but millions more are not yet even connected to electricity. Despite all of these daunting contrasts, the Government of India is convinced that ICT applications can help revolutionize life in rural regions for a minimum cost.

7.1. Growing Public Libraries Network

It is acknowledged that government should take steps to provide public access to the internet, but it also should encourage the development, specifically in public libraries, of communication access centers that will play an important role in bridging the digital divide. There are proposals from the telecommunications ministry to open cyber-cafes - it would be a good idea to put them in public libraries wherever there is one in the vicinity. Public library authorities have a

responsibility to ensure that library and information networks are as comprehensively available as other public utilities and provided at reasonable cost. The hope should be that the number of networked public libraries in our country will cross the one lakh mark within a couple of years and then reach the level as specified in the IFLA recommendations by the year 2020. Both existing and new libraries should have infrastructure that is at least capable of access to electronic information over national and international networks and to access local information in multiple formats. The social entrepreneurs who are actively working on ICT may, with the appropriate incentives, undertake pilot projects to connect rural villages to the internet and to the established rural public libraries network.

7.2. User Friendly Specialized Services

The public library has to serve as a cultural and educational centre for the community in which it is located. In a developing country like India, public libraries should have a vigorous extension programme in order to make information more usable to their clientele. Public libraries have to play a direct role in local development – it cannot stop at just the mere technical processing of literature, some further manipulation may be needed. Specific information required by the public is beyond the reach of ordinary reference services. Public libraries also have to play a crucial role in both controlling and facilitating access to a growing number of local and remote electronic information resources and . . . "in guiding users to find the most reliable and relevant information for their needs, what has been called as the librarian as knowledge navigator" (Shourie, 2003).

Librarians working in public libraries can help people "navigate" through information. For example, by creating pathfinders and/or offer training sessions on how to use e-mail, search engines, or do word processing. They can also help people to develop and use new resources and forums: for example, if individuals wish to be more actively involved in an electronic medium, such as creating a public forum on local issues, librarians can help to get access to both local and remote resources. Second generation software allows portal building within a web site budget, opening up the possibility for librarians of their developing e-groups for inter-communication at different levels, and a variety of community portals.

7.3. E-learning for public awareness

In a country like India e-learning now has great relevance, especially for extending higher education into new, previously neglected areas of its people. A large percentage of the target population is beyond the reach of formal education channels due to a variety of inherent weaknesses in the teaching system, including the lack of traditional educational infrastructure in many areas. E-learning initiatives may benefit rural folk who leave formal education channels either due to lack of locally available facilities or due to other economic commitments.

8. Public library as multi-purpose community centre

As mentioned earlier public libraries are considered as "the local gateways to knowledge". The Indian federal government has recently granted permission to educational institutions to set up and run community radio stations. This low cost technology can really reach out to the laymen who are still battling poverty and illiteracy. The federal government has decided to give community broadcasting licenses to "Well established educational institutions or organizations recognized by central government or the state government" (Noronha, 2003). It is essential that government should allow public libraries across the country to set up similar facilities. Similarly, a number of knowledge centers (KC) have been established in our country. KnowNet [4] is a virtual network for recognizing, evaluating and sharing local knowledge. It has created some simple and easy to use

online resources to enable communities and individuals to take full advantage of the ICT revolution. The KnowNet initiative is a virtual help point that acts as a two-way communication system for extracting and hosting information on the net with its entire range of activities being carried out through the help of remote volunteers. These centers differ from ordinary libraries not just by name but also by function. KCs are making full use of computing and communication technology and repositioning themselves as learning centers. Public libraries in India should assume a similar function, emulating their role as knowledge servers by interfacing the users and knowledge, consolidating information and networking global knowledge. So far, public libraries have not yet involved themselves fully in the knowledge revolution in this way.

Libraries also have an important role to play in enhancing users' knowledge and making sure the new knowledge-intensive their economy is accessible to those who can not afford to purchase books or other materials regularly.

9. Conclusion

"Public libraries as leaders in the building of community-driven knowledge economies, in every locality of the country".

Public libraries in India do have the potential to use new information and communication technologies to create online facilities and services which will further transform our lives. Although information and communication technologies in India were first made a part of rural development in the 1980s, rural public libraries remained largely forgotten in the dissemination of information to rural populations. Moreover, IT policy formulated since the year 2000 has shown little interest in the development of rural libraries. This scenario needs to change: we the information professionals need to come forward and study the present system of operation and find a better solution to transform straightforward reading rooms into an information/knowledge centre where people, weighed down by illiteracy or limited education.

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Role of Public Libraries in cultural Diversity: *A Study with special reference to City Central Library Hubli-Dharwad*

Anil B. Talawar **Kumbar, B D** **Gururaj S. Hadagali**

Abstract

This paper explains the role of public libraries in the society, especially in India which has a tremendous cultural diversity. An attempt is also made to expose the services provided by the City Central Library Hubli-Dharwad to the citizen's category to the various information needs of the users belonging to the different categories of the society.

Keywords : Public Library, Public Library Services, Cultural Diversity, Indian Culture.

1. Introduction

The early notion of a public library was 'museum of the books'. Today the public library is regarded as the "people's university". It is the product of modern society and it maintains that knowledge should be free of any subscription and other charges to every person irrespective of caste, creed, colour, age and sex. A library is now therefore freely open to all and free access to information as well.

The public library is established to provide reading materials, which communicate experience and ideas from one person to another and make them easily and freely available to all people. The public library is a local centre of information that makes all kinds of knowledge and information readily available to its users. It is established, supported and funded by the community, either through local, regional or national government or through some other form of community organizations. It provides access to knowledge, information and works of imagination through a range of resources and services. It is equally available to all members of the community regardless of race, nationality, age, gender, religion, language, disability, employment status and educational attainment (Aboyade, 1984).

The basic feature which distinguishes a public library from other libraries is that it is open to all and is stacked with diverse materials representing all shades of recorded views. UNESCO Public Library Manifesto (1949 revised in 1972 and 1994) gave a new image and wider scope to this type of libraries service. A public library can rightly be called index to the human development in the field of humanities and social, physical and biological sciences. Education and library services are the two faces of the same coin which one cannot separate them. It means library is the chief instrument so far perfected accumulating and using man's intellectual heritage. Francis Bacon has said that "reading make a full man, conference a ready man and writing a perfect man" (Bacon, 2008)

2. Diversity in Public Libraries

Public libraries can offer more than just a place to read or borrow books. They can play an important role in raising awareness of different cultures and promoting the integration between different category/groups. Libraries have obvious role in offering free information about other culture and ethnic groups. As they are used by many sections of society, they also have the potential to provide a natural meeting place for people of different cultures. The success of libraries in promoting intercultural understanding depends on the books and information available and the resources to fund activities.

Public libraries have a social obligation to all the citizens of our country, irrespective of Cast, Creed, Sex ethnicity, background, or economic status. Public libraries need to serve a wide range of population of different categories. A certain cultural awareness and understanding to diversity is necessary to best meet the needs of this diverse population. It is essential that libraries incorporate multi-cultural materials into their collections such as books, films, and other library materials.

3. Cultural Diversity in India

The Indian culture is one of the oldest culture in the world (Indian Culture Facts, 2011). In India, there are amazing diverse cultures throughout the country. The North, South, East and West are having their own distinctive tradition and cultures and almost every state has its own cultural identification. Hardly any culture in the world that is as unique as India. It is having variety of climatic conditions and geographical features. India is native place to some of the most ancient civilizations (Indian Culture Facts: 2011). India's diverse cultural reality is very much in evidence, with 17 regional languages and 1,652 mother tongues (Khullar, 2005). India is a host to most world religions: Hinduism, Buddhism, Jainism, Sikhism, Christianity and Islam, etc.

Indian culture can be traced back to the Indus Valley (3250 BC to 2000 BC) with subsequent influences of the Vedic culture (1500 BC), Buddhism and Jainism (600 BC to 200 BC), Islam, Advaita, Bhakti and Rajput cultures. Recent major influences include colonization, post-colonial government building, industrialization and globalization (Hussain, 1993). All these forces have created an extremely complex entity called India.

Cultural identity is the sense of belonging and attachment to a particular way of living associated with the historical experience of people. Multiculturalism exists where one society embraces group of people with different cultural identities.

Today's globalised society is characterized by two profound developments. One is the cultural and social changes caused by migration and the growth of the multicultural society; the other is related to digitization and the growth of the so-called information or knowledge society. Both developments have fundamental effects on librarianship in general and public librarianship in particular (Audunson, 2005). Public libraries are popular community arenas that function as centers for culture, lifelong learning, information, and, not least, as social centers. Public libraries are to meet the needs of the local population and play an important role in terms of access to educational opportunities and social inclusion.

4. Public Library as a Cultural and Social agency

Public libraries were clearly intended to have a social impact on the citizens they served. (Kerslake & Kinnelle, 1998) defined social impact as "the meaning of the public library to the communities in which they work" and outlined two levels of impact. The immediate level as it refers to community development and skills in the labour market and the cumulative level as it refers to citizenship and social inclusiveness and their effects (Debono, 2002); (Kerslake & Kinnelle, 1998); (Matthews, 2007) Debono examined the social impact of public libraries by completing a review of the pertinent literature and studies available; and identified 15 areas of social impact: information literacy, local history and genealogy, develop IT skills, support democracy, culture and arts, increased quality of life, equity and free access, personal development, vocational and/or economic, recreation, community building, decreasing social isolation or creating social inclusion, education, health and general information, and public space Generally, researchers have found that the public libraries studied did demonstrate positive social impacts in a least some of the identified areas (Debono, 2002; Matthews, 2007).

5. Public Library as a Community Information Centre

In an information age, the key function of the public library is to provide up-to-date facts and information to all the sections of the community. The Public Library Manifesto mission stated that, "ensuring access for citizens to all sorts of community information". (IFLA/UNESCO, 1994)Information needs of various citizens may vary from person to person, but public library major role of should serve its best to satisfy the information needs of the users. Major role of public library includes:

- Providing access to information at all levels;
- Collecting information about the local community and making it readily accessible, often in co-operation with other organizations;
- Training people of all ages in the use of information and the associated technology;
- Guiding users to the appropriate information sources;
- Providing opportunities for disabled people to have independent access to information; and
- Acting as a gateway to the information world by making it accessible to all, thus helping to bridge the gap between 'the information rich' and 'the information poor. (Saur, 2001)

The awareness that public libraries can serve as community information centres has existed for the last several years. The National Policy on Library and Information System (NAPLIS) report of 1986 specifically recommended that village libraries should serve as local information centres, bringing areas such as public health, adult education, and local self-government under the same umbrella (India Department of Culture, 1986). Despite the prescience and sound pronouncements of NAPLIS, these recommendations were not implemented at the national level, due to a host of political and bureaucratic reasons.

The topic of community information services has been gaining in importance within the field of library and information studies (LIS) and has been suggested as an important area for library service models in developing countries (Kempson, 1986). Community information has been defined as survival information, a type of information necessary for participation as a full and equal member of society (Martine, 1984). Additionally, community information services aim to assist individuals and groups with participation in the democratic process and daily problem solving with issues such as housing, employment, education, welfare rights and civil rights (Library Association, 1980). Community information services have been linked with information and referral services for marginalized populations (Metoyer-Duran, 1993). Community information services involve simply providing relevant information for communities (Alemna, 1995).

Beyond the provision of community information, however, the public library can position the library as an important cultural and community centre. Part of this cultural centre can include providing space for local artisans to display their works, hosting traveling storytellers, and the general promotion of local folk traditions. Thus, by being sensitive to community needs and values (Alemna, 1995). Public libraries can be spaces for cultural promotion and preservation. India, a country with a rich and diverse cultural heritage, has a huge untapped resource in the public library system to reinvigorate local cultural practices. Enhanced cultural roles that public libraries may take will inevitably need to be in sync with indigenous norms and practices.

6. Role of Public Library in Cultural Diversity

The purpose of a library in modern society is to educate the community in the widest sense. Society consists of various groups of community belonging to one or other social group, such as

shopkeepers, businessmen, technicians, bureaucrats, clerks, students, educationists, teachers, engineers, doctor, intellectuals, mechanics, agriculturists, farmers, labours, etc. The interest of knowledge of these different groups of people within the society is very much varied according to their human needs. The primary role of public library, such as State Library, District Library, City Central Library, and others is to provide the best information facilities to all those library users in the community. Library and society are interlinked and interdependent. Society without libraries has no significance, and a library without society has no origin.... it is regarded as 'social institution', a product of society for its cultural advancement.

A nation's prime role is cordial relationship among the citizens of different cultures within the society. No country can stand with single community, race, religion, caste, rituals, etc. it is generally said, 'United we stand, divided we fall', every nation want to have united citizen in every respect. At the same time, every country has its own diplomacy to the other to construct cordial relationship in one way or the other.

As communal harmony and national integration are most important issues, meeting between the social leaders and local community in order to build up confidence and remove misunderstandings and prejudices would be advisable. Public library can arrange such meetings by its own or in collaboration with other organizations providing wholesome recreation to all. Public libraries having served the nation with equal treatment play an important role for the unity, co-operation and national integration of a country. Through its services it can lead the people to the common front. There may be different castes/tribes within in a society having their own culture, but library services may bring together and integrated all the people of the society. This is very clear in the context of India which is a vast country, comprising different culture, religion, castes/tribes, etc.

7. City Central Library Hubli - Dharwad: A profile

7.1. Origin

With the enforcement of the Karnataka Public Libraries Act on 22nd April 1965 and as per the notification issued by the Government of Karnataka, the City Library Authority for the twin cities of Hubli-Dharwad came into being on 5-11-1966. According to the provision made in the Karnataka Public Libraries Act, 1965 the City Library Authority established the City Central Library, Hubli - Dharwad in the city of Dharwad on 1-1-1967.

The City Central Library, Hubli - Dharwad is located more approximately to the widely accepted belief i.e. in the heart of the city. Since its inception, the City Central Library has made a commendable progress in spreading the cause of the library by opening good number of branch libraries, service stations, mobile library service and service centers in several parts of Hubli - Dharwad city.

7.2. Location

The City Central Library, Hubli - Dharwad is located in the Center place Dharwad city, in its own building situated behind the D.C. Compound. The plan as estimated was prepared in 1971 and the foundation was laid in the same year. After 20 years, the then Chief Minister of Karnataka Shri. S.Bangarappa inaugurated the new building in 1991. Before the construction of the new building it was earlier situated in Karnataka Vidyavardhak Sangh Building.

There are 22 branches and 17 service stations under jurisdiction of City Central Library, Hubli - Dharwad, it is also providing mobile Library services in 48 points of Hubli - Dharwad city.

7.3. Library working hours

The City Central Library, Hubli - Dharwad is kept open from 8.30 am to 8.p.m. On all weekly holidays and second Saturday including gazetted holidays, the branches are kept closed.

7.4. Membership

The membership to this library is made against a deposit of Rs. 25.00 which entitles member to borrow one book, for two books the deposit is Rs. 30.00 and Rs. 40.00 for 3 books. There is a provision of issuing reference books, text books and costly books on different subjects against a special deposit apart from membership fees. The maximum loan period is for a period of 15 days. There is no fee charged for using reference books and other newspapers and magazines within the premises of the library.

7.5. Books and Periodical Collection of the Library

The value of library and its service solely depends upon a comprehensive and useful collection. The City Central Library to purchase the books in different languages, the majority of the books are in local language. To keep abreast with the current affairs, scientific, technological and economic development, the City Central Library and its branches provide access to a number of periodicals, magazines of popular interest. The periodicals subscribed are in Kannada, English, Hindi, Urdu, Marathi, Telagu and Tamil languages. The total number of periodicals subscribed every year by the city Central Library, Hubli - Dharwad is nearly 100.

7.6. Computerization

City Central library has started automation of library activities in the year 2003 by installing computers. From the year March 2003 onwards computer division has started making entry of books in software called E-Granthalaya which is developed by National Informatics Centre. As on December 2012 58,049 books are entered. Computers are supplied by RRRLF and E-Granthalaya provides all housekeeping activities of library.

8. Services Rendered by the City Central Library Hubli-Dharwad

There was a time when a library was designed to serve the private interest of small group. Today library service is must, in fairness, serve to general public, academicians, students, research scholars, businessman and others. The library be planned in such a way so as to serve the greatest good of greatest number of minimum cost. The public library has to perform multifarious functions to achieve these ideals and principles.

8.1. Lending Services

City Central Libraries Hubli-Dharwad provides book borrowing service to its members. Any kind of documents can be borrowed by the members and the loan period will be for 15 days. Overdue charges are levied at the rate of 25 paisa per book per day. Only fictions and general books are issued for home reading. Reference books, periodicals and audio-visual materials are not issued for the general users.

8.2. Inter-Library Loan and Photocopy service

The library is providing inter library loan facility to its members. Whenever the need arises, including photocopying services. In case of book or periodical or some other documents required for study and reference is not in the library then the interlibrary loan facility is not available here.

8.3. Reference and General Information Services

City Central Library has a reference section, containing reference books and other reference materials which can be consulted only in the library. Reference sections typically include reference materials such as encyclopedias, dictionaries, yearbooks, directories, government publications and atlases. Some reference materials are also available on CD-ROM. Maximum utilization of this service is by the general public, high school students, under and post - graduate students.

8.4. Magazines and Newspapers

City Central Library carry a range of periodicals and magazines including national and local newspapers in different languages like English, Hindi and regional languages. Magazines are on different topics (E.g. History, Health and Lifestyle Business, Education, Science & Technology, Nature, etc.)

8.5. Children Section

Childhood is early life that a taste for books and the habit of using libraries and their resources are most easily acquired. City Central Library has Special collection and separate area is maintained for the children who is below 14 years of age. The children section is lively, stimulating place in which activities of various kinds will be a source of cultural inspiration.

8.6. Mobile Library Service

Public library have been introduced mobile library service in urban as well as some rural areas. Mobile library also known as the "Book mobile" "Library on wheels" (Public Library Services, 2008). Retired community and housewife's are the major users of the mobile library. Mobile library stops at each of the scheduled locations for 2-3 hours duration. Books may be borrowed and returned at the place by using membership cards, and users can read the books in the mobile library van.

9. Extension Activities of the Library

The City Central Library is well equipped with all infrastructures and it undertakes the extension activities like storytelling, debate and quiz competitions, organizing lectures to the people of Hubli - Dharwad. It also takes up the following extension activities on different occations.

9.1. Book Exhibition

Normally book exhibitions are organized two or three times in a year on the occasions of Gandhi Jayanthi, Republic Day and during the National Library week celebrations.

9.2. Film shows

Since 1981 the library is making all possible efforts to organize the documentary film shows at different parts of the city. It is rather a regular activity carried out to increase the popularity and importance of the public library among the general public. In addition to these extension activities, City Central Library Hubli - Dharwad also conducts seminars and symposia on various aspects. It is thus emerging as a powerful communication media in the society.

10. Conclusion

The public library today is regarded as multi-purpose, informative, educative and cultural agency. It exists to facilitate the flow of information and ideas. The need for City Central Library for

capacity building should be seriously planned and streamlined for lifelong learning. In order to spread retain and introduce young minds about the Indian culture, City Central Library must be equipped with state-of-the-art technologies to ensure perpetual and free flow of information well-organized, preserved for the prosperity to bring the people of different culture to closer. In spite of some barriers City Central Library Hubli-Dharwad are providing services to people of Hubli-Dharwad city.

There are no well trained personnel to know and understand the psychology of children and encourage them to make use of the library. There should be trained personnel to understand the psychology of the children. The City Central Library should link in itself with other educational, social and cultural institutions, including schools and adult education programmes. Mobile librarian has to obtain maximum knowledge about the users.

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Role of Public Library in implementing E-governance in Karnataka: *Issues and Problems*

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Abstract

E-governance is new song sung by most of administration because of benefits it brings in mass service, management and administration etc. Paper firstly explains concept of "e-governance" and brings fourth e-governance initiative by Karnataka State Government along with their features and purpose. Secondly, analysis the role played by Public libraries in bringing together both e-governance and citizens of Karnataka. Finally, discusses the issue and problems in public libraries becoming successful as access point of e-governance.

Keywords : E-Resources, E-Services, OPAC, SDI, CAS, Bulletin Board Services

1. Introduction

The interface of computer technology with the communication technology means Information Communication Technology (ICT) made the flow of information easier and faster. The networking of public libraries has become essential. The RRRLF realized the lack of automation in public libraries. In order to fill in the gap, the RRRLF came forward to provide computers to all state central libraries (SCLs) and district central libraries (DCLs). It also proposes ultimately to cover and link up all the public libraries, mandal libraries, village libraries and book deposit centres with the DCLs, SCLs and desire to establish the network of Indian public libraries.[1] The modernization of the public libraries in the villages will enable rural communities in having access to needy information. It is desirable to establish a photo digital library to help the public libraries.[2] There are lot of factors that inhibiting the development of public libraries as lack of national policies promoting ICT as a tool for development, political aspects, linguistic and cultural diversity, and lack of resources constrain developing library services, inadequacy and problems in transfer of funds. Usually neither the library nor the computer centre has the budget to manage those costs, so they keep backing away from the responsibility issue.[3]

It will be better and cost saving if public libraries can be developed into centres for e-governance. Existence of public libraries even in remote area of country offer great opportunity for government service to reach common and remote citizens. With all financial; technical; Infrastructural support and well qualified/trained staff public libraries can play a major role in efficient e-governance. Article tries to explain meaning and initiative of e-governance by Karnataka government. Also highlights problems of rural people in accessing e-governance service, role of Public libraries in making the efficient and constraints in doing so.

2. Meaning/ Definition and Objectives of E-governance

"E-Governance is the application of Information and Communication Technology (ICT) for delivering government services, exchange of information communication transactions, integration of various stand-alone systems and services between Government-to-Citizens (G2C), Government-to-Business(G2B),Government-to-Government(G2G) as well as back office processes and interactions within the entire government frame workThrough the e-Governance, the government services will be made available to the citizens in a convenient, efficient and transparent manner".[4] E-governance is simply the use of information and communications technology, such as the

Internet, to improve the processes of government. E-governance promises to make government more efficient, responsive, transparent and legitimate and is also creating a rapidly growing market of goods and services, with a variety of new business opportunities.

3. Objectives of e-governance:

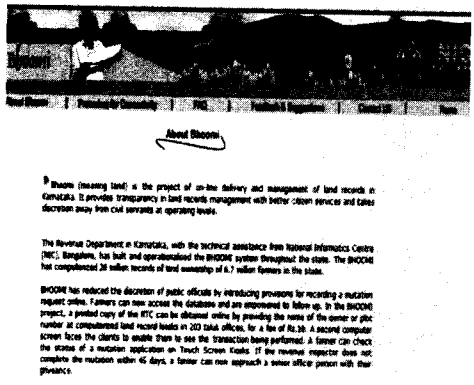
- Efficiency
- Transparency
- Citizens' participationcontributes to
    - Good governance
    - Trust and Accountability
    - Citizen's awareness and empowerment
    - Citizen's welfare
    - Democracy
    - Nation's economic growth

4. E-Governance Initiative in Karnataka:

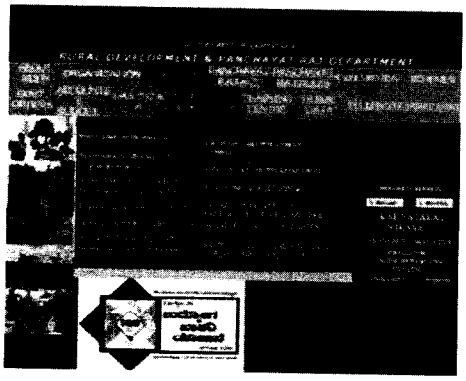
4.1. Bhoomi

'BHOOMI' the land records management systems is the first e-Governance project that has been successfully implemented for the benefit of the common man. It is providing service to more than 70 lakh farmers of Karnataka since last 4 years.[16]

Under this project, Land Records Kiosk has been setup in each taluk of the state to issue:



- Land records documents to public on demand.
- Finger print (Bio-metric) authentication to ensure fool proof system
- Easy & quick access to land records documents & status of mutation, using Touch Screen Kiosk.
- Mutation requests processed on First-in-First-out Basis
- Workflow based online system to carry out mutations on land records data.
- PKI enabled BHOOMI and integration with Sub-registrar data are on pilot run.



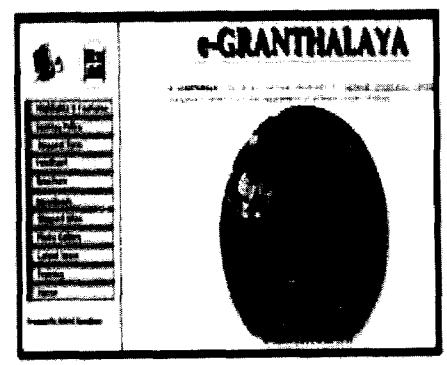
4.2. SamanyaMahiti

'SamanyaMahiti' is the web based initiative of Rural Development &Panchayati Raj Department to provide information about basic amenities available in all Hamlets of Karnataka State. It covers 387 parameters of all 21 sectors.

Here information can be viewed Hamlet wise, Village wise, Hobli wise, Gram Panchayat wise, Taluka Panchayat Constituency wise, Zilla Panchayat Constituency wise, Assembly Constituency wise, Parliamentary Constituency wise, Taluka wise, District wise and for entire State pertaining to any of the 21 sectors. This Data is collected by Zilla Panchayat of the respective districts and overall activity is monitored by PME wing of RDPR.[18]

4.3. E-Granthalaya

E-Granthalaya is library automation software from National Informatics Centre, Department of Electronics & Information Technology, Ministry of Communications and Information Technology, Government of India. The software has been designed by a team of experts from software as well as Library and Information Science discipline. Using this software the libraries can automate in-house activities as well as user services. The software can be implemented either in stand-alone or in client-server mode where database and WebOPAC are installed on the server PC while the data entry program is installed on client PCs. The software provides LAN/Web based data entry solutions for a cluster of libraries where a centralized/Common database can be created with Union Catalog output. The software provides Web OPAC interface to publish the library catalog over Internet/Intranet. The software runs on Windows platform Only, UNICODE compliant, thus, supports data entry in local language.[17]



Features incorporated are:

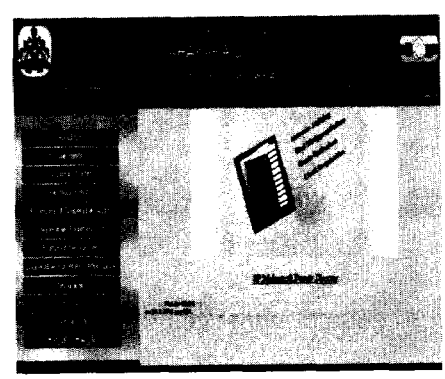
- Acquisition, serials, OPAC, circulation and administration, with barcode interface
- Exhaustive help and search
- Guest account for non-members and web utilities are also available

4.4. Sahakara Darpana:

Directorate of Co-operative Audit'Shakara Darpana' is a dual language portal, developed with an objective of bringing transparency in administration. It is an initiative of NIC Karnataka and Directorate of Co-operative Audit.The portal displays the financial position of more than 30,000 Co-operative Institutions, depicting their strengths and weaknesses.[14]

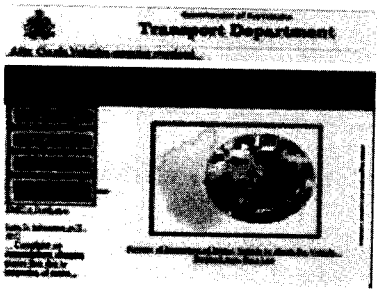
Key features:

- Abridgement of Balance Sheet
- Accounting of Profit & Loss
- Account Manufacturing
- Account Trading
- Ratio Analysis
- Checking the irregularities (Administrative, Financial and Maintenance of records)



4.5. Sarathi & Vahan:

Transport Department 'Sarathi & Vahan' provides total automation of Regional Transport Office (RTO), transactions - comprising of Fee and Tax, all stages of Registration, License, Permit and Enforcement, Fitness, Fee and Tax sections through workflow based system.[13]



It also provides following services:

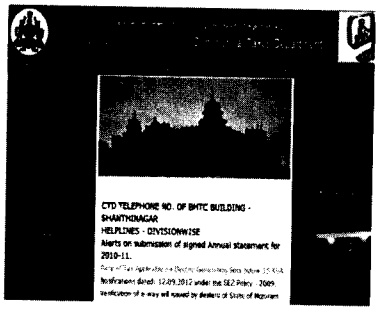
- On-line system with no manual intervention
- On-line issue of various documents through workflow
- Integration with Traffic wing on Police Department
- Capturing image and applicant details at the driving track for Driving License

4.6. Returns Filing System (RFS):

'Return Filing System' has been implemented in 130+ circle offices of Bangalore to disseminate information about tax rates etc. It will bring in transparency in tax administration.

This website has details of the tax schedules with rates of tax and related notifications in force.[8]

Key features:

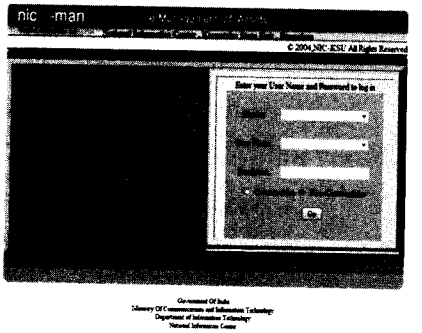


- Standardization at all field level offices throughout the state
- Improvement in service to dealers
- Accuracy at all times
- Data security at all levels
- Dealer details available at all times

4.7. E-MAN:

'E-MAN' is generic web based software for integrated maintenance of consumable and non-consumable items of technical stores. The web based software has been installed and implemented by many State Units of NIC.

The software provides facility for issuing items, indenting and approval, returning and receiving fresh items into the stock. [10]



Key features:

- Maintenance of Stores
- Receipts / Issues / Returns - to and from stores
- Auto e-mail for each transaction to the respective recipient
- Stock report generation on different parameters
- Call reporting for the hardware failure under AMC
- View facility for AMC vendors to monitor hardware failures

4.8. AasthiTerige (Property Tax):

'AasthiTerige' is software developed for calculation and collection of property tax. Once an authorized government official fixes the Annual Rental Value and Property Tax, the software automatically calculates the amounts. This computerized mechanism has been implemented by the Government of Karnataka in the Gram Panchayats.[5]

Key features:

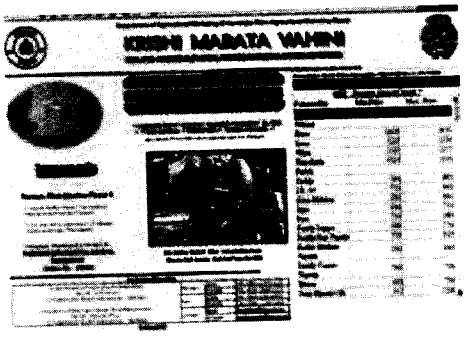
- Computerized printing of Demand Notes and Notices
- Tax collections done through computerized cash counters
- Local language support
- Transparent System

4.9. Child Labour Eradication Activities Information System (CLEAIS):

Karnataka State Child Labour Eradication Project Society has implemented the 'Child Labour Eradication Activities Information System (CLEAIS') to facilitate- Data Entry, Query and Graph related information on:

- Enforcement Activities
- Prosecution Cases
- Minimum Wages Cases
- Recovery Cases
- Recovery of Dues by DC
- Child Labour Identification
- Bridge Schools
- Category wise Bifurcation of Children
- Bonded Child Labour
- Child Labour Eradication Activities in Rural Development & Public Relations Department.
- Child Labour Eradication Activities: Department of Urban Development
- Child Labour Eradication Efforts Department of Social Welfare
- Capacity Building & Training Activities
- Environment Building Activities
- Details of Society Fund

4.10. Krishi Marata Vahini :

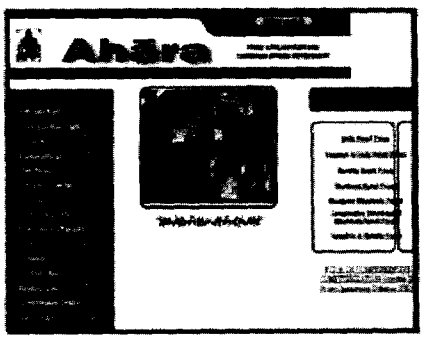


'Krishi Marata Vahini' is a web based online Agricultural Commodities Price Information System. It provides the market wise price information daily by 4 PM, in English and Kannada Languages.[11]

The information obtained through the portal is being used by traders and farmers to get and fix competitive prices for their agricultural products.

4.11. Ahara:

Food, Civil Supplies and Consumer Affairs Department has started the 'Ahara' project. The web based initiative has been taken up to popularize the Governments Food Policy towards Below Poverty Line (BPL) beneficiaries.[7]The department provides online information to 50 lakhs BPL family on the following topics:



- Details of 20,000 Fair Price Shops
- Daily Retail prices of essential commodities of all the districts
- Variation in Daily Retail Prices
- Variation in Weekly Prices
- Monthly Retail Prices & Month end Retail Prices
- Month end Wholesale Prices
- Comparative Statement Of Wholesale/Retail Prices
- Citizens Charter and Scheme details TPDS and other particulars
- District wise allotment of food grains

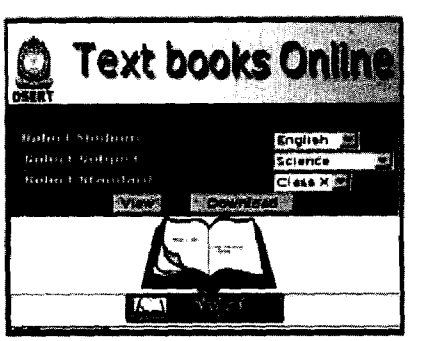
4.12. Audit Monitoring System (AMS) :

The Office of the Controller (Accounts Management) & Ex-Officio Secretary to Government, in the Finance Department has initiated the 'Audit Monitoring System' (AMS) to lead and integrate the States work on public financial management and accountability.[15]

They have developed a website to monitor the response of the departments in the Government to:

- Audit Objections/Observations in Inspection Reports
- Draft Audit Paragraphs/Reviews Proposed for inclusion in the CAGs Audit Report (Civil, Commercial, Revenue Receipts, ZP),
- Departmental Notes to Paragraphs/ Reviews included in the CAGs Audit Report (Civil, Commercial, Revenue Receipts, Zilla Panchayats),
- Departmental Notes to Excess over voted grants/charged appropriations requiring regularization, and
- Action Taken Notes to PAC/COPU Reports

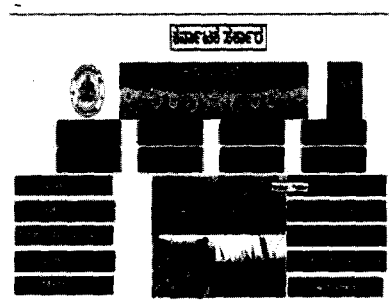
4.13. Online Text Books for Class X:



The Department of State Educational Research & Training (DSERT), of Karnataka Government, has taken up the initiative of providing the class X text books online.

The department has made available the text books for the subjects - Science, Hindi, English, Kannada, Mathematics, Biology, Social Science, Sanskrit, Marathi, Tamil, Telugu & Urdu of class X in all languages i.e Kannada, English, Hindi, Marathi, Telugu, Urdu and Tamil for common good. All these books are provided in PDF format.[9]

4.14. RaitaMitra:



Agriculture Department

The 'RAITA MITRA' portal of Karnataka government provides tips, information and bulletins on a daily basis to farmers for better cultivation.

Access to information is provided free of cost through the 745 RAITA MITRA centres across the State.[12]

4.15. CASCET - 2003:

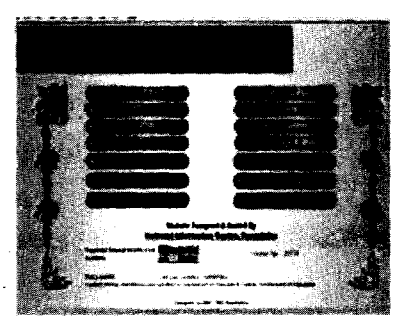
For Education Department 'CASCET-2003', is software which facilitates the admission process of Professional Colleges for Medical and Engineering disciplines. The project is successfully running for the tenth consecutive year. The success of CET has also led to counselling and admission for other degree courses like Diploma Engineering, Nursing, Ayurvedic, Unani and Homeopathic. The automation has enabled transparency in rank generation and seat allocation.

Features:

- Computerized evaluation of answer sheets
- Announcement of merit list and allotment of seats on Matrix Display boards.
- Automated audit trail for back-end transaction
- Bio-Metrics (FIT) authentication for access
- Web enabled registration for entrance examination
- Comparison statement as per key values and real answers
- Performance comparison between the qualifying exam and CASCET

4.16. E-archive:

For Department of Archives



'e-archive' is a web enabled catalogue software, it features powerful search engine inclusive of PHONETIC search for over 5 lakh documents. The software has been implemented by the department of Archives, to provide an access to its veritable storehouse of valuable documents dating back to 17th century.

This website provides full information on Kannada & Culture, State Archive, Karnataka Gazetteer, Archaeology & Museums, Heritage, Right to Information Act etc in both English and Kannada language.

4.17. E-Panchayat:

The Panchayats Raj Institutions (PRIs) are saddled with the problems of inadequate physical and financial resources, technical capabilities and extremely limited computerization. As a result, the potential of PRIs as the preferred delivery channel for the schemes of State and Centre as well as for citizen services has not been fully realised. While some computerization efforts for PRIs

have been made by NIC over the years, the e-Governance revolution sweeping the country has not touched the PRIs yet in significant measure. The Ministry of Panchayati Raj, Government of India has therefore decided to take up the computerization of PRIs on a mission mode basis.[6]

Objective of e-PRI MMP are:

- Enabling Panchayats to better deliver its mandated services to the Citizens through IT
- Enabling PRIs to use IT as a tool for transparency, disclosure of services to Citizens and social audit
- Improving internal management processes and decision making in Panchayats
- Enabling PRIs to use IT for electronic tagging and tracking of funds transferred to Panchayats, including rapid bank transfer of funds, tracking the expenditure of the Panchayats

5. Governance

The project will be led by the centre and implemented by states. Hence a three-tier structure is proposed for program governance of e-Panchayat MMP implementation:

- **Central Level Bodies** - Headed by Program Review Board (PRB). The second layer would consist of key committees to act as advisory committees to the PRB on various aspects such as Technical, Functional, e-Governance Standards and Change management and the third one will be the Central Programme Management Unit (CPMU).
- **State Level Bodies** - Headed by State Apex Programme Management Committee. The second layer will be the State Programme Management Unit (SPMU)
- **District Level Bodies** - District Programme Management Committee and will be headed by CEO ZP of the District.

6. Constraints of Rural People

- The rural people are deprived of ICT infrastructures
- Educational imbalance in the rural areas
- Lack of technical education
- Lack of support from government institutions to provide ICT education for rural people
- Inadequate access of productive resources
- Poverty
- Linguistic barriers
- Socio-Economic problems

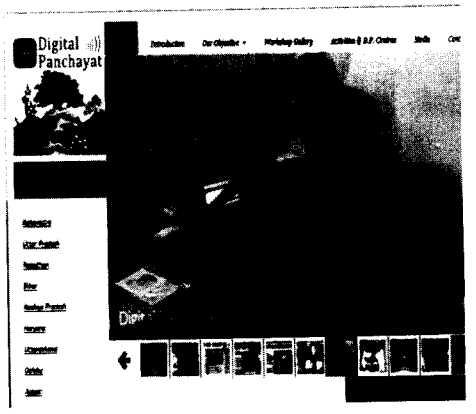
7. Public library in the rural area

The rural library is major source of information for the local level administration. The government of Karnataka established rural libraries in all villages of the state under the public library system to provide necessary, required, informative and recreational information to the people of the village. But most of the rural/village library systems are badly shaped.[2] They are

suffering from the infrastructure facility, lack of financial assistance, maintenance, trained staff, sources, media facilities. So the rural libraries have to provide by all facilities like sufficient sources of information, human resource, technically trained staff, and application of information and communication system, media and internet facilities.

The information provided through e-governance is not reaching the rural people because the rural public library is suffering from various constrains:

- No own building
- No sufficient place for reading room
- Limited collection of resources
- Only traditional type of materials
- One or two local and regional news papers
- Local level and local language magazines
- No trained staff
- No computers and software
- No multimedia content documents
- No ICT facilities



8. Issues and Problemsfaced by Public Libraries in Providing E-governance:

- The lack of policies encouraging ICT as a tool for development in public libraries.
- Political & Cultural factors like, language diversity, rural politician attitude and support, user attitude and skills are practical problems.
- The lack of resource is another problem in developing public library services like Skilled Manpower; Building & other Infrastructure etc.
- The inadequacy and problems in transfer of Funds is the major factor in the development of public library.
- The lack of Collaborative approach with other Information centres, Special & Academic libraries in the region to develop collaboration for promoting and modernizing public library services in the country.

9. Suggestion and Recommendation:

- The consolidation and expansion of Public Libraries network with other public libraries.
- The E-learning programme through Public libraries.
- Work for target groups, setting of awareness and information services.
- The use of ICT in library extension programs is the demand in the digital era.
- The education and training for staff is must in the digital environment due to the
- Adaptation of ICT application in all the areas of library services.
- To provide sufficient funds from government.

- To develop separate department to look after implementation and training programs of e-governance and strengthen existing.

10. Conclusion

Public libraries are been identified as one point access for effective e-governance service.They need shake of hands government and intuitions having come interest. The centralisation of the E-governance services through public library approach is the effectivemethod in the digital era. The national policy may focus on the budget, because of the high price of tools equipment's in creating e-governance. The join up approach with other libraries is also the possible solution for the development of e-governance. The public library legislation is must designed/modified to suit for digital era of e-governance. In India, modern information system with the ICT application is set up at the right time, with the help of right infrastructure and is administered by the right type of qualified professionals then public libraries can be prospects of effective e-governance.

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Special Component Plan (SCP) Libraries in Nalgonda District State of the Art

Keshalu, P

Abstract

This article is all about the present use of ICT and its applications in the university libraries in Maharashtra state. Explanation about the necessity of networking & consortiums, portals, marketing, knowledge management in university libraries is highlighted in this article. This paper is also focused on how Government of India is supporting in the development of university libraries by initiatives like INFLIBNET & NKC are explained here. Finally it is concluded that all the university libraries in Maharashtra State and their user's required to act together to utilize these new ICT avenues in this modern days.

Keywords : Public libraries, CCP for libraries, Library resources and services

1. Introduction

Government of India introduced the concept of Special Component Plan for the Scheduled Castes for ensuring their speedy development, since Scheduled Castes predominantly belong to the weaker sections of the society. They have few assets and are generally dependent on agricultural labour and other low income occupations. They mostly continue to pursue traditional occupations and are generally unable to avail themselves of the new employment opportunities generated through various economic development activities. As such it was necessary to have an overall perspective of the development of Scheduled Castes comprising economics, educational and social aspects and fulfilment of minimum needs.

2. Approach of the State Government

Taking into consideration the guidelines issued by the Government of India, the State Government has decided that:-

- The Special Component Plan should include schemes giving direct benefits exclusively to the Scheduled Caste individuals or cluster of families to the maximum possible extent.
- The department concerned with the non-divisible sectors explore possibility of quantifying funds exclusively for the Scheduled Castes.
- The Special Central Assistance to be released by the Government of India shall be utilised for enhancing the subsidy to the persons belonging to the Scheduled Castes below the poverty line. The maximum subsidy under the scheme shall not exceed 50 per cent of the total admissible financial assistance. Where subsidy under the existing scheme is below 50 per cent (to the Scheduled Castes beneficiaries), it will be increased up to 50 percent and where no subsidy is provided under various schemes, the subsidy may be provided up to 50 per cent, and subsidy proposed under the Special Component Plan shall be sanctioned to the families belonging to the Scheduled Castes who are living below the poverty line and whose income does not exceed Rs.11,000/- in rural areas per annum.

3. Objective of Special Component Plan libraries

The objective of this special plan is to provide funds for various scheduled caste development schemes. This was introduced by the Government of India in 1979 to channelise the

flow of funds/outlays and benefits for specific schemes, which are development and welfare oriented for scheduled castes. The state governments / union territories / union ministries have earmarked funds. The phrase special component plan libraries refer to libraries receiving aid under SCP by the Government of Andhra Pradesh. Providing financial assistance for establishing libraries in villages by SC/ST communities is one of the key features of Special Component Plan (SCP). Accordingly, libraries have been established in key areas with a cluster of SC/ST communities. The Nalgonda district such libraries prevail in the following places.

- Thungathurthy
- Nampally
- Vemulapally
- Mothey
- Thipparthy
- Nadigudem

4. Nalgonda District: A Brief Profile

Nalgonda district is situated between the northern latitudes of 16º 25' and 17º 601 and eastern longitudes of 78º 40' and 80º 05'. The district is bounded on the east by Warangal, Khammam, Krishna, Guntur districts, on the south by Guntur and Mahaboobnagar districts. On the west by Mahaboobnagar and Warangal districts. On the south by Dindi and Krishan rivers; the district total area 14,242 sq.km. The district has been decided into three revenue divisions. They are Nalgonda, Bhuvanagiri and Miryalaguda.

According to 2001 census, the scheduled caste population in the district is 5,75,788 of them 2,91,960 are males and 2,83,828 are females. It constitutes 17.73percent to the total population of the district. The scheduled caste and scheduled tribe population forms 17.73 percent and 10.55 percent respectively to the total population of the district.(Source: 2001 Census)

Table-1 Mandal wise Distribution of sample SC Community in Nalgonda

S.No.	Name of the Mandal	Total Population	Scheduled Caste		Total	% of Total Population
			Male	Female		
1	Thungathurthy	52,922	5,630	5,652	11,282	21.3
2	Nampally	38,801	4,061	4,127	8,188	21.1
3	Vemulapally	43,003	5,460	5,203	10,663	24.8
4	Mothey	42,680	4,503	4,340	8,843	20.7
5	Thipparthy	45,373	5,576	5,521	11,097	24.5
6	Nadigudem	39,543	4,895	4,924	9,819	24.8
Total		**262,322**	**30,124**	**29,768**	**59,892**	**22.8**

5. Objectives of the Study

- To study the status of accommodation, furniture and equipment in the SCP libraries.
- To understand distribution of library materials in the SCP libraries of Nalgonda district.
- To enumerate sex wise distribution of registered numbers in SCP libraries.

- To find out distribution of books and periodicals (by language, subject, periodicity) acquired in the SCP libraries.
- To know the expenditure pattern of SCP libraries in Nalgonda.

Data collection

Data were collected by using a semi-structured interview schedule. The investigator contacted each librarian and personally solicited the information. Data analysis was done through simple statistical techniques.

Allocation of funds during Plan periods

In the Sixth Five Year Plan (1980-85), Special Component Plan (SCP) was considered for Scheduled Castes as one of the strategies along with Special Central Assistance (SCA) and Scheduled Castes Development Corporation (SCDC). Soon after the Sixth Plan period, there was rise in the allocation of funds under SCP (Rs.600 crores) and SC, ST Financial Development Corporation (Rs.577.93 crores of margin money loan amounting to about Rs.106.59 crores, bank loan amounting to Rs.370.84 crores and Rs.1000.50 crores and subsidy). Thus, the expenditure on SCs has proportionately been more than STs.

In the Seventh Five Year Plan (1985-90), under Special Component Plan, specific schemes for the welfare and development of SCs were implemented. More emphasis was laid on the educational development of SCs and STs.

During the Seventh Plan period, major task was to be removal of the deficiencies experienced in the formulation and implementation of the programmes during Sixth Plan and take reform measures concerning administration, implementation and evaluation of programmes. These include assignment of specific responsibilities of collectors in the implementation of SCP, communication of disaggregated physical and financial targets to district and Block authorities, strengthening of the implementation machinery, regular inspection, making checklist for each programmes, avoidance of multiples counting of beneficiary families and review the progress at the level of Chief Secretaries and Chief Ministers. A high per capita expenditure is earmarked for Scheduled Castes in SCP by the States New Schemes—planned and non-planned. Special consideration was given to SC families in the IRDP.

The thrust area of Eighth Five Year Plan (1992-97) is to streamline the mechanism of planning and implementation of programme covered under Special Component Plan will be reviewed to make sure real and tangible flow of benefits to the target groups, both individual and families. In order to establish a functional coordination, integration and effective delivery of services, the process of decentralized participatory planning will be followed. In the implementation of programmes of Scheduled Castes removal of discriminatory practices, promotion of voluntary organization and development of women will be regarded as the paramount importance.

During Ninth Five-year plan (1997-2002), 120 lakhs has been allocated for the implementation of special component plan. Out of this amount Rs. 18lakhs has been allocated for SCP libraries. During Tenth Five-year plan (2002-2007) 2517.84crores has been allocated for the implementation of special component plan. Out of which 178.94lakhs has been allocated for SCP libraries. During Eleventh Five-Year plan (2007-2012). A sum of Rs. 1903.00 lakhs has been earmarked for special component plan out of total proposed out lay of Rs.12055.00 lakhs during annual plan 2010-2011. Out of which Rs. 712.80 lakhs has been allocated for SCP libraries.

Table-2 Status of Accommodation in SCP Libraries of Nalgonda District

Sl. No.	Name of the SCP Library	Year of Establishment	Library Building	Total Area of The Library	No. of Rooms Provided in Library
1	Thungathurthy	1986	Own	150 SFT	2
2	Nampally	1986	Own	500 Sq Yards	2
3	Vemulapally	1986	Own	360 Sq Yards	2
4	Mothey	1986	Rent Free	500 Sq Yards	7
5	Thipparthy	1987	Own	240 Sq Yards	2
6	Nadigudem	1987	Rent Free	144 SFT	2

The table 2 describes the development of SCP libraries in Nalgonda district over the years with respect to their year of establishment, Library building, Plinth area of library and the availability of rooms in SCP library. Among the SCP libraries in Nalgonda district Thungathurthy, Nampally, Vemulapally and Mothey established in 1986 and Thipparthy and Nadigudem SCP library have established in 1987. It is evident from the table that, Thungathurthy, Nampally, Vemulapally and Thipparthy SCP Library has own building. Mothey and Nadigudem SCP library has managed in Rent building. There are, Mothey SCP library having 7 rooms, followed by Thungathurthy, Nampally, Vemulapally, Thipparthy and Nadigudem library have 2 rooms only.

Table-3 Furniture & Equipment in SCP libraries in Nalgonda

S.No.	Name of the SCP Library	Tables	Chairs	Book racks	Fans	Lighting
1	Thungathurthy	7	4	5	3	3
2	Nampally	4	5	5	0	0
3	Vemulapally	3	6	5	2	7
4	Mothey	12	9	4	1	0
5	Thipparthy	3	6	5	0	0
6	Nadigudem	7	4	4	2	2
Total		**36**	**34**	**28**	**8**	**12**

Table 3 describes the quantitative data about the furniture and equipment in SCP libraries in **Nalgonda** District. The majority of the Tables (36), Chairs (34), Bookk Racks (28), Lighting (12) and Fans (8) in SCP libraries of Nalgonda district. It is found that the Mothey SCP library having highest position in providng of Tables (12) and Chairs (9). Followed by providing of Tables (7) Thungaturthy and Nadigudem. On the other hand, book racks available 5 in Thungathurthy, Nampally, Vemulapally and Thipparthy rest of Mothey and Nadigidem provide 4 book racks only. There are 3 fans in Thungathurthy, (2) Vemulapally and Nadigudem. However, in Nampally and Thipparthy it is to note that the libraries are not provided by the Fans and Lighting which are not provided one.

Table-4 Quantum of Library Materials in SCP libraries in Nalgonda

S.No.	Name of the SCP Library	Books	Periodicals	Newspapers
1	Thungathurthy	2025	12	5
2	Nampally	2595	16	4
3	Vemulapally	2275	10	5
4	Mothey	1357	14	4
5	Thipparthy	2586	18	6
6	Nadigudem	2188	19	5
Total		**13026**	**89**	**29**

Information relating to the different types of collection in the SCP libraries at the time of survey is presented in Table 4. It is obvious, that the total Book collection of Nampally SCP Library (2596) being the highest. Followed by, Thippathy (2586), Vemulapally (2275), Nadigudem (2188), Thungathurthy (2025) and Mothey (1357). While Nadigudem SCP library, clearly sweeps its strength in Periodicals (19). Followed by Thippathy (18), Nampally (16), Mothey (14), Thungathurthy (12) and Vemulapally (10). It is interesting to note that, Thipparthy SCP library offers 6 news papers, followed by 5 news papers offer only Thungathurthy, Vemulapally and Nadigudem. The remaining Nampally and Mothey SCP librarie offer only 4 news papers.

Table-5 Sex Wise Registered Members in SCP libraries in Nalgonda

S.No.	Name of the SCP Library	Male		Female		Total
		No.	%	No.	%	
1	Thungathurthy	245	93.87	16	6.13	261
2	Nampally	155	72.09	60	27.91	215
3	Vemulapally	328	94.52	19	5.48	347
4	Mothey	150	75.00	50	25.00	200
5	Thipparthy	307	97.46	8	2.54	315
6	Nadigudem	258	70.30	109	29.70	367
Total		**1443**	**84.63**	**262**	**15.37**	**1705**

Table 5 shows that the sex wise distribution of registered members in SCP libraries of Nalgonda district. It is found from table that, majority of the male registered members constitute 1443 (84.63%) while female constitutes 262 (15.37%) in Nalgonda district. There are majority of the male registered members have in Thipparthy (97.46) SCP library and lowest male members having in Nadigudem (70.30%). However, it is observed that the Nadigudem (29.70%) SCP library has got highest female registered members but Thipparthy SCP library has got lowest place in female registered members.

Table-6 Language wise collection of books in SCP libraries in Nalgonda

S.No.	Name of the SCP Library	Telugu		English		Others		Total
		No.	%	No.	%	No.	%	
1	Thungathurthy	1800	88.89	175	8.64	50	2.47	2025
2	Nampally	2409	92.83	127	4.89	59	2.27	2595
3	Vemulapally	1930	84.84	268	11.78	77	3.38	2275
4	Mothey	1280	94.33	49	3.61	28	2.06	1357
5	Thipparthy	2403	92.92	158	6.11	25	0.97	2586
6	Nadigudem	2045	93.46	111	5.07	32	1.46	2188
	Total	**11867**	**91.10**	**888**	**6.82**	**271**	**2.08**	**13026**

It is obvious, that the total language wise Book collection in SCP libraries in Nalgonda District. Nampally and Thipparthy libraries being the highest while the same SCP libraries clearly sweeps its strength in book collection of more than 2400 in telugu language.

Vemulapally SCP Library has highest book collection (268) in English language. On the other hand Thungathurthy SCP library have got second place in book collection of English language. It is pathetic find from the table that, book collection in the others language such as Urdu, Hindi and etc., Vemulapally (77), Nampalli (59), Thungathurthy (50) Nadigudem (32), Mothey (28) and Thipparthy (25). It is interesting to note that, Mothey SCP library have very lowest book collection in Telugu (1280) and English (49) languages.

Table-7 Quantum of Books by Subject Wise in SCP libraries in Nalgonda

S.No.	Name of the SCP Library	Neo literate	Student	Fiction	Subject Oriented	Agriculture	Service/ Business	Journals for Youth	Total
1	Thungathurthy	115 (5.68)	285 (14.07)	1200 (59.26)	312 (15.41)	36 (1.78)	12 (0.59)	65 (3.21)	**2025**
2	Nampally	212 (8.17)	795 (30.64)	1140 (43.93)	236 (9.09)	45 (1.73)	52 (2.00)	115 (4.43)	**2595**
3	Vemulapally	167 (7.34)	623 (27.38)	852 (37.45)	493 (21.67)	21 (0.92)	10 (0.44)	109 (4.79)	**2275**
4	Mothey	110 (8.11)	274 (20.19)	600 (44.22)	170 (12.53)	30 (2.21)	16 (1.18)	157 (11.57)	**1357**
5	Thipparthy	250 (9.67)	340 (13.15)	680 (26.30)	116 (4.49)	0 (0.00)	0 (0.00)	1200 (46.40)	**2586**
6	Nadigudem	77 (3.52)	597 (27.29)	864 (39.49)	386 (17.64)	75 ()3.43	61 (2.79)	128 (5.85)	**2188**
Total		931 (7.15)	2914 (22.37)	5336 (40.96)	1713 (13.15)	207 (1.59)	151 (1.16)	1774 (13.62)	**13026**

(Parentheses indicated by percentages)

The data in Table 7 presents the distribution of books by subject in SCP libraries in Nalgonda district. It is seen that, Thungathurthy and Nampally having a more than 1000 books in fiction. On the other hand, Nampally has got huge collection of books (795) as student related. There are, Thipparthy SCP library having a high in collection of Journals (1200) for youth and also Neo literature (250). It is very interesting to note that, have no collection in Agriculture and Service/Business in Thipparthy SCP library. Moreover, it is pointed out that the Vemulapally has got first place for collection in subject oriented (493) books in Nalgonda district. Thus, as a whole the table shows that, Mothey SCP library has lowest collection in all type of book collection.

Table -8: Number of Periodicals in SCP libraries in Nalgonda

S.No.	Name of the SCP Library	Dailies			Weekly's			Fort nights			Monthly			Quarterly			Annually			Total
		T	E	O	T	E	O	T	E	O	T	E	O	T	E	O	T	E	O	
1	Thungathurthy	4	1	0	2	1	-	2	-	-	7	-	-	-	-	-	-	-	-	17
2	Nampally	4		-	6	-	-	3	-	-	3	-	-	-	-	-	-	-	-	16
3	Vemulapally	4	1	-	3	-	-	2	-	-	5	-	-	-	-	-	-	-	-	15
4	Mothey	4		-	4	1	-	2	-	-	10	1	-	-	-	-	-	-	-	22
5	Thipparthy	4	1	-	3	1	-	2	-	-	7	-	-	-	-	-	-	-	-	18
6	Nadigudem	5		-	3	-	-	3	-	-	12	-	-	-	-	-	-	-	-	23

T=Telugu E=English O=Others

Table 8 shows the total number of periodicals in SCP libraries in **Nalgonda** district. It is obvious, that the total Periodical collection of Nadigudem SCP Library being the highest and also clearly sweeps its strength in subscription of monthly (12) wise and Dailies (5) periodicals in telugu language. On the other hand the Mothey SCP library has 10 periodical, Thungathurthy (7) Vemulapally (5) subscribing in monthly wise. It is interesting to note that only one SCP library (Mothey) in Nalgonda has subscribing one English language periodical on monthly wise. None of the SCP library have not subscribe in quarterly and annually periodical in any language in Nalgonda district.

Table-9 News papers in SCP libraries in Nalgonda

S.No.	Name of the SCP Library	Telugu	English	Total
1	Thungathurthy	4	1	5
2	Nampally	4	0	4
3	Vemulapally	4	1	5
4	Mothey	4	0	4
5	Thipparthy	4	1	5
6	Nadigudem	5	1	6
	Total	**25**	**4**	**29**

The data in Table 9 presents the quantum of news papers available in various languages in the SCP libraries of Nalgonda district under survey. Majority (25) of the Telugu news papers and (4) English news papers available in Nalgond district SCP libraries. While the highest, five Telugu news papers and one English paper having in Nadigudem SCP library. Followed by, 4 Telugu news papers having in Thungathurthy, Nampally, Vemulapally, Mothey and Thipparthy SCP libraries. None of the English paper in Nampally and mothey.

Table-10 Expenditure pattern of SCP libraries in Nalgonda

S.No.	Name of the SCP Library	Salaries	Maintenance	Periodicals	Others	Total
1	Thungathurthy	15000	18000	7200	0	40200
2	Nampally	135000	0	7200	0	142200
3	Vemulapally	120972	2000	7300	15000	145272
4	Mothey	85200	1800	7200	15000	109200
5	Thipparthy	89964	0	7200	15000	112164
6	Nadigudem	15000	1800	7200	0	24000
	Total	**461136**	**23600**	**43300**	**45000**	**573036**

From the Table 10, it can be seen that the Expenditure pattern of SCP libraries in Nalgonda. The maximum Rs.4, 61,136/- was spent for payment of salary and secondly Rs.23, 600/- for maintenance. The expenditure breakup under the other expenditure head is 'periodicals' Rs.43, 300/- and others (furniture and equipment) Rs.45, 000/- in Nalgond district. A sum of Rs.1, 35,000/- out of the total library expenditure had been utilized by the Nampally SCP Library and Rs.1, 20,972/- (Vemulapally). The total amount of Rs.18, 000/- Thungathurthy SCP library expenditure had been utilized for maintenance. Nampally and Thipparthy has not use expenditure for their SCP libraries. On the other hand Vemulapally has use Rs.7, 300/- for purchasing of periodicals followed by Thungathurthy, Nampally, , Mothey, Thipparthy and Nadigudem has utilize amount of Rs.7,200/-. From the table it is observed that amount of Rs.15, 000/- had been allocated for the others (Furniture and Equipments) such as Vemulapally, Mothey and Thipparthy. Rest of the SCP libraries ahs not use any amount for others.

6. Major Findings of the Study

- The amount allocated in the budget under SCP is not fully utilized.
- The study is found that the status of SCP library buildings in Nalgonda district. Out of 6 libraries 4 libraries are having their own buildings and 2 are rent free buildings.
- The data indicate that all the SCP libraries in Nalgonda have their furniture and equipment facilities. The Mothey branch library is in leading position with regard to furniture and equipment.
- SCP library in Nampally is in leading position with regard to books 2595 No.s, Nadigudem is in leading position to periodicals and Thiparthy is in leading position with regard to newspapers.
- The Thiparthy branch library out of 315 members, 307 (97.46%) are male registered 8 (2.54%) are female registered members in lowest position with regard to sex wise distribution of registered members.
- The Nampally library 2595 books is in leading position with regard to language wise distribution of books.
- Nampally SCP library out of 2595 books 795 (30.64%) are student books, 52 (2.00%) are service and business books.

- The Nadigudem SCP library out of 23 periodicals, all are in Telugu language, also leading position with regard to total number of periodicals.
- The study is found that the total number of news papers in Nalgonda district branch libraries namely Nadigudem is highest position in News papers collection. Thungathurthy, Nampally, Vemulapally, Mothey and Thipparthy are an equal in leading position. Nampally and Mothey is lowest position with regard to total number of newspapers.
- The Vemulapally SCP library the total expenditure is Rs.1,45,272/- is in leading position with regard to expenditure pattern.

7. Suggestions

1. There shall be optimum utilization of funds more provided in the budget under SCP.
2. Steps should be taken to construct maintain own buildings by the Government.
3. The Central Government should allocate more funds for the libraries for purchasing furniture and equipment facilities.
4. The library authorities should take steps to encourage the women readers to take membership in libraries.
5. The Central Government should allocate more funds for the libraries for purchasing periodicals news papers and other reading materials.

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Users Attitudes towards Public Library Services and Facilities in Karnataka: *A Study*

Khaiser Nikam **Jaya Kumara**

Abstract

The present study provides a glimpse of the user's perception about the public library services and facilities in Karnataka. The purpose of this paper is to know (i) attitudes of public library users towards services and facilities (ii) opinion of users towards strategies used by the library to attracts users (iii) perception of users towards barriers to use library services and (iv) users overall impression about the public library. The structured questionnaire was designed and distributed randomly to 1680 users between 15 to 40 years of age out of which 1021 filled-in questionnaires were received representing 60.77 percent. The statistical techniques employed were mean, standard deviation and chi-square tests used for analysis and interpretation of data, the result of the survey indicates that about 35.4 percent of respondents were between 21-25 year of age, majority (77.6%) of users were male. Public library users are satisfied with the strategies used by the library to attract users and restrictive policies of the library are the major barrier to use library services. The chi-square test shows that there is significant differences are observed between the frequencies of responses of public library users.

Keywords : Attitudes, Public Library, Public Library Services, Strategy, Barriers

1. Introduction

The public library is a library that is accessible by the public and is generally funded from public sources and operated by civil servants. Public libraries are distinct from research libraries, school libraries, and other special libraries in that their mandate is to serve the general public information needs (rather than the needs of a particular school, institution, or research population). Public libraries offer a variety of services to their communities, including collections, reference, referral, and programming. Depending on the type of community in which a library is located, the library may emphasize programs and other types of services for particular segments of the population (e.g., children, young adults, older adults), it provide access to a wide range of information resources like books, periodicals, reference materials, etc. IFLA/UNESCO (1994) declares "The public library service must be adapted to the different needs of communities in rural and urban areas". Totterdell (1981) stresses the importance of relationship between the public library and community as: "If the library is too responsive to community needs then its involvement with the community must be much greater". As a repository of human experience, not subject to the barriers of space and time, the major purpose of the library is to provide information. According to Lawal and Udofia (1994), the library meets the information needs of the users in the following four categories:

- Education - to develop society, adults, children and to fill gaps in memory.
- Information - to develop executive activities such as economics, social and commercial development.
- Aesthetic - to cultivate appreciation for culture, art, truth and judgment.
- Recreation - to provide amusement and hobbies.

The function of the library, therefore, is to implement, to enrich, to vitalize and humanize the educational programmes, as it strives to attain excellence in content, process and product.

2. Objectives

The main objectives of the present study are:

- to know the demographic characteristics of public library users;
- to examine users attitudes towards availability of public library services;
- To know the opinion of users towards strategies used by the library to attracts users;
- To know the perception of users towards barriers to use library services and
- To know the users overall impression about the public library

3. Scope, Limitation and Methodology

The scope of the present study is limited to City Central Libraries of Karnataka. There are 26 City Central Libraries in Karnataka out of those 14 City Central Libraries (includes State Central Library) covering 12 districts in Karnataka were selected for the purpose of data collection. They are Mysore, Mandya, Hassan, Tumkur, Bangalore, Mangalore and Shimoga from Southern Karnataka. Bidar, Gulbarga, Bijapur, Dharwad, Bellary and from North Karnataka.

The survey method is used to collect the data from the users by using a structured questionnaire. To collect primary data from the users, the researcher used random sampling method. The questionnaire was circulated amongst 1680 (total sample size) YAPL users between 15 to 40 years age, out of which 1021 responses were received representing 60.77 percent. Simple statistical techniques like averages, mean, standard deviation and chi-square tests were used for analysis of data.

4. Hypotheses

The following hypotheses are framed for the study:

H_1: There is a significant difference between the frequencies of responses of public library users towards library services and facilities.

H_2: There is a significant difference between the frequencies of responses of public library users towards strategies used by the library to attract users;

H_3: There is a significant difference between the frequencies of responses of public library users towards barriers to use library services.

H_4: There is a significant difference between the frequencies of responses of public library users towards overall impression about the public library.

5. Results of the Study

The summary of the results are presented here.

5.1 Demographic Characteristics of Public Library Users

The demographic characteristic includes age, gender, mother tongue, educational qualification, occupation, marital status, income and geographical area of public library users. The analysis of data reveals that out of 1021 respondents more numbers of users were in the age group of '21 – 25 years' representing 41.1 percent. Majority of the respondents numbering 775 (75.9 %) were male and the remaining 246 (24.1%) were female. Largest numbers of respondents have Kannada as their mother tongue scoring 75.9 percent. The result also shows that, of the 1021 respondents, about 457 (44.8%) of the users were UG degree holders. Regarding the occupation of

users, the study reveals that nearly 373 (36.5%) of users were 'students'. Regarding marital status of respondents about 852 (83.4 %) respondents were unmarried and remaining 169 (16.6 %) respondents were married. Nearly 569(55.7%) respondents belongs to less than Rs.5, 000 income group and more number of the respondents scoring 553 (54.2%) were from the city area.

5.2 Attitudes of Public Library Users towards Public Library Services and Facilities

The public library provides various services and facilities to people irrespective of age, gender, caste etc. The public library users' attitudes towards services and facilities are presented in table 1. The result shows that majority of public library users stated agree for the parameter 'Arrangement and proper shelving of books' with highest mean value of 3.70 and SD being 1.11. The second ranking service which they like most was 'College and career information' (mean=3.46; SD=1.14). It is followed by 'providing finding aids are available in the library' (mean=3.26 and SD=1.32), and 'Young adult advisory service' (mean=3.24 and SD=1.32). So also for other services like 'Conducting library tours' and 'Audio and video recording' the users were in disagreement side with mean value 2.48 each. The least ranking service is 'Free access to the Internet' with mean value of 2.36 and SD being 1.43.

Table-1: Opinion of Users towards Public Library Services and Facilities

S/N	Parameters	Responses in Percentage (N=1021)					Mean	SD
		1	2	3	4	5		
1	Arrangement and proper shelving of books	56 (5.5)	91 (8.9)	223 (21.8)	380 (37.2)	271 (26.5)	3.70	1.11
2	College and career information	73 (7.1)	135 (13.2)	242 (23.7)	386 (37.8)	185 (18.1)	3.46	1.14
3	Providing finding aids (ex. Books list, catalogue, authors list etc)	145 (14.2)	160 (15.7)	196 (19.2)	318 (31.1)	202 (19.8)	3.26	1.32
4	Young adult advisory service	152 (14.9)	147 (14.4)	221 (21.6)	302 (29.6)	199 (19.5)	3.24	1.32
5	Reference information for education	167 (16.4)	176 (17.2)	153 (15.0)	335 (32.8)	190 (18.6)	3.20	1.36
6	Referral service	135 (13.2)	192 (18.8)	227 (22.2)	314 (30.8)	152 (14.9)	3.15	1.26
7	Reference assistance	190 (18.6)	181 (17.7)	226 (22.1)	295 (28.9)	129 (12.6)	2.99	1.30
8	Services to disabled users	171 (16.7)	223 (21.8)	234 (22.9)	236 (23.1)	157 (15.4)	2.98	1.31
9	Photocopy (Xerox)	216 (21.2)	205 (20.1)	183 (17.9)	222 (21.7)	195 (19.1)	2.97	1.42
10	Separate young adults room	213 (20.9)	200 (19.6)	209 (20.5)	260 (25.5)	139 (13.6)	2.91	1.34
11	Services to young adults who are unable to come to the library for variety of reasons	225 (22.0)	220 (21.5)	190 (18.6)	215 (21.1)	171 (16.8)	2.89	1.40
12	Personal computers for independent use	265 (26.0)	172 (16.8)	228 (22.3)	214 (21.0)	142 (13.9)	2.80	1.38
13	Inter library loan service	223 (21.8)	253 (24.8)	225 (22.0)	195 (19.1)	125 (12.2)	2.75	1.31
14	Training for information literacy skills	260 (25.5)	219 (21.4)	217 (21.3)	201 (19.7)	124 (12.1)	2.71	1.35
15	Conducting library tours	323 (31.6)	250 (24.5)	190 (18.6)	147 (14.4)	111 (10.9)	2.48	1.34
16	Audio and video recording	339 (33.2)	231 (22.6)	186 (18.2)	147 (14.4)	118 (11.6)	2.48	1.37
17	Free access to the Internet	407 (39.9)	223 (21.8)	135 (13.2)	121 (11.9)	135 (13.2)	2.36	1.43
	Chi- Square and P Value	$\chi^2 = 4.852$; df=56; P < 0.001						

1 – Strongly disagree, 2 – Disagree, 3 – Neither agree nor disagree, 4 – Agree, 5 – Strongly agree,
SD = Standard deviation, N=Number of Respondents, χ^2 = Chi-Square, P = Probability,
P≤.050 – Significant, P > .050 – Not Significant, Numbers in Parentheses Indicates Percentage

Hypothesis Evaluation: The Chi-Square test indicate that there is significant differences (χ^2=4.852; P<0.001) are observed between the frequencies of responses towards 'public library services and facilities', hence the hypothesis formulated 'There is a significant difference between the frequencies of responses of public library users towards library services and facilities' is supported.

5.3 Opinion of Public Library Users towards Strategies Used by the Library to Attract Users

The opinion of public library users towards strategies used by the library to attract users' is shown in table 2. It is clear from the table that, majority of respondents is in agreement side for all the strategies used by the library. The result shows that the first ranking strategy used by the library is 'Display of new arrivals' with highest mean of 3.47 and SD being 1.28. The next strategy is 'Daily important news headings are displayed' (mean =3.44 and SD=1.28). It is followed by 'Attractive proverbs and slogans are displayed' (mean=3.38 and SD=1.27), and 'Display of latest library activities and programs' (mean=3.23 and SD=1.28). The second lowest ranking strategy of the library is 'Art works and paintings are displayed' (mean=3.12; SD=1.35) and the least ranking strategy adopted by the library is 'Library users are encouraged to contribute thought for the day 'with mean value of 3.10 and SD being 1.30.

Table 2: Opinion of Public Library Users towards Strategies Used by the Library to Attract Users

S/N	Parameters	Responses in Percentage (N=1021)					Mean	SD
		1	2	3	4	5		
1	Display of new arrivals	128 (12.5)	107 (10.5)	172 (16.8)	390 (38.2)	224 (21.9)	3.47	1.28
2	Daily important news headings are displayed	132 (12.9)	95 (9.3)	209 (20.5)	357 (35.0)	228 (22.3)	3.44	1.28
3	Attractive proverbs and slogans are displayed	133 (13.0)	117 (11.5)	190 (18.6)	392 (38.4)	189 (18.5)	3.38	1.27
4	Display of latest library activities and programs	153 (15.0)	129 (12.6)	242 (23.7)	327 (32.0)	170 (16.7)	3.23	1.28
5	'Thought for the day' is displayed at the entrance	157 (15.4)	155 (15.2)	203 (19.9)	340 (33.3)	166 (16.3)	3.20	1.30
6	Art works and paintings are displayed	186 (18.2)	154 (15.1)	206 (20.2)	305 (29.9)	170 (16.7)	3.12	1.35
7	Library users are encouraged to contribute 'Thought for the day'	185 (18.1)	186 (18.2)	151 (14.8)	344 (33.7)	155 (15.2)	3.10	1.30
	Chi- Square and P Value	χ^2 = 5.113; df=28; P < 0.001						

1 – Strongly disagree, 2 – Disagree, 3 – Neither agree nor disagree, 4 – Agree, 5 – Strongly agree,
SD = Standard deviation, N=Number of Respondents, χ^2 = Chi-Square, P = Probability,
P≤.050 – Significant, P > .050 – Not Significant, Numbers in Parentheses Indicates Percentage

Hypothesis Evaluation: The Chi-Square test indicates that there is significant differences (χ^2=5.113; P<0.001) are observed between the frequencies of responses towards 'Strategies Used by the Library to Attract Users', hence the hypothesis formulated 'There is a significant difference between the frequencies of responses of public library users towards strategies used by the library to attract users' is supported.

5.4 Public Library Users Perception about Barriers to Use Library Services

Even in the most information rich contexts, there are many barriers to use library resources and services like insufficient library staffs, lack of separate section for young adults, lack of transport, Lack of interest in library services, resources and programs and Lack of ICT (Information and communication technology) facility in the public library. The public library users perception about barriers to use library services in presented in table 3. It may be observed from the table that 'Restrictive policies of the library' is the major barrier to use library services with the mean value of 3.23 SD being 1.25. The second ranking barriers are 'Lack of separate section for young adult' and 'Lack of publicity on available resources and services of the library' with mean value of 3.14 each and SD of 1.34 and 1.30 respectively. The second lowest barrier is 'Insufficient library staff' (mean=2.99 and SD=1.32), the least barrier to use library service is 'Lack of transportation' with lowest mean value of 2.83 and SD being 1.33.

Table 3: Users Perception about Barriers to Use Library Services

S/N	Parameters	Responses in Percentage (N=1021)					Mean	SD
		1	2	3	4	5		
1	Restrictive policies of the library	128 (12.5)	162 (15.9)	243 (23.8)	320 (31.3)	168 (16.5)	3.23	1.25
2	Lack of separate section for young adults	162 (15.9)	192 (18.8)	193 (18.9)	291 (28.5)	183 (17.9)	3.14	1.34
3	Lack of publicity of available resources and services of the library	136 (13.3)	200 (19.6)	258 (25.3)	235 (23.0)	192 (18.8)	3.14	1.30
4	Lack of trained staff	152 (14.9)	219 (21.4)	184 (18.0)	284 (27.8)	182 (17.8)	3.12	1.33
5	Lack of ICT (Information and communication technology) facility	176 (17.2)	194 (19.0)	207 (20.3)	251 (24.6)	193 (18.9)	3.09	1.36
6	Lack of interest in library services, resources and programs	167 (16.4)	203 (19.9)	255 (25.0)	227 (22.2)	169 (16.6)	3.03	1.31
7	Insufficient collection	126 (12.3)	236 (23.1)	297 (29.1)	211 (20.7)	151 (14.8)	3.02	1.23
8	Insufficient library staff	196 (19.2)	180 (17.6)	223 (21.8)	286 (28.0)	136 (13.3)	2.99	1.32
9	Lack of transportation	226 (22.1)	197 (19.3)	262 (25.7)	198 (19.4)	138 (13.5)	2.83	1.33
	Chi- Square and P Value	$\chi^2 = 4.788$; df=38; $P < 0.001$						

1 – Strongly disagree, 2 – Disagree, 3 – Neither agree nor disagree, 4 – Agree, 5 – Strongly agree,
SD = Standard deviation, N=Number of Respondents, χ^2 = Chi-Square, P = Probability,
P≤.050 – Significant, P > .050 – Not Significant, Numbers in Parentheses Indicates Percentage

Hypothesis Evaluation: The χ^2 test indicates that there is significant differences (χ^2=4.788; P<0.001) are observed between the frequencies of responses of users towards 'perception about barriers to use library services'. Hence the hypothesis formulated 'There is a significant difference between the frequencies of responses of public library users towards perception about barriers to use library services' is supported.

5.5 User's Overall Impression towards Public Library

The public library users overall impression about the public library services is presented in table 4. It is seen from the table majority of respondents are in agreement side and they are impressed for all the parameters. The survey reveals that public library users are highly impressed with the parameter 'the library enables me to be more productive' with highest mean value of 4.11 and SD being 1.05. The next impressed parameter is "the library enables me to be more productive', (mean=4.06; SD=1.02). The second lowest ranking parameter is 'The library improves my ability to do research' (mean=3.91; SD=1.07), and regarding the parameter 'I am satisfied with the young adult services' the users are less impressed with least mean value of 3.79 and SD being 1.10.

Table 4: User's Overall Impression about Public Library

S/N	Parameters	Responses in Percentage (N=1021)					Mean	SD
		1	2	3	4	5		
1	The library enables me to be more productive	41 (4.0)	41 (4.0)	104 (10.2)	409 (40.1)	426 (41.7)	4.11	1.01
2	The library enhances my effectiveness	33 (3.2)	60 (5.9)	124 (12.1)	398 (39.0)	406 (39.8)	4.06	1.02
3	My library is important for my activities	53 (5.2)	54 (5.3)	106 (10.4)	434 (42.5)	374 (36.6)	4.00	1.07
4	The library enables me to accomplish tasks faster	24 (2.4)	51 (5.0)	201 (19.7)	425 (41.6)	320 (31.3)	3.94	.95
5	The library improves my ability to do research	41 (4.0)	74 (7.2)	170 (16.7)	381 (37.3)	355 (34.8)	3.91	1.07
6	I am satisfied with the young adult services	55 (5.4)	92 (9.0)	142 (13.9)	454 (44.5)	278 (27.2)	3.79	1.10
	Chi- Square and P Value	$\chi^2 = 1.029$; df=22; P < 0.001						

1 – Strongly disagree, 2 – Disagree, 3 – Neither agree nor disagree, 4 – Agree, 5 – Strongly agree,
SD = Standard deviation, N=Number of Respondents, χ^2 = Chi-Square, P = Probability,
P≤.050 – Significant, P > .050 – Not Significant, Numbers in Parentheses Indicates Percentage

Hypothesis Evaluation: The Chi-Square test indicates that there is significant differences (χ^2=1.029; P<0.001) are observed between the frequencies of responses for the question 'User's Impression towards Public Library'. Hence the hypothesis formulated 'There is a significant difference between the frequencies of responses of public library users towards 'overall impression about the public library' is supported.

6. Conclusion

Public library is considered as community information centers providing access to a wide range of knowledge and information for the benefit of the individual and society as a whole. After perusing the results of the study it is concluded that the users' attitudes towards public library services, facilities, strategies used by the library, barriers to use library services and users overall impression about the public library are significant. Their perceptions towards strategies used by the library to attract users are highly appreciable, public library need to concentrate on providing services like 'free internet service' 'facility of audio and video recording' and they need to conduct

library tour to build awareness about availability of library services and facilities. And the public libraries may liberal in their policies to make the users optimum use of the services and facilities of the library.

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Blogging Tools: *An Overview*

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Abstract

Blogging software is the program used to create blogs. As specialized content management systems, weblog applications support the authoring, editing, and publishing of blog posts and comments, with special functions for image management, web syndication, and moderation of posts and comments. There are number of blogging tools/software that enables users to create their online diaries with ease. In this paper an attempt has been made to give an overview about blogging tools or software. The paper describes the contents, and different types of blogging software such as; free or open source software, proprietary software, and developer-hosted platforms. Further the paper also highlights the features of some blogging software.

Keywords: Weblog, Blogging Tools, Open Source Software.

1. Introduction

Blogging is relatively a new phenomenon, but it has already gained high popularity. Utilizing a blog has become one of the most popular processes of promoting an affiliate program today. Exactly what is excellent about a blog is that in lots of situations you can easily post it free of charge. The popularity of blogging is due in great part to the development of many simple, out-of-the-box products that allow for the uncomplicated creation and maintenance of a blog. A quick Web search for "blogging software" reveals a wide spectrum of choices, from free hosted packages, requiring nothing more than an e-mail address and a witty blog name, to robust packages offering hardy content management systems, news aggregation, and other advanced features worthy of a sophisticated enterprise package. [1] Blogging software is the program used to create blogs. As specialized content management systems, weblog applications support the authoring, editing, and publishing of blog posts and comments, with special functions for image management, web syndication, and moderation of posts and comments. [2] Currently there are a number of blogging tools that enable users to create their online diaries with ease. This article provides a brief overview about some blogging software.

2. Contents of Blogging Software

All weblog software supports authoring, editing, and publishing of entries in the following format: [3]

- Title, the main title, or headline, of the post.
- Body, main content of the post.
- Permalink, the URL of the full, individual article.
- Post Date, date and time the post was published.
- Comments – Comments allow readers to discuss blog entries, correcting errors or otherwise expressing their opinions on the post or the post's subject. Services like co Comment aim to facilitate discussions through comment tracking.
- Categories (or tags) – indexes to subjects discussed by the entry.
- Trackback and or pingback – links to other sites that refer to the entry.

3. Types of Blogging Software

Many weblog applications can be downloaded and installed on user systems. Some of these are provided under *free-software and open-source licenses*, allowing them to used, modified, and redistributed freely. Others are *proprietary software* which must be licensed for a fee, although free-of-charge versions may also be available. Other weblog applications are offered only through their *developers' hosts*, either free of charge or for a fee. Services are typically limited to hosting of the blog itself, but some services offer the option of using the hosted software to update a blog published elsewhere.

4. Free or Open Source Software

These software packages are offered as free or open source software:

- APACHE ROLLER (JAVABASED)
- B2EVOLUTION (PHP/MY
- BLOSXOM (PERL)
- DOTNETNUKE (VB.NET/ASP.NET)
- DRUPAL (PHP)
- FROG CMS (PHP)
- HABARI (PHP)
- JAWS (PHP)
- JOOMLA (PHP)
- LIVE JOURNAL (PERL) (ALSO AVAILABLE DEVELOPER HOSTED)
- LIFE TYPE (PHP)
- MOVABLE TYPE (PERL)
- NUCLEUS CMS (PHP)
- SERENDIPITY (PHP)
- SLASH (PERL)
- SUBTEXT (C#/ASP.NET)
- TEXT PATTERN (PHP)
- TYPO (RUBY ON RAILS)
- WORD PRESS (PHP)

5. Proprietary Software

These packages are under a proprietary software license. They may require the purchase of a license key to use them. The specific licensing terms vary but some are free of charge for personal or non-commercial use. For example:

- Community Server
- Expression Engine
- Traction Team Page
- Windows Live Writer

6. Developer-Hosted Platforms

Software services operated by the developer, requiring no software installation for the weblog author:

- Blogger
- Love Journal
- My Space
- Skyrock
- Tumblr
- Type Pad
- Typo
- Windows Live Spaces
- Wordpress.com
- Xanga
- Vox

4. Features of Blogging Software

Table 1: List of Software for Blogging

Name	Platform	Developed by	Operating system	Type	License	Free or Fee	Website
Apache Roller	Java	Apache Software Foundation	Cross-platform	weblog server	Apache License 2.0	free	http://roller.apache.org/
b2evolution	PHP	François Planque	Cross-platform	Blog software	GNU General Public License	free	www.b2evolution.net
Blosxom	Perl	Rael Dornfest	Cross-platform	Blog publishing system	MIT License	free	http://blosxom.sf.net/
Typo	Ruby on Rails	Tobias Lütke	Cross-platform	Content management system, Blog software	MIT License	free	http://www.typosphere.org/
Word Press	PHP	Matt Mullenweg, Ryan Boren, Donncha O Caoimh	Cross-platform	Blog publishing system	GNU General Public License version 2	free	http://wordpress.org/
Live Journal	Danga Interactive	Brad Fitzpatrick	Cross-platform	Blog Social Network	SUP	free	www.livejournal.com
Movable Type	Perl, PHP	Six Apart	Cross-platform	Blog publishing system	BSD	free	movabletype.org
Serendipity	PHP	Garvin Hicking and Team	Cross-platform	CMS/Blog software	**BSD**	free	http://www.s9y.org
Life Type	PHP	Oscar Renalias and Team	Cross platform	CMS/Blog software	**GPL**	Free	http://www.lifetype.net/
Blojsom	Java	-	Cross platform	Multi blog package	BSD	free	http://sourceforge.net
Radio UserLand	Frontier	Userland Software	Windows, Mac OS X, Mac OS 7.5.5 or greater	Blog Publishing System	Proprietary	both	http://radio.userland.com

Apache Roller

Roller Weblogger is a Java-based, full-featured, Multi-blog, Multi-user, Open Source weblog server. Roller was originally written by Dave Johnson in 2002 for a magazine article on open source development tools, but became popular at FreeRoller.net (now JRoller.com) and was later chosen to drive the employee blogs at Sun Microsystems, Inc. and IBM developer Works blogs. In 2007, Roller becomes an official project of the Apache Software Foundation. [4]

Features

- Multi-user blogging: can support tens of thousands of users and blogs
- Group blogging with three permission levels (editor, author and limited)
- Support for comment moderation and comment spam prevention measures
- Bloggers have complete control over blog layout/style via templates
- Built-in search engine indexes weblog entry content
- Pluggable cache and rendering system
- Support for blog clients that support MetaWeblog API
- All blogs have entry and comment feeds in both RSS 2.0 and Atom 1.0 formats

4.2 B2evolution

B2evolution is a multi-lingual, multi-user, multi-blog publishing system written in PHP and backed by a MySQL database. It is distributed under the GNU (General Public License) and is available without charge. B2evolution is focused on ease of installation and feature richness. It can easily be installed on almost any LAMP (Linux, Apache, MySQL, and PHP) host in a matter of minutes. With the latest release, no configuration file editing is necessary, as all configurations is handled through the installer or administrative back-end. [5]

Features

- AntiSpam Deluxe
- Multiple blogs.
- Blog skins.
- Multiple users and authors.
- Integrated stats.
- Plug-in framework.
- Advanced categorization.
- Localized in several languages.
- Web standards compliance.
- True workflow.
- Easy install & upgrade.

4.3 Blosxom

Blosxom (pronounced "blossom") is a lightweight yet feature-packed weblog application designed from the ground up with simplicity, usability, and interoperability in mind. It is a free-software weblog program (and simple content management system) written in Perl by Rael Dornfest and now maintained by a group of developers. It uses the pre-existing file system instead of a database management system, unlike most blog software. [6]

Features

- Absolutely FREE for the taking!
- Minimal requirements means Blosxom runs just about anywhere.
- Makes use of all the operating system and Web server beneath its feet have to offer -- whether Mac OS X and Apache or Windows XP and IIS.
- Multiple Weblogs with only one Blosxom installation.
- Permalinks point to (aka bookmark) a particular story in the context of its posting day.
- By-day, by-month, and by-year "archives".
- Flavour via a customizable template system.
- Choose between dynamic (on-the-fly) or static (spitting out regular files) rendering of your blog.
- RSS syndication.
- Intelligent defaults.
- Minimalist in terms of requirements and know-how, yet feature-packed and infinitely extensible via a powerful plug-in system. The Blosxom Plug-In Registry sports oodles of plug-ins to expand, extend, integrate, and delight.

4.4 Typo

Typo is a free, open source (MIT License) blogging engine written in the Ruby programming language, using the Ruby on Rails web application framework. Typo can use any of the various SQL databases supported by the Ruby on Rails framework. [7]

Features

- Does not need to rebuild the contents of the blog, everything is created on the fly
- Uses caching. Typo only creates the served files when needed, and serves static copies to the readers.
- Spam protection, customizable blacklists and Akismet support
- Textile, Markdown, and Smarty-Pants support, plus you can create your own text filters
- Ping and Track Back support
- Article categories and tags
- Ta-Da List, delicious, Flickr, 43 Things, and Upcoming.org syndication
- Ajax based live search and commenting
- Ajax based comment moderation
- RSS2 and Atom 1.0 syndication feeds as well as feeds for comments and track backs

- Supported databases: MySQL, SQLite, and PostgreSQL
- Simple URI format for all of the permalinks (for example http://blog.example.com/2005/01/29/an-example-article)
- Web based administration and posting interface, plus support for all 3 major external client APIs (Blogger, MetaWeblog and Movable Type Extensions)
- Migration scripts from Movable Type 3.x, Text pattern 1.x, Word Press 1.5x-2.0 as well as plain RSS.

4.5 WordPress

WordPress is a free and open source blogging tool and a dynamic content management system (CMS) based on PHP and MySQL. It has many features including a plug-in architecture and a template system. WordPress is used by over 14.7% of Alexa Internet's "top 1 million" websites and as of August 2011 manages 22% of all new websites. WordPress is currently the most popular CMS in use on the Internet. It was first released on May 27, 2003, by founders Matt Mullenweg and Mike Little as a fork of b2/cafelog. As of December 2011, version 3.0 had been downloaded over 65 million times. [8][9]

Features

- Full standards compliance
- No rebuilding.
- Word Press Pages
- Word Press Links
- Word Press Themes
- Cross-blog communication tools
- Comments
- Spam protection
- Full user registration Password Protected Posts
- Easy installation and upgrades
- Easy Importing
- XML-RPC interface
- Workflow
- Typographical niceties
- Intelligent text formatting
- Multiple authors
- Bookmarklets
- Ping away

4.6 Live Journal

Live Journal (often abbreviated **LJ**) is a virtual community where Internet users can keep a blog, journal or diary. Live Journal is also the name of the free and open source server software that was designed to run the Live Journal virtual community. Live Journal's differences from other blogging sites include its WELL-like features of a self-contained community and some social networking features similar to other social networking sites. [9]

Features

- Each journal entry has its own web page, which includes the comments left by other users.
- The most distinctive feature of Live Journal is the "friends list," which gives the site a strong social aspect in addition to the blog services.
- Live Journal allows users to customize their accounts in several ways. The S2 programming language allows journal templates to be modified by members.
- Each user also has a "User Info" page, which contains a variety of data including contact information, a biography, images (linked from off-site sources) and lists of friends, interests, communities and even schools which the user has attended in the past or is currently attending.
- Live Journal also allows "voice posts" to their paid and sponsored users, where one can call into the system and record an entry.

4.7 Movable Type

Movable Type is free software under the GPLv2 license. In addition to the free version, users can purchase support or buy commercial, education, or nonprofit licenses, which come with support contracts and author limits and unlimited blogs. Movable Type Enterprise also supports the Oracle database and Microsoft SQL Server. [10]

Features

- Multiple weblogs
- Standalone content pages
- Asset and File Manager
- User and user role management
- Customizable templates
- Tags
- Categories, sub-categories and multiple categories for articles
- Track Back

4.8 Serendipity

Serendipity is a PHP-powered weblog application which gives the user an easy way to maintain an online diary, weblog or even a complete homepage. While the default package is designed for the casual blogger, Serendipity offers a flexible, expandable, and easy-to-use framework with the power for professional applications. [11]

Features

- WYSIWYG and HTML editing
- Built-in, powerful media database
- Multiple authors, configurable permission/user group system
- Threaded comments, nested categories, post to multiple categories
- Multiple languages (internationalization)
- Online plugin and template repository for easy plug-and-play installation

- Cool plugins: category-based sub-blogs, podcasting, RSS planet/aggregator, static pages
- Robust spam blocking
- One-click upgrading from any version
- Can be embedded into your existing web pages
- Standards-compliant templating through Smarty, remote blogging via XML-RPC
- BSD-style licensing
- Multiple Database support (SQLite, PostgreSQL, MySQL, MySQLi)
- Shared installations can power multiple blogs from just one codebase
- Native import from earlier blog applications (WordPress, Text pattern, Moveable Type, bblog, ...)
- Dynamic.
- Trackback and Pingback
- Shared library.
- Easy Upgrading.
- Flexible Input/output.
- Actively maintained by some skilled and open-minded developers.

4.9 Life type

Life Type is an open-source blogging platform with support for multiple blogs and users in a single installation. It is written in PHP and backed by a MySQL database. Life Type is licensed under the GNU General Public License. Life Type began as a project to create a flexible blogging platform. Life Type was built with the intention to have a scalable architecture while keeping the core as light as possible, hoping to ensure an efficient and fast web-publishing engine. [12]

Features

- User Friendly Interface
- Integrated Media Management
- Built-in anti-spam Filter
- Support for Track backs
- Multiple Users per Blog
- Easy Installation
- Mobile features
- Multiple Blogs in one Installation
- Central Page for Communities
- Sub domains
- Easily Localizable
- Performance
- Clean Content
- Powerful Plug-in Framework

- Smarty Templates
- Demo Site
- Requirements and License.

4.10 Blojsom

Blojsom is a full-featured, multi-user, multi-blog package written in Java. Blojsom aims to retain simplicity in design while adding user flexibility in areas like back-end storage, flavors, templating, themes, and plugins. [13]

Features

- Setup and Installation is easy
- Multiple Blogs/Multiple Users
- Entries
- Categories
- Responses
- Plugins and Event/Listeners
- Syndication Formats
- Templates and Themes
- Remote Editing
- Internationalization and Localization
- Allows you and your users to search your blog entries.

4.11 Radio User Land

Radio User Land is a client-side blogging software package from User Land Software, including an RSS aggregator, outliner and scripting language. Radio was the first commercially available program to enable the "RSS enclosure" method of delivering audio or video files, the basis of what came to be known as podcasting several years later. Radio blog content can be organized into categories with separate RSS feeds; categories also can be assigned to separate page templates and servers.[14]

Features

- Fast installation
- Storage space
- Unique URL
- Any ISP compatible
- Firewall compatible
- Free trial
- Weblog Publishing
- Browser-based editing
- WYSIWYG
- HTML compatible

- One-click publishing
- Email postings
- Hyperlinks
- Daily, weekly, and monthly archiving

5. Conclusion

Blogs are ideal for disseminating all types of information chosen by the blogger for commenting, expressing opinions, and for discussing implications. There is a place for every user to maintain a blog. They can easily access and share information by creating more number of blogs using different blogging software available on the web. This study would be helpful to select suitable software for creating blog for users.

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Data Security Threats in Digital Environment

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Abstract

Data security is matter of concern in the Internet era. Data maintained by the libraries, and other organization are under threats in the digital environment. The unauthorized access to the databases might create problems such as data theft, data alteration, or its. In this regard data security is a major issue to be kept in view. This paper discusses about the aims and measures of data security.

Keywords: Data security, malware, Internet, Digital environment

1. Introduction

Data security is a process of preventing and detecting unauthorised access to one's system. The data privacy and security practices are important areas in the digital environment. The emerging technology is not fool proof against the data threats. The data security threats are ever increasing and demands frequent updates to the existing data privacy and security policies.

The increasing influence of Information and Communication Technology (ICT) in library administration and services has raised concerns about the data security. Improper IT security will literally lead to unauthorized access to data, thereby resulting in data corruption, data loss, incursion in to privacy and might even give rise to questions on data integrity. The state-of-the-art IT security framework is very vital for protecting data from these threats.

Even in a small library set-up, strong security architecture is necessary to protect the precious and sensitive data from the hackers. Library databases include important records such as accession details, member details, circulation details etc. If the hackers get their hand on these records, then they may tamper the data or in worst case may even delete the entire records. Many libraries lack the security architecture which provides an opportunity to hackers to exploit the data and information systems. Installation of firewall and anti-virus alone cannot help in data security. Multi-level security layers need to be implemented to check the unauthorized data access.

Lack of qualified IT staff is one of the major problems faced by the libraries. And with new methods being adopted by the hackers every day, it becomes necessary to library staff to seek the help of Information Technology (IT) staff to protect the library data. The IT department should educate the librarians on data security methods by providing frequent training on the latest threats, and solutions to overcome these threats. They can also help by evaluating the security measures taken by the librarians and suggesting any necessary amendment to the existing security blanket.

2. Meaning of Data Security

Data security refers to the protection of data from unauthorised modification, destruction, inspection, recording or disclosure through the administrative, logical and other controlling measures to limit the data accessibility (Experian QAS, 2012). Data security ensures that the data is kept safe from corruption and access is suitably controlled (Wikipedia, 2012). The common goal of data security is to achieve the authorized access and maintaining the confidentiality of data. It also aims to protect the data from accidental or incidental access (Experian QAS, 2012).

3. Why data security

Millions of computers are connected to the Internet to share the data. Data alteration, destruction, theft, record and its misuse is a major problem in the networked environment. Abuses from the computers have increased due to the raised connectivity to the Internet. The rising abuse over the Internet increases the threat to personal privacy. It has stimulated data security (Denning & Denning, 1979).

4. Aims of Data Security

- ***Confidentiality***

The personally identifiable and sensitive information requires highest level of protection. Information such as bank account numbers, credit card numbers, income tax records, telephone numbers, postal address etc need to be protected by getting into the wrong hands. The unauthorized disclosure of this type of sensitive information is a major threat on the networked environment.

- ***Integrity***

Data integrity is one of the important characteristic of data. Frequent database security breaches have increased the importance of measures being taken to protect data integrity. In simple words, the data integrity is the prevention of anything that will make information insecure and unreliable. It prevents the accidental or intentional tampering of data. The accuracy of data is very important because many decisions are made based on the available data. Inaccurate data may lead to decisions which might not lead to desired results.

- ***Access Control***

Preventing unauthorized access to data or data systems is known as access control. Anyone without the relevant permission is not allowed to access the data. Access control basically includes authentication, which helps in identifying the person who is trying to access the system. Generally, the username and password are used as the method of authentication. In a big library set-up, access control also includes the assigning of different levels of permissions to the different users.

- ***Malware***

Malware or Malicious codes are widely circulated through Internet. Hackers find Internet as the best medium for circulating the malicious code. These malicious codes are hidden and users unknowingly download these codes while browsing. These malicious codes are programmed in such a way that once they enter any computer in the network they quickly transmit themselves to other systems on the network, thereby affecting the entire network. The hackers frequently deceive the users by offering free content download like wallpapers or screensavers, and also by offering trial or demo version of softwares. Along with these free downloads, the malicious codes are also downloaded without the user knowledge. These malicious codes start collecting information from the users system without there consent or start infecting the programs and files.

- ***Phishing***

Phishing is a method of sending fraduant emails with intent to collect personal and sensitive data. The hackers deceive the users by sending the e-mails as if the mail is been sent from trustworthy and recognized website. The hackers usually adopt this method for collecting the information related to financial transactions. The users without identifying the threat behind these legitimate looking fraduant mails provide critical data to the hackers. The data provided by the

recipient of these mails are stored in the database of the hackers and they use this information for conducting their financial transactions.

- ***Spyware***

As the name suggests, Spyware is spying software that gets installed on the user's system without their consent. They are programmed to collect sensitive information from the system and transmit it to the hackers. The key element of spyware is that the user is completely unaware of data being collected and transmitted by this malicious software to other interested parties or hackers. The spyware is mainly developed for business and commercial gain.

- ***Viruses***

The term most system users are scared off. Virus is a program that infects programs or data files. The major trait that the viruses have is self replication; they multiple themselves. They get copied from an infected program or file to another program or file. Virus enters a user system as a self downloadable file while accessing e-mail, surfing, downloading or even when an infected external storage device is plugged to the system. Some viruses are designed in such a way that they change their own programming codes and are very hard to trace.

- ***Worms***

Computer worm is a malicious program that replicates itself and gets transmitted between systems without any human action. A worm multiplies many times and consumes much of memory space, thereby resulting in slow system performance. A worm does not have any major threat, except the resource that it consumes. The most frequent way of worm entering a system is through emails.

5. Prevention Measures

Prevention is better than cure. It is better to realize the security threats that loom large in this digital age and protect our data from the hackers. The best ways to prevent these threats are:

- The firewall and antivirus softwares should be kept enabled while browsing the Internet.
- The websites which have not undergone security check and have not been certified should be avoided.
- The web browsers also help in identifying and blocking the sites which contain malicious code. These settings should be enabled in the browsers before using the Internet.
- Regular software updates and patch files need to be downloaded to protect the system from the latest threats.
- The data might corrupt sometimes and the owner of the data may not able to fix the problem. Often the only option is to restore data from a backup (Mailat,, 2007). Regular data backups are the solutions to regain the corrupted data.
- Effective use of Firewalls might block the malicious programs being entering into the computers.
- However, even the best policies and procedures ensuring data security have little value if front-line staffs are not aware of them. It is a good practice to put library staff under regular training sessions and awareness programs. Interestingly, awareness of data security plays a vital role in protecting the data as other measures do.

6. Conclusion

With increasing impact of systems in libraries, the libraries are becoming more vulnerable for security threats. The migration to the digital environment should be undertaken only after ensuring that strong security architecture is in place. The threats should be understood and anticipated, solutions need to designed, and then the data and operations need to be migrated to the digital environment. As the threat to data stored on systems is endless, data security is also a continuous process. New data security policies and procedures need to be framed periodically to tackle the threats to the data in the digital environment.

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Legal and Security Issues in Virtual Corporate Library

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Abstract

Virtual library is universally defined as a group of 'cataloged' Web sites that extend the resources of educational institutions are public libraries beyond the four walls. Scholars held that libraries have tended to view virtual libraries as a set of finite projects, rather than an evolutionary process. Studies have revealed that the rapid growth of virtual environment has necessitated the government and corporate agencies to develop necessary legal and security mechanism in order to protect information. The security threats also come from inside the organizations. They include – disgruntled current employees, former employees with a grudge, model employees who may need quick cash or employees that have left the organizations and have gone to work for a competitor. Scholars have also emphasized that management support for a security policy is crucial. The security of an organization must start at the top of the company and percolate to the lowest level employee.

Keywords : Virtual library, Data security, Information security, Corporate library

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Metadata Standards: *A Perspective*

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Abstract

Metadata standard registries have great potential to enhance usability and reusability of metadata schemas. Application profiles are a key concept for Dublin Core, and have a crucial role in promoting reuse of metadata schemas. This paper discusses basic concepts and models of metadata schemas, in order to clarify functional requirements for extending registry functions to enhance usability and reusability of metadata schemas.

Keywords : Metadata, Digital resources, Repositories.

1. Introduction

We understand a digital library to be an electronic collection of real or virtual resources, which may also be available elsewhere. These resources must be whole works, with which humans can have a complete cognitive or affective engagement. A digital library may allow either online or offline access to the elements it organizes and houses, and may include multimedia as well as multilingual data.

In response to the rapid development of digital libraries and repositories, many general and domain-specific metadata standards have been developed or proposed by various user communities. Even within the same subject domain or for the same type of resource, there are often two or more options of metadata standards. In building a large digital library or repository, an issue often encountered is that the participants may have used diverse schemas and description methods to create their metadata records. Ideally, users of such a digital library or repository "should be able to discover through one search what digital objects are freely available from a variety of collections, rather than having to search each collection individually" [Tennant, 2001]. In other words, users should not have to know or understand the methods used to describe and represent the contents of the digital collection. However, in reality, the diversity of standards for the description of varying types of resources, sometimes within the same digital library or repository, poses particular challenges to users as well as those who are responsible for managing these resources. Only if devices can be developed to attain interoperability will it be possible to facilitate the exchange and sharing of data prepared according to different metadata schemas and to enable cross-collection searching **[1].**

2. What is metadata?

Metadata, in general, is defined as 'data about data' or 'information about information'. In the other words, metadata is data that describe information resources. This broad definition covers various levels of descriptions and one can view this variety on a continuum from the simple to complex: A short descriptive note on a book, an informal description of search hits by search engines, a catalog and MARC (Machine Readable Cataloging) record, and a TEI (Text Encoding Initiative) header all are data that describe an information resource and hence metadata. To refine this popular definition, metadata is considered "structured" data about data. Although excepts unstructured data such as descriptive note on a book and informal description of the search engines, this definition can actually interfere with comprehending the full scope of the metadata and needs to be more explained **[2]**

3. Why use metadata?

The foregoing section has discussed the inadequacy of search engines in locating quality information resources. How does metadata solve the problem? A more formal definition of metadata offers a clue. Metadata is data associated with objects which relieves their potential users of having full advance knowledge of their existence or characteristics.

Information resources must be made visible in a way that allows people to tell whether the resources are likely to be useful to them. This is no less important in the online world, and in particular, the World Wide Web. Metadata is a systematic method for describing resources and thereby improving access to them. If a resource is worth making available, then it is worth describing it with metadata, so as to maximize the ability to locate it.

Metadata provides the essential link between the information creator and the information user. While the primary aim of metadata is to improve resource discovery, metadata sets are also being developed for other reasons, including:

- Administrative control
- Security
- Personal information
- Management information
- Content rating
- Rights management
- Preservation

While this document concentrates on resource discovery and retrieval, these additional purposes for metadata should also be kept in mind. **[3]**

3.1 Metadata for Digital Resources: Implementation, Systems Design and Interoperability

- Provides practical guidance on the key choices that information professionals in libraries, archives, and museums must make when defining and implementing a metadata strategy
- Provides insight on the new area of *metadata librarianship* while positions are opening in many organizations and many professionals worldwide are charged with managing and sharing metadata
- Focuses on metadata usability and the careful definition of what a digital library system must do in order to define a metadata strategy
- Explains key concepts of interoperability of digital library systems to information professionals
- Written by professionals who have concrete experience with metadata creation, sharing, reprocessing and aggregation in multiple sectors, particularly libraries, archives and museums. **[4]**

4. Metadata for Repositories and Services

Designing effective mechanisms for such repositories will enable large-scale commercial publishing on the Web. One repository model, the Kahn-Wile ski Digital Object Repository, supports

formal specification of the services, policies, and transaction methods associated with a collection of resources. Research on repository architectures and their metadata will need to balance market forces and organizational needs to ensure that the technological options enable rather than constrain the expression of policy **[5].**

5. Metadata Functions

Resource discovery

- Allowing resources to be found by relevant criteria.
- Identifying resources.
- Bringing similar resources together.
- Distinguishing dissimilar resources.
- Giving location information.

Organizing e-resources

- Organizing links to resources based on audience or topic.
- Building these pages dynamically from metadata stored in databases.

Facilitating interoperability

- Using defined metadata schemes, shared transfer protocols, and crosswalks between schemes, resources across the network can be searched more seamlessly.
- Cross-system search, e.g., using Z39.50 protocol.
- Metadata harvesting, e.g., OAI protocol.

Digital identification

- Elements for standard numbers, e.g., ISBN
- The location of a digital object may also be given using: a file name
- A URL Some persistent identifiers, e.g., PURL (Persistent URL); DOI (Digital Object Identifier)
- Combined metadata to act as a set of identifying data, differentiating one object from another for validation purposes.

Archiving and preservation

- Challenges:
- Digital information is fragile and can be corrupted or altered;
- It may become unusable as storage technologies change.
- Metadata key to ensuring that resources will survive and continue to be accessible into the future. Archiving and preservation require special elements:
- To track the lineage of a digital object,
- To detail its physical characteristics, and
- To document its behavior in order to emulate it in future technologies **[6].**

6. Metadata Schemas

There are literally hundreds of metadata schemas to choose from and the number is growing rapidly, as different communities seek to meet the specific needs of their members. Recognizing the need to answer the question of how can a simple metadata record be defined that sufficiently describes a wide range of electronic documents, the Online Computer Library Center (OCLC) of which the University of Queensland Library is currently the only full member in Australia, combined with the National Center for Supercomputing Applications (NCSA) to sponsor the first Metadata Workshop in March, 1995 in Dublin, Ohio [DC1]. The primary outcome of the workshop was a set of 13 elements (subsequently increased to 15) named the Dublin Metadata Core Element Set (known as Dublin Core). Dublin Core was proposed as the minimum number of metadata elements required to facilitate the discovery of document-like objects in a networked environment such as the Internet.

Many different metadata schemes are being developed as standards across disciplines, such as library science, education, archiving, e-commerce, and arts. In the table below, an overview of available metadata standards is given.

Table-1: Overview of available metadata Stadards

Name	Focus	Description
DDI	Archiving and Social Science	The Data Documentation Initiative is an international effort to establish a standard for technical documentation describing social science data. A membership-based Alliance is developing the DDI specification, which is written in XML.
EAD	Archiving	Encoded Archival Description - a standard for encoding archival finding aids using XML in archival and manuscript repositories.
CDWA	Arts	Categories for the Description of Works of Art is a conceptual framework for describing and accessing information about works of art, architecture, and other material culture.
VRA Core	Arts	Visual Resources Association – the standard provides a categorical organization for the description of works of visual culture as well as the images that document them.
Darwin Core	Biology	The Darwin Core is a metadata specification for information about the geographic occurrence of species and the existence of specimens in collections.
ONIX	Book industry	Online Information Exchange - international standard for representing and communicating book industry product information in electronic form.
CWM	Data warehousing	The main purpose of the Common Warehouse Metamodel is to enable easy interchange of warehouse and business intelligence metadata in distributed heterogeneous environments.
IEEE LOM	Education	Learning Objects Metadata - specifies the syntax and semantics of Learning Object Metadata.
CSDGM	Geographic data	Content Standard for Digital Geospatial Metadata maintained by the Federal Geographic Data Committee (FDGC).
e-GMS	Government	The e-Government Metadata Standard (E-GMS) defines the metadata elements for information resources to ensure maximum consistency of metadata across public sector organizations in the UK.

GILS	Government/ Organizations	The Global Information Locator Service defines an open, low-cost, and scalable standard so that governments, companies, or other organizations can help searchers find information.
TEI	Humanities, social sciences and linguistics	Text Encoding Initiative - a standard for the representation of texts in digital form, chiefly in the humanities, social sciences and linguistics.
NISO MIX	Images	Z39.87 Data dictionary - technical metadata for digital still images (MIX) - NISO Metadata for Images in XML is an XML schema for a set of technical data elements required to manage digital image collections.
INDECS	Intellectual property	Indecs Content Model - Interoperability of Data in E-Commerce Systems addresses the need to put different creation identifiers and metadata into a framework to support the management of intellectual property rights.
MARC	Librarianship	MARC - MAchine Readable Cataloging - standards for the representation and communication of bibliographic and related information in machine-readable form.
METS	Librarianship	Metadata Encoding and Transmission Standard - an XML schema for encoding descriptive, administrative, and structural metadata regarding objects within a digital library.
MODS	Librarianship	Metadata Object Description Schema - is a schema for a bibliographic element set that may be used for a variety of purposes, and particularly for library applications.
XOBIS	Librarianship	XML Organic Bibliographic Information Schema - a XML schema for modeling MARC data.
PBCore	Media	PBCore is a Metadata & Cataloging Resource for Public Broadcasters & Associated Communities
MPEG-7	Multimedia	The Multimedia Content Description Interface MPEG-7 is a ISO/IEC standard and specifies a set of descriptors to describe various types of multimedia information and is developed by the Moving Picture Experts Group.
MEI	Music notation	Music Encoding Initiative is a community-driven effort to create a commonly-accepted, digital, symbolic representation of music notation documents.
Dublin Core	Networked resources	Dublin Core - interoperable online metadata standard focused on networked resources. Dublin Core Website: http://dublincore.org/
DOI	Networked resources	Digital Object Identifier - provides a system for the identification and hence management of information ("content") on digital networks, providing persistence and semantic interoperability.
ISO/IEC 11179	Organizations	ISO/IEC 11179 Standard that describes the metadata and activities needed to manage data elements in a registry to create a common understanding of data across organizational elements and between organizations.
ISO 23081	Records management	ISO 23081 - two-part technical specification defining metadata needed to manage records. Part 1 addresses principles, part 2 addresses conceptual and implementation issues.
MoReq2	Records management	MoReq2 - A specification describing the MOdel REQuirements for the management of electronic records.
DIF	Scientific data sets	Directory Interchange Format - a descriptive and standardized format for exchanging information about scientific data sets.

6.1 Dublin Core Metadata schema

Element	Element description
Creator	Person or organization primarily responsible for creating the intellectual content of the resource, e.g. authors in the case of written documents, artists, photographers, etc. in the case of visual resources.
Publisher	The entity (e.g. agency including unit/branch/section) responsible for making the resource available in its present form, such as a publishing house, a university department, or a corporate entity.
Contributor	Person or organization not specified in a Creator element who has made significant intellectual contributions to the resource but whose contribution is secondary to any person or organization specified in a Creator element, e.g. editor, transcriber, illustrator.
Rights Management	A rights management statement, an identifier that links to a rights management statement.
Title	The name given to the resource, usually by the creator or publisher. Can be the same as the title of the resource, or may be more descriptive
Subject	The topic of the resource. Typically, will be expressed as keywords or phrases that describe the subject or content of the resource. Controlled vocabularies and formal classification schemes are encouraged.
Date	A date associated with the creation or availability of the resource.
Identifier	A string or number used to uniquely identify the resource. Examples for networked resources include URLs, Purls and URNs. ISBN or other formal names can be used.
Description	A textual description of the content of the resource, including abstracts in the case of document-like objects or content descriptions in the case of visual resources.
Source	The work, either print or electronic, from which this object is derived, if applicable. Source is not applicable if the present resource is in its original form.
Language	The language of the intellectual content of the resource.
Relation	Relationship to other resources, e.g. images in a document, chapters in a book, items in a collection.
Coverage	Spatial locations and temporal duration characteristic of the resource.
Type	The category of the resource, such as home page, novel, poem, working paper, technical report, essay, dictionary.
Format	The data format of the resource, used to identify the software and possibly hardware that might be needed to display or operate the resource, e.g. postscript, HTML, text, jpeg, XML.

8. Standards of Metadata

- Metadata schemas (also called schemes) generally specify names of elements and their semantics.
- Optionally, they may specify:
- Rules for how content must be formulated (for example, how to identify the main title)
- Representation rules for content (for example, capitalization rules), and
- Allowable content values (for example, terms must be used from a specified controlled vocabulary).
- Many metadata schemas are being developed in a variety of user environments and disciplines.

Information Resource Description

- **Dublin Core:** The Dublin Core Metadata Element Set is a standard for cross-domain information resource description. Dublin Core Metadata Element Set: http://dublincore.org/documents/dces/

  Metadata Terms: http://dublincore.org/documents/dcmi-terms/
- **MARC:** MARC provides the mechanism by which computers exchange, use, and interpret bibliographic information, and its data elements make up the foundation of most library catalogs used today. MARC became USMARC in the 1980s and MARC 21 in the late 1990s.
- **MODS: Metadata Object Description Schema** includes a subset of MARC fields and uses language-based tags rather than numeric ones, in some cases regrouping elements from the MARC 21 bibliographic format. MODS are expressed using the XML schema language of the World Wide Web Consortium. http://www.loc.gov/standards/mods/. [7]

Cultural Objects and Visual Resources

- **CDWA:** Categories for the Description of Works of Art, A standard for describing works of art, architecture, groups of objects, and visual and textual surrogates. http://www.getty.edu/research/conducting_research/standards/cdwa/index.html.
- **VRA Core Categories version 3.0 :** For creating records to describe works of visual culture as well as the images that document them. http://www.vraweb.org/projects/vracore3/.
- **VRA Core Categories version 4.0** http://www.vraweb.org/projects/vracore4/index.html

Educational-purpose

- **LOM:** Learning Object Metadata: Focuses on the minimal set of attributes needed to allow learning objects to be managed, located, and evaluated. Learning Objects are defined here as any entity, digital or non-digital, which can be used, re-used or referenced during technology, supported learning **[8]**.

Archives and Preservation

- **EAD**: EDA (Encoded Archival Description) A standard for encoding archival finding aids using Extensible Markup Language (XML). http://www.lcweb.loc.gov/ead/
- **PREMIS**: PREMIS (Preservation Metadata: Implementation Strategies) Defines "core" set of preservation metadata elements, with supporting data dictionary, applicable to a broad range of digital preservation activitieshttp://www.oclc.org/research/projects/pmwg/

E-Commerce

- **The INDECS Project**: Created to address the need, in the digital environment, to put different creation identifiers and their supporting metadata into a framework where they could operate side by side, especially to support the management of intellectual property rights. http://www.indecs.org/
- **ONIX (Online Information Exchange)**: It has elements to record a wide range of evaluative and promotional information as well as basic bibliographic and trade data. http://www.editeur.org/onix.html

Agents

- **FOAF:** The Friend of a Friend The FOAF project is based around the use of machine readable Web homepages for people, groups, companies, etc. The "FOAF vocabulary" provides a collection of basic terms that can be used in these Web pages. : http://www.foaf-project.org/
- **RDF-vCARD**: Representing vCard Objects in RDF/XML http://www.w3.org/TR/vcard-rdf
- **RDF:** This note specifies a Resource Description Framework, expression that corresponds to the vCard electronic business card profile defined by RFC 2426 [VCARD].

Geospatial Data

- **CSDGM:** Content Standards for Digital Geospatial Metadata *A standard for* supporting the collection and processing of geospatial metadata. It is intended to be useable by all levels of government and the private sector. http://www.fgdc.gov/metadata/csdgm/index_html

Media-Specific

MPEG-4 and MPEG-7 for Audio and Video (ISO/IEC standards developed by MPEG (Moving Picture Experts Group)

- **MPEG-4:** A standard for multimedia of the fixed and mobile web. Overview: http://www.chiariglione.org/mpeg/standards/mpeg-4/mpeg-4.html
- **MPEG-7:** A standard for description and search of audio and visual content. Multimedia Content Description Interface Overview http://www.chiariglione.org/mpeg/standards/mpeg-7/mpeg-7.html

9. Conclusion

Metadata is a dynamic topic and has evolved considerably since the initial *ELIS* metadata entry was published in 2002 **[10].** This current entry stands as a new article, with fresh coverage of the earlier topics (e.g., the definition of metadata and metadata generation), and greater attention to metadata models. This entry provides new facts uncovered on the history of metadata; presents an overview different metadata types, functions, and schemes; provides a series of domain-specific definition for metadata and discusses the various types of standards comprising metadata architectures.

The remarkable growth in metadata activities has been extremely positive, resulting in greater access to information and better documentation. However, like many developments, this growth has not been without challenges. Determining how to generate metadata (emphasizing an automatic or manual approach), and who to involve in the process (professionals, technical assistants, content creators, the public), presents metadata quality and workflow challenges. Striving for interoperability and sharing metadata can pit local metadata needs against higher level goals. And, perhaps the most exciting challenges stem from the goal of metadata reuse.

Although accessible online, a digital library is not identical to a website or a portal. However, while portals, specialized websites and search engines cover a wide range of subject areas, digital libraries are more narrowly focused around one or a specific group of disciplines. Digital libraries, moreover, attach content specific and highly descriptive metadata such as,

descriptors or keywords to describe each item in the collection. Therefore, searches in a digital library can produce more useful results, save time and effort in searching, and in the best of cases browsers may directly access the text or multimedia content for which they executed their search.

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Relevance of Wi-Fi Tools in Academic Library Service: *An Overview*

Raghunadha Reddy, T **Kumar, K**

Abstract

The paper presents the technological aspects of Wi-Fi technology and explores some of the major issues of wireless networks in libraries and components of the Wi-Fi technology. Fortunately, the technology has advanced considerably and can be deployed for keeping in view the user's needs; the libraries provide new technology-based services to them. To know the use of these new facilities/services among the library users, without sacrificing the security of library's network. Infrastructure facilities require for the libraries to go Wi-Fi network. The paper also discussed the availability of commercial and free Wi-Fi services with its advantages and disadvantages.

Keywords : Wi-Fi Technology, WLAN, VPN, Protocol

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Security System of Academic Libraries in Digital Era: *An Overview*

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Abstract

Digital era has provided new challenges and opportunities for higher education for teaching, learning and research. The developments in ICTs, libraries have been integrated at the electronic frontier for rapid organization and transfer of information. Digital resources in various formats are being added in libraries. The paper highlights the security systems in academics libraries and changing roles and mission of libraries in the digital age. Various digital resources, organization, services, user interface are discussed.

Keywords: Digital Library, Security System, Library Security, Academic Libraries

1. Introduction

Digital age we are in now, has provided research and higher education and the libraries in institutions of higher learning are to face new challenges. In this new phase of information and new technologies, the science and technology are becoming the critical factors of the so-called "Value Added Economy". The institutions of higher education are concerned with the impact of more fundamental forces like financial imperatives, societal needs, technological drivers, multidisciplinary research and the libraries at the digital convergence that are driving towards change. Many of these relate to the emerging digital technology. Library associated to a university, college or any educational institution is known as academic library. Academic libraries differ from a public library and special library in purpose and of its services. The main function of an academic library is to act as an auxiliary support to its parent institution in carrying out its objectives mainly education. Library is undoubtedly important intellectual resource of any academic community and helps them for its self-development and to fulfill the educational curriculum requirements by promoting studies and research.

2. Academic Libraries Role and Mission

In Academic Libraries digital collection can easily be preserved on computer systems or other suitable media and access can be given through computer networks, local area networks, wide area networks or the Internet. The digital content cannot be tampered or stolen by the library users as the original content is available with the server with back up. But, it is not so easy in the case of physical collections. The library has to preserve the physical collections for the use of its clients as well as preserve for future generations for which it has to overcome the unethical means of losses.

The importance of academic libraries was aptly recorded by the Education Commission headed by Prof. D.S. Kothari in its report that "the academic library should provide library facilities and services necessary for success of all formal programmes of instruction, open the door to the world of knowledge that lies beyond the boundaries of own field of qualification and bring books ,students and scholars, together under conditions which encourage reading pleasure, self discovery, personal growth and the sharpening of intellectual curiosity". Therefore, the academic library has to build a strong collection in the form of physical, electronic and digital to cater to the knowledge requirements of students, faculty members, research scholars and scientists of the academic institution (**Kothari**, 1966).

There has been a paradigm shift the library services and the roles of information professionals. Some of the changes that have observed in the academic libraries are:

- There has been transition from print to electronic media.
- There has been an increased demand for accountability.
- Emphasis has been on teamwork rather than individual contribution
- The users have become more 'Active Users' than 'Passive Users'.
- Emphasis in the libraries has been on 'Access' to 'Acquisition'.
- Provide continuing education and training to its users.
- Organize information resources in print and non-print considering the changing needs.
- Provide Human and technologically moderate access to information.
- Develop a co-operative user centered culture.
- Develop information/knowledge resources focused on patron's needs.

3. Organization of Digital Resources

Libraries have used a number of tools for organizing their information resources, including Translation schemes, classification schemes, catalogue codes, bibliographic formats and vocabulary control tools. These tools have been user for organizing web information resources, but it has been noted that these tools are inadequate for the creation of metadata for digital information resources to support resource discovery and information access. Hence new metadata standards have been developed. Markup languages like SGML, HTML and XML have been designed to encode sections of electronic documents in order to enable computers to process the text automatically.

3.1 Classification of Digital Information

Many of the web directories and subject gateways provide access to the classified information resources on the web. The following web are some typical examples of use of classification schemes and subject heading list in the organization of web information resources.

- **EELS and EEVL** (http://eels.lub.lu.se and www.eevl.ac.uk): A gateway for quality assessed engineering information resources on the Internet.
- **Scorpion** (http://orc.rsch.oclc.org:6109/): SCORPION assign subject codes to a document and the document can be treated as query against a DDC database using ranked retrieval.
- **Cyberstacks** (www.purblic.iastate.edu/CYBERSTACK/): Library of Congress classification scheme has been used for locating the documents on stacks.
- **ScoutReport** (www.ilrt.bris.ac.uk/mirrors/scout/addserv/signpost/help.html#01): US National Science Foundation Project. About 12,711 select critical Internet sites and mail lists can be browsed.
- **California Digital Library** (www.cdlib.org): Specific collection and catalogues can be accessed.
- **Biome** (www.biome.ac.uk): Health and life sciences. One can choose subject specific gateways – OMNI, VetGate, BioResearch, NATURAL and AgriFor. CAB thesaurus can be used.
- **Infomine** (http://infomine.ucr.edu): Provides access to several thousands of web resources comprising databases, e-journals, text books, conference proceedings, and guides to the internet for most disciplines, which can be browsed by author, title and keyword.

- **Cyberdewey** (www.anthus.com/CyberDewey/CyberDewey.html): Users can select specific Dewey class or can select a term or phrase from alphabetical index. This leads for list of topics.
- **THOMAS and American Memory** (http://thomas.loc.gov/ and http://memory.loc.gov/): Legislation information of library of congress.
- **ACM Portal:** The ACM Digital Library (http://portal.ac.org): Journals and conference papers.
- **Sosig** (www.sosig.ac.uk): Social science gateway is an Internet service that provides access to selected high quality information. Thesaurus can be used for search term.
- **Bubl Link** (www.bubl.ac.uk/link/): Provides access to a catalogue of over 11,000 selected Internet resources, catalogued according to DDC. Search can be made using Dewey class numbers.

4. Digital Library Services

Developments in the Internet and Web technologies have brought significant changes in the notion of traditional reference services and a number of web-based 'expert services' are now offered by many non library organization. Though the 'expert service' does not form part of the current available digital libraries of the future.

4.1 Reference and Information Services on the Web

- Xrefer (www.xrefer.com/).
- Mediaeater Reference Desk (www.mediaeater.com/easy-acess/ref.html).
- The Electronic Library (http://ask.elibrary.com/redesk.asp).
- All Experts – (All subjects available free).
- The Internet Library for Librarians (www.itcompany.com/inforetriever/).
- Information Please (www.infoplease.com).
- Britannica (www.britannica.com).
- LiveAdvice.Com – (All subjects – Fee based).
- Professional City – (Law, Accounting, Marketing – Fee based).
- The Internet Public Library (www.ipl.org).
- Reference Desk (www.referencedesk.org/).
- Find/SVP – (Business – Fee based).
- Askme – (All subjects available free).

5. Library Security and Need

It is important to provide a safe and security facility for library staff, library resources and equipment, and library users. It is also important that the security system should perform these functions as seamlessly as possible, without interfering with the library's objective of easily and simply providing user services. Library security includes safety of staff, users and the protection of the library and its collections, fire protection and disaster planning (**Brown and Patkus**, 2003).

- Many sections of print media are out dated
- To delet the less important topics from print media

- Conditioned expectations of the people
- Essential for information markets
- Choice of perceived quality information of source
- Predicting future uncertainty
- Effective knowledge management
- Keeping pace with competition
- Scientific placement

6. Library Security Systems

Most of the libraries do not allow the users with notebooks, record notes, etc. and they insist depositing such things in the property counters provided exclusively for this purpose. They permit the users to take loose sheets or small scribbling pads only inside the library. Visual inspection by library staff through floor walks is another manual method followed by librarians to overcome the unethical practices *viz.,* malicious writes, injures, defaces, cuts, mutilates and destruction of library materials within the library premises.

7. Electronic Security Systems (ESS)

- Electromagnetic System;
- Electronic Surveillance Cameras; and
- Radio Frequency Identification (RFID) System.

8. Electro-Magnetic System

The Electro-magnetic (EM) security system is little bit old technology which was used in libraries for decades. It is dominant in Europe and used by many libraries around the world. In this technology, a magnetic, iron-containing strip with an adhesive layer is attached to the library material. This strip is not removed at checkout; it is simply deactivated by a scanner that uses a specific highly intense magnetic field. One of the advantages of the EM strip is that it can be re-activated and used at a low cost.

9. Radio Frequency Identification (RFID) System

RFID-based systems move beyond security to become tracking systems that combine security with more efficient tracking of materials throughout the library, including easier and faster charge and discharge, inventorying, and materials handling. List of few Indian libraries who have implemented RFID Technology at present

- NIT, Rourkela, Orissa.
- Dayananda Sagar Institutions, Bangalore
- CMR Institute of Technology, Bangalore
- IIT Chennai, VTLS LMS
- IIM Shillong, VTLS
- Nirma University, Softlink Asia (Alice Software)
- PRL, Ahmedabad
- Anna University, Chennai

- BCL, Delhi, Libsys
- Babaria Institute, Vadodara, Gujarat
- IIT Kharagpur,
- IIM Indore, VTLS
- Pandit Deendayal Petroleum University, Ahmedabad, Alice Software
- Chandragupt Institute of management Patna, VTLS
- Sandip Institute of Technology & Research, Nashik, KOHA
- Marwadi Education Foundation Group of institutions, Rajkot, KOHA
- IIM, Lucknow, Libsys
- IGCAR, Chennai, Libsys
- Parliament Library, Delhi
- Punjab University, Chandigarh
- Bank of Baroda Library , Mumbai
- Kerala State Library
- NIT, Surat
- Jaykar Library, Pune
- IISC, Bangalore, Libsys

The RFID system offers the following advantages to the library managers and users;

- Reduction in the amount of time required to perform circulation operations
- Simplified user self-charging and discharging

10. Elements of Electronic Security Systems

The major elements of any electronic security system include (a) Burglar protection; (b) Collection security; (c) Access control and (d) Video surveillance

10.1. Burglar Protection

A burglar protection system includes sensors to detect an intrusion, alarms, and notification to the appropriate authorities. There are different ways of classifying the types of sensor systems. Sensors can be active or passive, covert or visible, volumetric or line detection. They can also be defined by their mode of application.

10.2. Collection Security

There are many methods of ensuring that no materials leave the library without being checked out. These systems always contain a security device that is placed on the materials(including books, magazines, videocassettes, audiocassettes, CDs, and DVDs) as well as a detection device that is typically located at all library exits. The detection devices must be safe for magnetic media and usually have audible and/or visible alarms. If desired, the audible alarm can be a voice alarm. There are two major methods currently used for detection: electromagnetic detection and radio frequency identification (RFID).

10.3. Electronic Access Control

Electronic access technology is the best system for controlling access to library buildings, facilities, and rooms. Authorized people are allowed to enter a controlled area by automatic unlocking of the door. For extra security, access control can be used in conjunction with video surveillance to control and monitor large facilities. Access cards can be integrated as photo ID cards for library employees and can be used as temporary "keys" for library clientele to have access to restricted areas.

10.4. Video surveillance

Academic libraries can use CCTV to identify visitors and employees, monitor work areas, deter theft, and ensure the security of the premises and other facilities. The system can also be used to monitor and record evidence on clientele and employees' misconduct. CCTV systems are quickly becoming one of the most important and economical security and safety tools adapted by the libraries.

11. Pros and Cons of Electronic Security Systems

Electronic Security Systems (ESS) was felt by the majority of library authorities to be most effective tool along with the following advantages:

- Effective in reducing levels of theft of library materials
- Effective in controlling the unethical practices within the Library premises
- Cost effective
- Easy to install and maintain

A few RFID Service providers in India (**Rathinasabapathy**, 2005)

- TS Informatics, Delhi
- 3M, Bangalore
- Bartronics India Ltd, Hyderabad
- Grandeur Technologies, Chennai
- HCL Info systems Ltd., Noida
- Rapid Radio Solutions, Ahmedabad (More than 15 projects in India)
- Libsys Corporation, Gurgaon (More than 15 projects in India)
- Edutech, Chennai
- Ecole Solutions, Bangalore
- I-Tek, Pune
- Gemini Traze, Chennai

12. Conclusion

Academic libraries should create and implement security policies, procedures and plans in an effective and efficient manner. As the price of books and journals is rising exponentially, and the libraries are to diversify into other expensive 'non-book' materials, not forgetting the latest technology, it is the need of the hour to the academic library to consider installation of electronic security systems to prevent and minimize the unethical losses occurred to the academic library

collections. Further, there is no point in spending millions of rupees on new acquisitions of information resources without installing such security systems.

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Spinning the Semantic Web:
An Introduction to Information Retrieval in the Modern Era Libraries

Ajit Prabhakaran **Pankaj Upreti** **Prem Prakash Shukla**

Abstract

This article explores how to transform the web into a web of data, rather than a web of documents. Web resources must cease to be undifferentiated strings of text; instead, they have to be able to reveal meaning within the text. Meaning, of course, in this case is: meaning that machines can process. "Semantic Web Technology" provides a high-level description, with examples, of the main standards and concepts: extensible markup language (XML), Resource Description Framework (RDF), URI, SPARQL, SWRL XFN OWL API OAUTH etc ontologies, and their utility in information retrieval, concluding with mention of more advanced SW languages and their characteristics. During the next ten years, web-based technologies will improve the ability to embed semantic structures in documents, and to build structured vocabularies and ontologies to define terms, concepts and relationships. SW will impact extraordinary advances in the visibility and exploration of information-especially in the ability of systems to interpret documents and infer meaning without human intervention. Thus it will be a boon for the librarians' expertise in organizing data and in structuring information.

Keywords : Semantic web, web 3.0, web technologies, web ontologies

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Transferring MARC 21 Formats for Bibliographic data to RDF: *A Semantic Approach*

Ujjal Marjit **Kumar Sharma** **Utpal Biswas**

Abstract

In this modern era, machine readable cataloguing system has influenced the world to facilitate the task of exchanging bibliography and related information among libraries. MARC 21 is the latest and well-liked format which allows exchanging, searching and indexing of library data in the web in an efficient, well-organized, and effective way. Fast growing of Semantic Web technologies has brought completely different opinions about semantic data offered in the web. Moreover, sharing, reusing, exchanging, and interlinking between diverse data sources are the key benefits of the Semantic Web. In this paper we move towards the translation of MARC 21 format for Bibliographic data into RDF (Resource Description Framework). In addition to that, how these translated semantically enriched library data caters benefits such as its accessible and reusable in the domain of any format of library is discussed elaborately.

Keywords : MARC 21, Semantic Web, RDF, Library Data, Information Science

1. Introduction

Today, the machine readable cataloguing has emerged as a new world of library and information science. An increasing number of online bibliography databases are being created to achieve the fast access and to exchange the library data among the libraries. The cataloguing system helps librarians to search for a particular bibliographic item easily and quickly by following the information recorded in the catalog. With the advent of online or machine readable catalog, the searching and the access process has been improved and the tasks of manually entering bibliographic information has been evolved. Machine readable cataloguing has played a significant role to make the library information accessible through the machines. Several libraries can exchange their library data between the machines. But they are still far from enabling the library metadata as a part of the web. The task of sharing and interconnecting between different data sources needs to be more transparent. Semantic Web focuses on the data rather than documents. It enables library data to be discovered through the web. It also helps to achieve fast navigation among the library data and improves their visibility, reusabliity, heterogeneity, and interoperability. In addition, every library resource such as a book, author, place will have their unique identifier which is available over the web. Efficient SPARQL queries over library data would help librarians to easily find the required information with a very less effort.

In the pre-semantic web era, the traditional web dealt with the web of documents rather than web of data. The Semantic Web is "*an extension of the current Web in which information is given well-defined meaning, better enabling computers and people to work in cooperation.*"- (Tim Berners-Lee, James Hendler, Ora Lassila, May 2001). More human intervention was required to handle the data in the general web. In case of Semantic Web no human interaction is required to handle the data, as it is machine processable. Since it focuses on data rather than documents, which means that the web directly connects data to data. It allows the information presented in the web to be consumed by the machine. It enables, analyses, searches, aggregates, and combines information from different sources. Apart from these Semantic Web offers following benefits: information sharing, information reusing, and interconnection of data among different data sources in the web.

Semantic Web uses graph database to store the data and allows data to be self-described in a more structured way so that the machine can easily process and analyse them. RDF and Ontologies are the main building blocks of Semantic Web. RDF describes resource's properties and relationship whereas ontology is a part of data modelling which provides a collection of terms and knowledge to share the information. Ontologies provide the controlled vocabularies of the concepts and enable the information exchange process between both humans and machines (Kaushal Giri, 2011).

In this paper, we focus on converting *MARC 21 Format for Bibliographic Data* into RDF and then discuss the usefulness of this RDF form of bibliographic information. We also discuss the trade-offs, if any, in the process of converting MARC 21 records into RDF. This paper is organised as follows: we discuss the related work in Section 2, Section 3 discusses a brief concept of RDF, in Section 4 we briefly discuss the MARC 21 record structure, we present our proposed work in Section 5, Section 6 shows the experiment and results, and Section 7 concludes our work.

4. Related Work

For the past several years a number of research scholars and the contributors in library domain have participated in bringing library legacy data into the Semantic Web. A standard technique in bringing these legacy data into Semantic Web is yet to be emerged. A number of prominent researchers and organizations have contributed their work related to controlled vocabularies, classification schemes, Semantic Web and library data. Few of them are from Library of Congress Controlled Vocabularies (Corey A. Harper, Barbara B. Tillett, 2007), SKOS Simple Knowledge Organization System Primer. Rob Styles et. al. (Rob Styles, Danny Ayers, Nadeem Shabir, 2008 Jan 27) have presented an approach on converting the MARC 21 records to their RDF equivalent by applying mapping rules between MARC 21 and RDF. They have shown how the resulting RDF library resources such as the people, books, places etc. could be linked to other sources like Library of Congress Linked Data sources, DBPedia, Geonames etc. Jennifer Bowen (Jennifer Bowen, 2010), has also presented a framework called eXtensible Catalog (XC) which facilitates the conversion of library legacy data to RDF datasets.

Variety of community and agencies has also announced the library structured metadata as Open RDF datasets, value vocabularies, and metadata element sets. A couple of links are presented in Library Linked Data Incubator Group. Few of them are British National Library (BNB), Europeana Linked Open Data, Cambridge University Library dataset, Hungarian National Library, Library of Congress Subject Headings, Biblioteca Nacional de Espana (BNE, Spanish National Library) (Daniel Vila-Suero, Boris Villazon-Terrazas, and Asuncion Gomez-Perez).

Resource Description Framework (RDF)

RDF is a data modelling framework for representing information about resources in the web. It uses the graph data model and URIs to describe the information and represents the information as

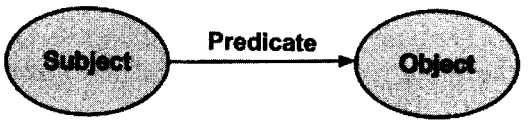


Figure 1: SPO form of RDF

a series of statements in a triple (*spo*) form- *Subject (s)*, *Predicate (p)*, and *Object (o)* as shown in the Figure 1. *Subject* represents a resource which is being described, *Predicate* represents resource's property or relationship, and the *Object* represents property value, which may be a literal as well as another resource. Each of these triples, except for literal values, can be described using URIs that uniquely identifies a resource on the web. RDF describes a resource using its *rdf: Description* container, Listing 1 shows excerpt of an example resource described using RDF. In this example, the resource "A Book" identified by the *about* attribute is being the *Subject,* the tags <lib:creator>, <marcont:hasPages> are the *Predicate,* and the values "An Author", "100" are the *Objects.* Therefore, by this example we can say that "A Book" created by "An Author" has "100" number of pages. RDF is also used in many other areas such as social networking, personal information, knowledge management etc. RDF data are generally stored in the Triplestore and are retrieved using its native query language called SPARQL (SPARQL Protocol and RDF Query Language).

Listing 1:

```
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:lib="http://www.zvon.org/library"
  xmlns:marcont="http://www.marcont.org/ontology/2.1#">
   <rdf:Description about="A Book">
        <lib:creator>An Author</lib:creator>
             <marcont:hasPages>100</lib:pages>
```

- **MARC 21 Format for Bibliographic data**

Early in 1960s, the Library of Congress has developed first machine readable cataloguing project called MARC (MAchine Readable Cataloguing). The major aim behind MARC project was to create and communicate machine readable library data among different library systems. MARC also prevents the issues of data duplicity as well as allows librarians to share bibliographic resources. Library of Congress (LOC) along with British National Bibliography later modified the MARC project. At the same time many other countries have started developing MARC in their own format such as CANMARC, USMARC, UKMARC, AUSMARC, SWEMARC, and INDIMARC. At present, MARC 21 is globally accepted and most popular standard format used by most of the libraries to exchange the library related information adhering to ISO 2709 standard. MARC 21 is an international format which was evolved from the combination of USMARC, UKMARC, and CANMARC formats and it serves as the basis for presentation and exchange of bibliography and related information. MARC 21 format defines five types of records in library catalogs, which are as *MARC 21 Format for Bibliographic Data, Holdings Data, Authority Data, Classification Data,* and *Community Information. MARC 21 Format for Bibliographic Data* describes the publication and physical description of related information of bibliographic material such as a Book, Computer Medias, Music etc.

Listing 2:

```
LEADER 01232nam  2200222 a 4500
001 EX000001
020 $a1416524797
022 $a7898018000
100 1$aDan Brown$q(Dan Brown),$d1964.
243 $1English.
245 10$aAngels & Demons$h[electronic resource].
260  $aRome :$bPocket,$c2006.
300  $a713 p.
```

An excerpt of a MARC 21 format for bibliographic record is shown in the Listing 2. A MARC 21 record is composed of three elements, viz. **Record Structure, Content Designation**, and **Data Contents**. Each of the MARC 21 record structure is again composed of three main components viz, the **Leader**, the **Record Directory** and the **Variable Fields** as shown in the Figure 2. **Leader** consists of the data elements and it provides the information to process the record. The **Record Directory** contains the tags, starting locations, and the length of each field within a record. It is an index to the location of the fields within a record. The Variable Fields are identified as three character numeric fields which contains the data.

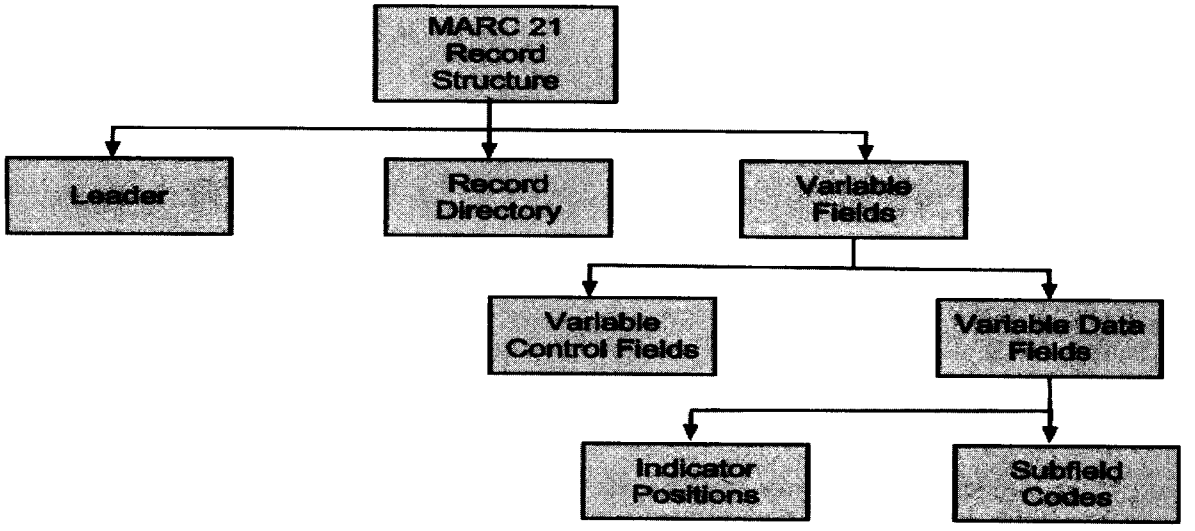


Figure 2: MARC 21 Record Structure

In MARC 21 format, the Variable Fields has two types: **Variable Control Fields** and **Variable Data Fields**. The three character numeric fields or tags 00X fields are identified as the Variable Control Fields whereas the tags from 01X-8XX are identified as the Variable Data Fields. The Variable Data Fields in turn consists of **Indicator Positions, Subfield Codes**, data elements and the field terminators. Each of these control fields, sub fields, and indicator positions are significant and have a specific meaning. While parsing each record and the variable fields we need to give special attention to this information.

- **Proposed Framework**

The proposed framework has been discussed based on the MARC 21 format for bibliographic record as shown in the Listing 2. As shown in the MARC 21 record, the record itself has semantic in its tags. As we had discussed, each of the control fields, data fields, indicator positions and subfields have a specific meaning in MARC 21 knowledge. The main issue behind this knowledge is that humans still have to remember about the meaning of each field, subfields and their indicator and intended positions. They are not straight forward as they are seen. Such type of records also suffers from data redundancy, and during information exchange, issues may arise in understanding whether the two records are talking about the same thing. Usually these issues are overcome by the concept of reusing. The Semantic Web technology has introduced many new techniques to fix such kind of issues. For example, when a resource is created in one system then the resource will have its own unique URI or global identifier.

Now the same resource should not be created again into different system, instead we can share the resource by just linking it with another outside source. Furthermore, the knowledge is bind with the resource itself and its properties, literals and relationships.

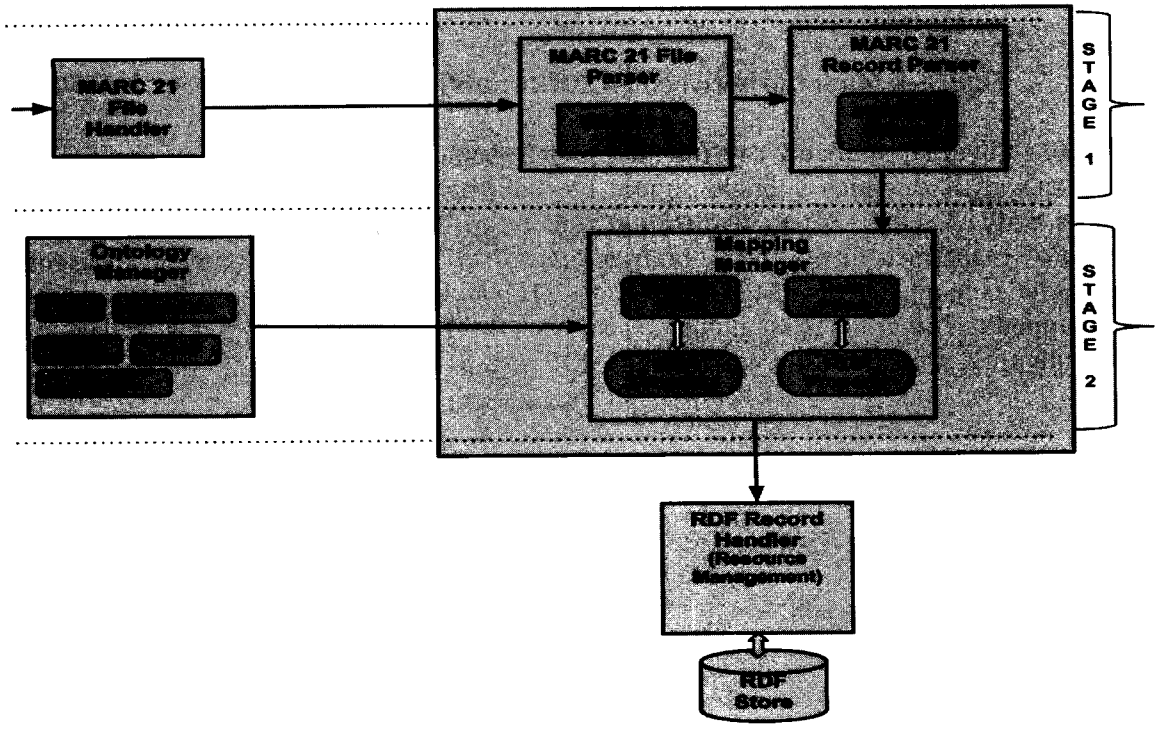


Figure 3: Work flow of the conversion of MARC 21 records to RDF

Figure 3 shows the proposed framework regarding the conversion process of MARC 21 records into RDF. This work is in preliminary stage, where in Stage 1, we start with the MARC 21 file. The MARC 21 file is parsed by the *MARC 21 File Parser* and results into individual MARC 21 records. We start with the straight forward approach to convert each of the record to its equivalent RDF resource.

In Stage 2 the MARC 21 record is parsed by the *MARC 21 Record Parser* which results into the control fields and the data fields. The resulting control fields and the data fields are inputted to

the *Mapping Manager* where the individual fields and subfields are mapped to their equivalent RDF terms. The *Ontology Manager* here acts like a supplier of a valid ontological terms or the knowledge of mapping. A conceptual view of the subfields and their equivalent RDF term is shown in the Figure 4. Each of the variables fields are mapped to their specific mapping classes, which is determined while parsing the individual record based on the next variable field's tag. There may be different subfields in a variable data field and each of these subfield has different meaning in the MARC 21 knowledge.

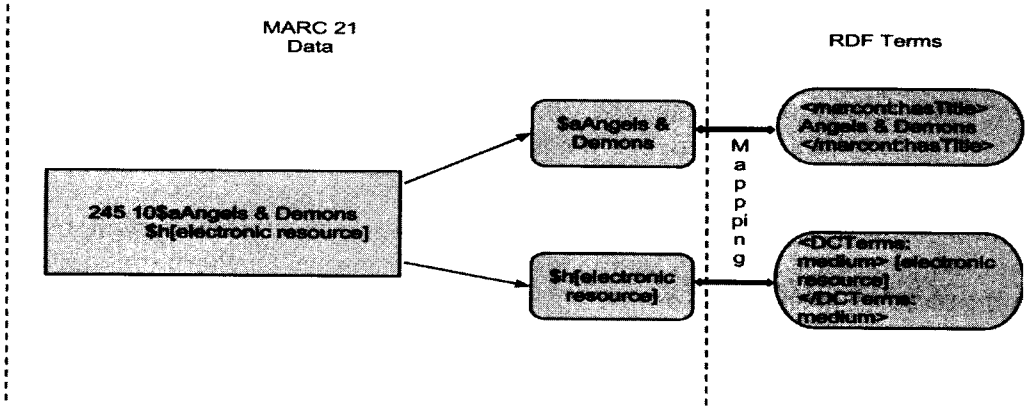


Figure 4: Mapping between MARC 21 subfields and RDF Terms

These individual subfields are mapped to a specific RDF term which is decided by the mapping manager, like, which subfield should be mapped to which RDF/Ontological term. For example, the MARC 21 field "*022 $a7898018000*" which represents the *International Standard Book Number (ISBN)* is mapped to the term "*<marcont:hasISBN>*", "*100 1$aDan*" which represents the "*Personal Name*" is mapped to "*<FOAF:name>*", "*243 $1English*" which represents the "*Language of a Work*" is mapped to "*<marcont:hasLanguage>*" and so on. The mapped RDF terms, which are also called the individual properties, are added to the RDF resource.

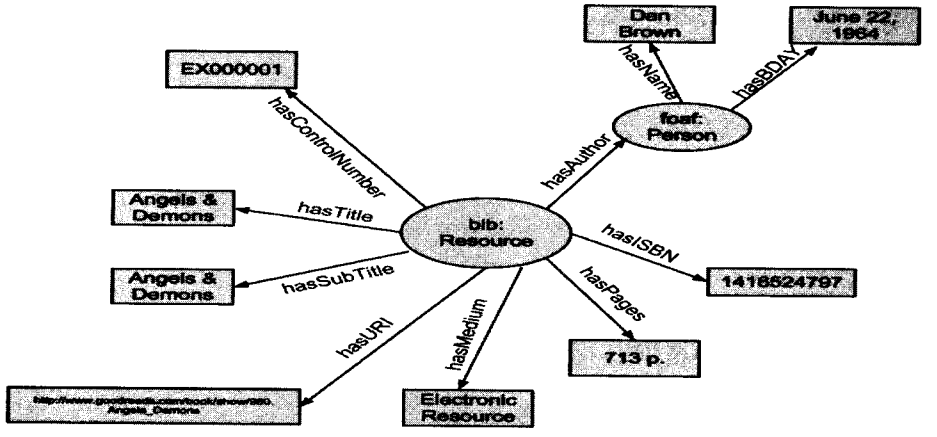


Figure 5: MARC 21 Records as RDF Resource

The resulting RDF terms are then stored into the RDF store. The challenging task in this process is unique assignment of the URIs to each of the resource so that their relationship and attributes are uniquely identified throughout the system. A simplified form of the RDF resource is

shown in the Figure 5 where a bibliography resource has its attribute as another resource, which may be in the same system or in the different source. For example, a bibliography record may have its author as relationship attribute, title as literal attribute, and name of publications as relationship attribute and so on.

Listing 3

```
<rdfs:Description
rdfs:about="http://www.example.record/bibo/01232nam    2200222  a
4500">
  <marcont:hasNumber>EX000001</marcont:hasNumber>
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 <marcont:hasDate> 2006</marcont:hasDate>
  <DC:extent>713 p.</DC:extent>

<marcont:hasURL>http://www.goodreads.com/book/show/960.Angels_
Demons</marcont:hasURL>
```

- **Experiment and Results**

Java version 1.6 along with Apache Jena version 2.7.4 have been used to experiment the proposed work. Jena is a Java framework for building Semantic Web applications and allows integration of OWL and RDFS ontologies. Jena TDB is used to persistently store the RDF datasets. Listing 3 shows the excerpt result of the working version of the project on converting MARC 21 record to RDF. The resulting library data which are semantically described using RDF can be used in various areas. Such information is always consumable by the machine and the machine can easily analyse them based on the user's criteria. They can also be explored through the web or applications relying on the RDF datasets. Several datasets can reuse or integrate them in order to interlink and provide the useful information.

The approach is very preliminary and it still needs several implementations in order to efficiently achieve the overall results. Till this stage a couple of minor tradeoffs have been encountered. While parsing each record we had to carefully handle the control fields, data fields and its subfields, though the indicator positions is not yet handled. Mapping between the RDF terms, control fields & subfields is yet another issue where mapping cannot be done by the machine alone, it needs manual supports. We had to go through the mapping from MARC 21 to several other ontologies in the library domain. K S Chudamani et. al. (K S Chudamani, H C Nagarathna, 2006) have elaborated the mappings from Dublin Core to MARC 21 and other formats which shows that the interoperability is possible among different formats. The mapping issue are overcome by supplying the mapping files separately by the experts or librarians. In this way, it is possible to have mapping inputs from both machine as well as human. While building RDF resources of the related records, a

special attention to the URIs is needed, since the same URIs could be generated more than once. In order to handle this redundancy it required repeatedly query the local RDF store for each parsed MARC 21 record. Apart from these, the knowledge or Ontology, by which RDF terms are assigned to several MARC 21 fields, is the main building block of the Semantic Web. In this approach MarcOnt (Marcin Synak, Sebastian Ryszard Kruk, June 2005), DCTerms, FOAF, and BIBO ontologies have been used. Before assigning a meaningful attribute or relationship it is necessary to choose which vocabulary is needed to represent the information, so that we can consistently generate the URIs and set the RDF links.

- **Conclusion and Future Work**

In this paper a preliminary version of the proposed framework to translate the MARC 21 for bibliographic information into RDF have been discussed. The work is still in progress and further research is needed to overcome the overall benefits of the Semantic Web in the field of library or information science. Linked Data is another sub-topic of the Semantic Web which enables publishing and sharing data on an open, global pool of shared Web of Data. Using Linked Data the library data will be more accessible and reusable through the web and web protocols like HTTP. Converting the MARC 21 format for bibliographic data into Linked Data is our next research goal. Till now only the conversion of *MARC 21 Format for Bibliographic Data* into RDF have been considered. Further research will be carried out on other formats such as *MARC 21 Format for Holdings Data, Authority Data, Classification Data*, and *Community Information.*

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UDC Online: *A Knowledge Organization Tool*

Pranali B. Gedam **Ashwini Paradkar**

Abstract

In the modern techno-savvy era, the traditional library classification scheme 'Universal Decimal Classification' has radically changed its structure and published on Web in 2001 entitled' UDC Online'. The author looks at the value of UDC Online is as a knowledge organization tool. It has created new opportunities to classifier for searching, browsing the class numbers and number building. It is very colorful and user friendly scheme. In this paper, an attempt has been made to give an overview of knowledge organization, UDC Online is a knowledge organization tool, searching, browsing and number building in the database.

Keywords : Knowledge Organization, Classification, UDC Online

1. Introduction

Knowledge Organization is an organization of knowledge. It is an organized structure for arranging or classifying the things and documents. KO is a complete set of universe of concepts and their relations realized and conserved by the people. The knowledge is used by experts, scientists, scholars, students to achieve their different goals. Universe of knowledge not only grows but also changes and expands.

2. Knowledge Organization

The concept "Knowledge Organization" describes a field of study related to Library and Information Science (LIS). KO is a continuous process. It includes the process to sort, arrange and utilise knowledge by means classification and categorisation to the concepts. In this context, KO is about activities such as document description, indexing and classification performed in libraries, databases, archives etc. These activities are done by librarians, archivists, subject specialists as well as by computer algorithms. 'Knowledge Organization Tool' aims to encompass all types of schemes for organizing information and promote knowledge management. It includes library classification schemes which aimto organize universe of knowledge at a general level. A library classification is a system of coding and organizing library materials according to their subject and allocating a call number to that information resource. These systems are used with the purpose of retrieval and manage a collection of the library. These schemes are enable knowledge structuring and management.

3. Objectives of the Study

- To identify Universal Decimal Classification scheme accessible on www and how it organize the universe of knowledge in the database.
- To access the database of UDC Online,
- To define the structure, facilities, services to users

4. UDC Online

UDC is one of the most expanded, most prevalent, developed, revised, up-to-date library classification systems in the world. UDC Online is a well-developed database available through BSI

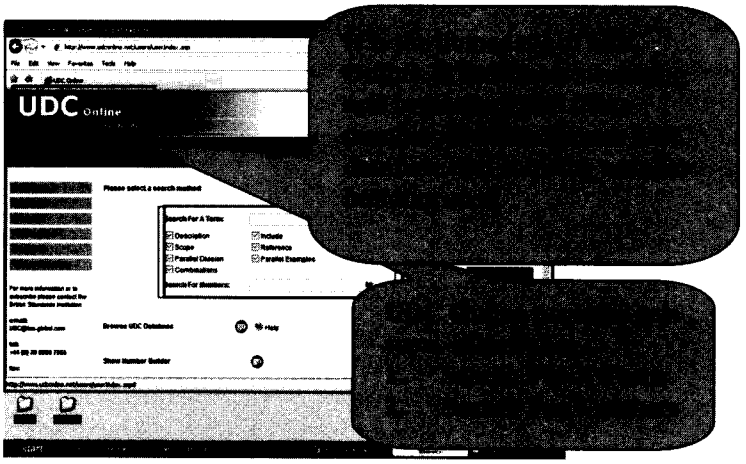
(British Standards Institution). It is an online enhanced version of the complete edition of UDC. This Online version of UDC is available on a yearly subscription and is competitively priced.It also provides trial accounts to users viewing UDC Online and how to search terms and numbers and how to build the numbers in English version. It offers both Authorization and Password to users to logon to UDC Online in Trial Accounts.

Table-4.1: UDC Published on Web

Sr. No.	Year Published	UDC Automation
1	1960	First use of UDC online
2	1980	BSI medium edition, 60.000 classes on magnetic tape
3	1993	UDC Master Reference File
4	2001	UDC on the Web
5	2007	UDC MRF 67600 classes - migration to a new, improved editorial system

[Source:http://www.udconline.net Last Accessed on 3/11/2009)

4.1 UDC Online



This is the Homepage of UDC Online highlighting searching methods. There are two types of searching methods given below:

- Search for a Term
- Search for Numbers

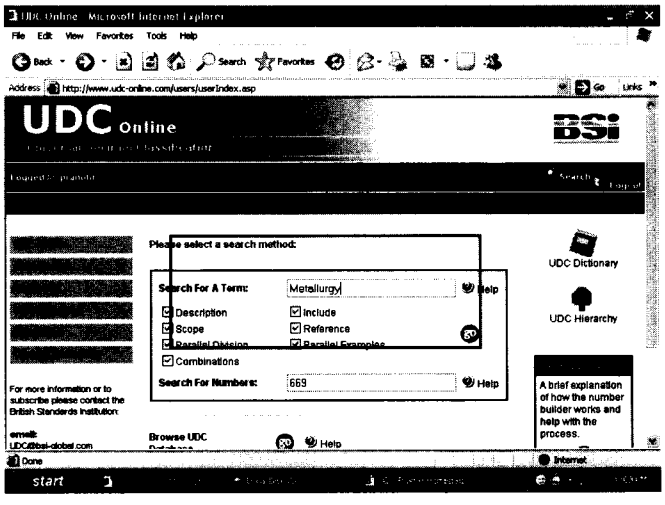
Any method can be selected for searching any UDC numbers or terms. In addition, it also provides 'Browse UDC Database' which gives browse results to users. UDC MRF database was maintained with text retrieval software and was distributed as a database file – it made the searching of captions and examples very easy.

4.1.1 Special Feature of UDC Online (Web)

- UDC Online is an international database.
- It has developed colour combined numbers specially Main Tables, Common Auxiliaries and Special Auxiliaries
- It has a provision for powerful search and browse.

- It enables broadening and narrowing searches.
- It enables to cover new subjects easily.
- There are two different search methods available.
- It provides search through 'UDC Dictionary'.
- It keeps good control over stemming/truncation.
- Number building boxes are provided for synthesized complex numbers.
- Special Auxiliaries are not shown separately. It is displayed with specific colour when search results are displayed.
- It includes a 'UDC Hierarchy Tree'.
- UDC Online is a colourful database recognizing numbers especially with a particular colour.
- It gives easy and quick checking of related and associated classes.
- It gives also quicker finding and building of UDC numbers.

4.1.2 UDC Online: Two Types of Searching Methods



In the above window, two types of searching methods in UDC Online are displayed.

1. **Search for A Term:** It can be used to search with a keyword or Term selected from the title of the book or preface. E.g. Metallurgy, Physics, Chemistry, etc.
2. **Search for Numbers:** It can be used to search with a number. E.g. 669, 62, 82.

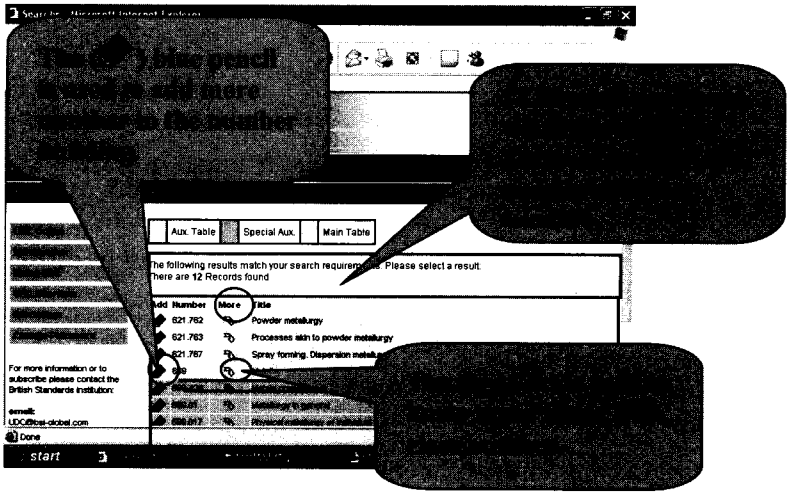
Boolean searches are available to search for any Term and UDC number using two indexes together. It gives the specific access of the particular number.

E.g. Metallurgy- 669

To use this, if the term like 'Metallurgy' and UDC number '669' is typed in search for box and clicking on 'go', the results with the term 'Metallurgy- 669' is displayed.

'Help' option is made available to the users while searching in the database.

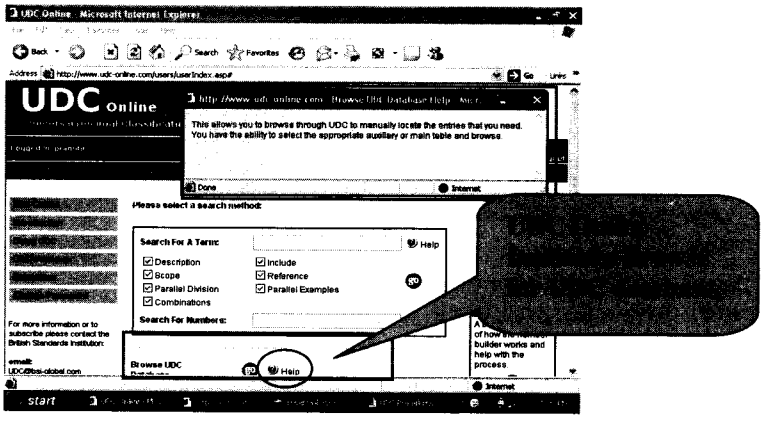
4.1.3 UDC Online: Search Results



With the help of UDC class number, there are 12 search results highlighted above in the window. The blue pencil ( ) shows 'Add Number'for making the compound number. In addition, the word 'More' ( ) is used for providing the more details about the number and indicates:

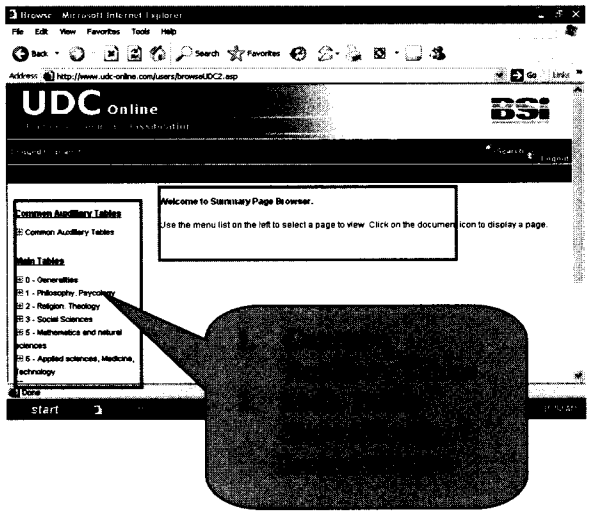
1. Description
2. Scope
3. Parallel Division
4. Combination
5. Include
6. Reference
7. Parallel Examples

4.1.4 UDC Online: Browse UDC Database



Browse UDC Online Database

UDC Online is a user friendly database that provides the access of both search and browse in UDC database. In the above window, 'Help' is provided to the users while browsing for UDC database. It allows browsing through UDC to manually locate the entries that are needed.



4.1.5 UDC Online: knowledge Organization Tool

On the left side of browse window, there are two tables –

- **Main Tables:** Main Tables are divided into Ten division of Universe of knowledge. This is the access of UDC Online schedule and goes in deeper hierarchies. If 'Generalia' is clicked, its hierarchy can be seen.

Table-4.2: Main Classes of UDC

Name of Ten Main Classes	Explanation
0	Generalities, Science and Knowledge organization, Information, Documentation. Librarianship, Institution, Publications.
1	Philosophy, Psychology
2	Religion, Theology
3	Social sciences, Statistics, Politics, Economics, Trade, Law, Government, Military affairs, Welfare, Insurance, Education, Folklore.
4	[Vacant]
5	Mathematics and Natural Sciences
6	Applied Sciences, Medicine, Technology
7	The Arts, Recreation, Entertainment, Sports
8	Language, Linguistics, Literature
9	Geography, Biography, History

Source: http://en.wikipedia.org/wiki/Universal_Decimal_Classification (Last Accessed on 12/05/09)]

Each single digit denotes main class and it is further divided into ten subclasses with two-digit numbers, and so on.

It has been observed from the above table that Class 4 is currently vacant, as its subject, linguistics, was moved to class 8 alongside literature. It has been also found that many subdivisions of UDC numbers are kept vacant.

Common Auxiliary Tables: These Tables are used to connect Main Tables.

Table-4.3: UDC Tables

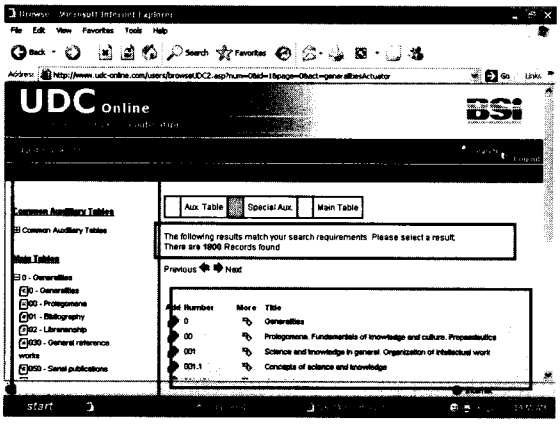
Sl. No.	Name of UDC Tables	Description	Common Auxiliaries	Function
1	Table 1a.	Coordination Extension	+ /	1. Co-ordination function(Connecting) 2. Connecting symbol
2	Table 1b.	Relation. Subgrouping	: [ ] ::	1. Relationship between two or more subjects 2. To denote complex subjects. 3. Order-fixing in a Compound number
3	Table 1c	Common auxiliaries of language	=.	1. To denote language or linguistic form of the document
4	Table 1d.	Common auxiliaries of form	(0...)	1. To represent the form of the document
5	Table 1e.	Common auxiliaries of place	(1/9)	1. To represent the subject belonged to a particular location
6	Table 1f	Common auxiliaries of race, ethnic grouping and nationality	(=...)	1. It relates to the aspects of Race and Nationality of a subject.
7	Table 1g	Common era (AD)	"..."	1. To denote the date, point of time or range of time of a subjects
8	Table 1h	Subject specification by notations from non-UDC sources	*, A/Z	1. It is used for non authorized UDC number 2. Direct Alphabetical specification used
9	Table 1k	General Characteristics	-0...	-
10	Section-2	Special Auxiliaries	-1/-9 .01/.09 '01/'09	It is used for connecting to the Main Tables.

The above table explains UDC Auxiliary tables. UDC's most innovative and influential feature was its auxiliary notation which provided for constructing compound number or a synthetic number.

These are the Special Auxiliaries Tables used for connecting to Main Tables. The special auxiliaries, unlike the common auxiliaries, occur at various places in the tables, and express concepts that occur in a limited subject range. There are three types of Special Auxiliaries denoted by subdivisions.It begins with a hyphen, point-nought or apostrophe (.0 is always used to introduce special auxiliary subdivisions, but 621.0 and 626.0 are exceptions). In UDC Online, number types are recognizable by colour coding. It is therefore listed only in particular sections of the main tables.

Both main tables and common auxiliary tables can be accessed and 'add numbers' can be used in the number building window.

4.1.5.1 UDC Online : Browse

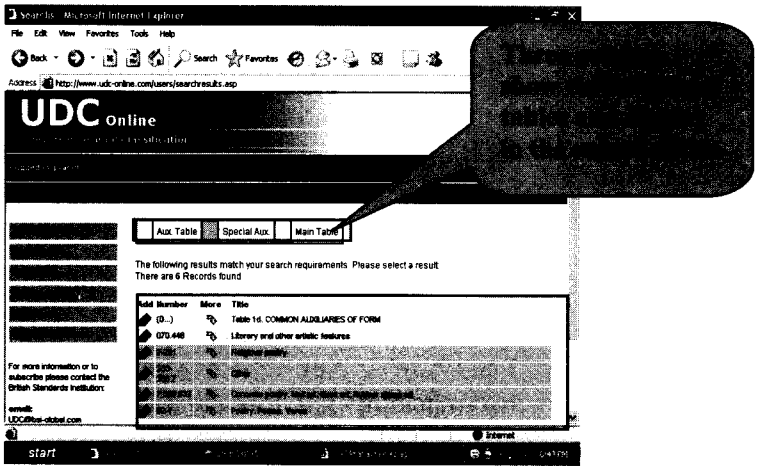


In the above window, there are shown the subdivisions of Generalities (0) on the left side.

00	Prolegomena.
01	Bibliography
02	Librarianship
030	General Reference Works
050	Serial Publications
06	Organizations and other types of cooperation
070	Newspapers, Journalism, The Press
08	Polygraphies. Collective works
09	Manuscripts. Rare and remarkable works.

In the above window, it is observed that the subdivision of Main Class of Generalities, 03, 04, 05, 07 are left vacant in UDC Online to add newly emerging number for future point of view.

UDC Online: Identify Tables

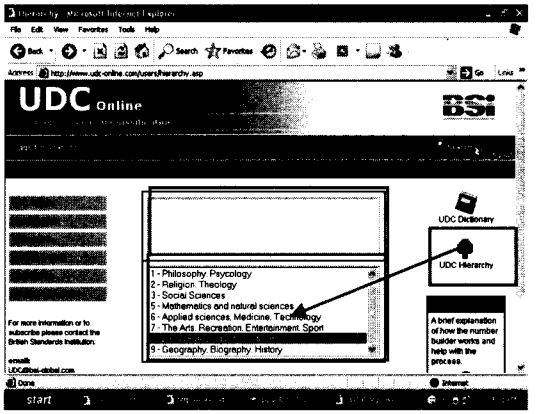


Search results are described in three colours in UDC Online window.

- Light Sky Blue colour denotes Auxiliary Table
- Green colour represents Special Auxiliary
- Light Pink colour denotes Main Table

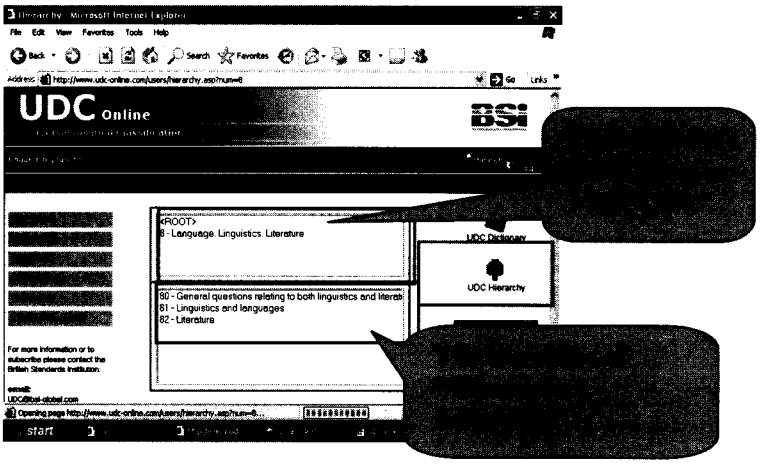
It is very colourful scheme, user friendly and easy to find UDC class numbers. These colours use in the entire database wherever it is specified.

UDC Online: First Level of Hierarchy



The icon shows UDC hierarchy on the right side of the above window. Ten Main Tables are displayed in UDC hierarchy box. If any main table is clicked, it displays the first level hierarchy. And if the user is interested to view the next level hierarchy, the hyperlink can be clicked.E.g. Main Table 8 explains Language, Linguistics, Literature. After clicking on the hyperlink of main table 8, the second level hierarchy is displayed.

UDC Online: Second Level of Hierarchy



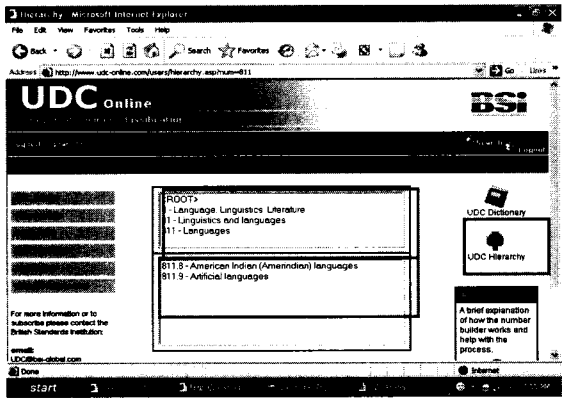
If the user is interested to view the second level hierarchy in UDC hierarchy window, the hyperlink can be clicked. E.g. The Main Table – 8 explains Language, Linguistics, Literature is displayed in the hierarchy box. After clicking on it, it reached in the Root box and the second level of hierarchy is displayed in the hierarchy box.

80 - General questions relating to Linguistics and Literature, Philology

81 - Linguistics and Language

82 - Literature

UDC Online: Third Level of Hierarchy



The user can click on hyperlink in UDC hierarchy window, if user wishes to view the deepest level hierarchy of any UDC number. E.g. The Main Table – 8 describes Language, Linguistics, Literature. After clicking hyperlinks, the first, second level of hierarchy 81- Linguistics and language and then third level hierarchy 811- Language is displayed in the Root box. The hierarchy of class – 811 Languages is displayed when clicked on it in the hierarchy window.

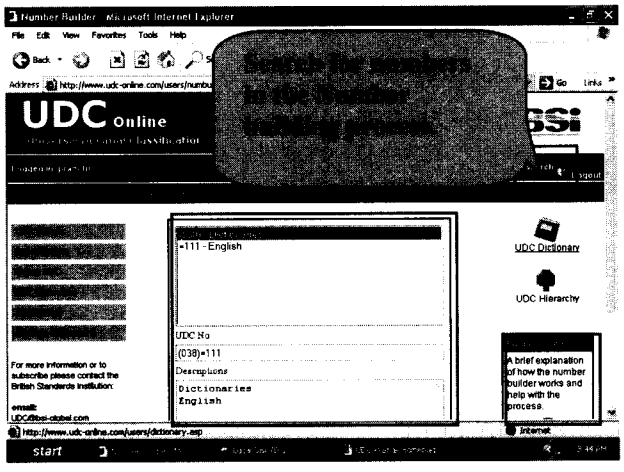
811.8 - American Indian (Amerindian) languages

811.9 - Artificial languages

UDC Online : Show Number Building

It is provided with a button to add the compound/complex numbers in UDC online Homepage and clicking on 'go'. User can easily search and navigate for terms and numbers and able to construct UDC number. There are various symbolic; punctuation marks buttons below the box are used for building UDC Number. They can be used for adding Common Auxiliaries. The enhanced functionality includes a number building facility to help construct complex UDC numbers and the ability for multiple searching strategies.

UDC Online: Number Building (Language)



(0...) is used for subdivision. For constructing number in language auxiliary form of document is selected, then language of the document is chosen by clicking the hyperlink 'Search'. This selected number is then added to the previously selected UDC number.

Eg. English Dictionaries

Dictionaries - (038)

English - =111

Built Number - (038)=111 English Dictionaries

It is observed that in the above window, to build UDC number for title 'English Dictionaries', the form of document 'Dictionaries' is selected, then 'English' the language of the document is chosen by clicking the hyperlink 'Search' for building UDC class number. Thus, the selected number is added to previously selected UDC number.

The pictorial windows displayed for UDC Online operations are a classy presentation for all those special features that are incorporated while designing UDC. Taking into consideration the actual needs of the classification and generalizations involved in any universal system that is followed, UDC stands a better deal with its annual updations.

5. Conclusion

It can be concluded that UDC Online is a well-developed database accessible through WWW to its users. It is a prominent and effective knowledge organization tool to classify universe of subjects and provide the fixed place to every things, documents, items. Some numbers are left vacant to add newly emerging subject for future point of view. Searching, browsing and number building are done immediately in the database. In addition, UDC Dictionary is provided if user faces any difficulty while searching the terms or numbers. To cope up with the knowledge society updates the database annually.

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Use of Library Portal by Science Faculty Members at Kuvempu University: *A Survey*

Geetha, M **Santhosh Kumar, K T** **Mamatha, K R** **Chethana**

Abstract

The study provides a detailed usage statistics of the Kuvempu University library portal during the academic year 2011-2012. The study examined the usage of library portal by faculty members of various science departments of Kuvempu University. The study investigated and observed the factors like attitude and perception towards library portal, purpose of use, benefits of using the library portal. The study also identified the difficulties faced by respondents while using the library portal. The study shows that 75% of respondents used the library portal. Research is the major reason for which majority (26.66%) of respondents use the library portal. 63.33% of the respondents opined that the portal has provided more efficient access to electronic resources. Low speed connectivity is a major problem found from this study. Based on the findings, the study suggests: proper training to the users as well as library staff, announcements of new e-resources, more high-speed computers for further improvement of library portal. This study would assist the library administrators in developing a more complete understanding of users information needs.

Keywords : Library Portal, ICT, Digital Library, Web based Services.

1. Introduction

In the age of the Internet revolution the portal became the medium for marketing of information. The portal is a great opportunity for libraries to give their services to the users at a real boost. Library portal as an information gateway, allows users to access an institution's resources and create direct links to the native interface of each resource. Such listings are available on most library websites today and provide resources from the library as well as web. A portal is a single-user interface for accessing wide variety of electronic resources, both within and outside the library. It allows easier access to users, simplified authentication, unified presentation of quality resources, personalization, and the portal may be a mechanism to offer services through an institutional portal.

A library portal has a unique uniform resource locator (URL), which normally, but not necessarily, points to the entry page or home page for the library site. Academic libraries cater the need of information of their users. In the last decade library websites have become the first point of contact. It has become increasingly important for libraries to evaluate the usage of portal to verify that the information being provided to their users is pertinent, clearly presented, and internally consistent. It is important to see that the resources and services provided by library portal are well utilized by the academic communities. [1] This study has been done to determine the usage of the library portal by the faculty members at Kuvempu University to improve the contents available on its portal.

2. Kuvempu University Library Portal

The University Library came into existence with the establishment of the Kuvempu University on June 29, 1987. The library acts as a nerve centre catering to the academic and research needs of the students, the researchers and the faculty members of 38 post-graduate departments covering Science, Social Science, and Humanities, engaged in higher

pursuit of knowledge. The Kuvempu University Library has been shaped as a centre of excellence, for academic and research pursuits by keeping itself open to the changes brought in by information and communication technologies. At present the library has a collection of 70,000 books, 4,124 back volumes of periodicals, 470 theses. The library is actively participating and contributing for the success of UGC's INFLIBNET and INFONET activities, and availing the benefits of these programmes for the benefit of its users.

3. Objectives of the Study

- To assess the level of awareness and the use of library portal by Faculty Members.
- To know the purpose and frequency of use of library portal.
- To identify the type of information sources and services used by Faculty members through library portal.
- To identify the problems faced by the users in using library portal.
- To give necessary suggestions to improve the effectiveness of library portal.

4. Methodology

A structured questionnaire has been used as a data collection tool for the study. These questionnaires have been distributed personally to the faculty member of various departments under science discipline at Kuvempu University. Total 60 faculty members have been selected for the study. The collected data has been analyzed with the help of SPSS (12.0) package.

5. Results and Discussions

The study population consists of 60 Faculty Members from different departments under the Faculty of Science. The following table gives detailed information of the distribution of questionnaires to respondents.

Table-1: Gender-Wise Distribution of Respondents

Sl.No.	Gender	Faculty Members
1	Male	42(70%)
2	Female	18(30%)
	Total	**60(100%)**

The above table reveals the data on distribution of respondents by Gender wise. Total 60 faculty members have been selected for the study. The total sample consists of 42(68.85%) of Male and 18(31.14%) of Female faculty members.

Table-2: Use of University Library Portal

Sl.No.	Response	Faculty Members
1	Yes	45(75%)
2	No	15(25%)
	Total	**60(100%)**

The use of library portal by users depends upon the nature of their information requirements and the nature of library collection and services etc. It is evident from the above 45(75%) Faculty members are using the library portal and 15(25%) Faculty Members are not using the library portal. It shows that 85% use of library portal by the respondents.

Table-3: Frequency of Use of Library Portal

Sl.No.	Frequency	Faculty Members
1	Daily	16(26.66%)
2	Weekly	27(45%)
3	Fortnightly	3(5%)
4	Monthly	1(1.66%)
5	Occasionally	13(22.95%)
	Total	**60(100%)**

Respondents were asked to indicate frequency of their use of library portal. The table 3 depicts the frequency of use of library portal. The study observed that 16(26.66%) Faculty Members made use of the library portal 'Daily', followed by 27(45%) of respondents used 'Weekly', 3(5%) of respondents used 'Fortnightly', 1(1.66%) of respondents used 'Monthly', and 13 (21.66%) of respondents Faculty Members made use of library portal 'Occasionally'. The study found that 45% of respondents used library portal weekly.

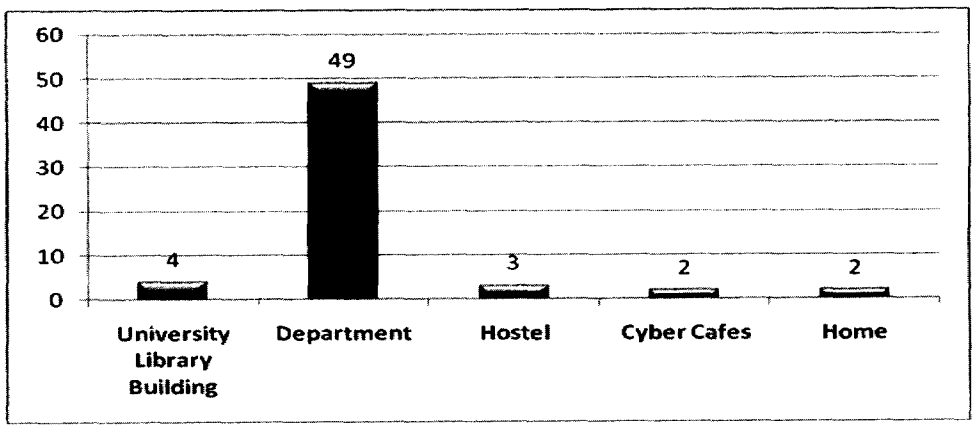


Figure-1: Library Portal Access Points

It is noted that there are different locations for accessing the library portal. The above figure shows the response of the faculty members about accessing the library portal. It is found that 4(6.66%) Faculty Members accessed the library portal within the library building, followed by 49(81.66%) Faculty members accessed the library portal in the department, 3(5%) Faculty Members accessed in the hostel, 2(3.33%) Faculty Members accessed in cyber cafes, and 2(3.33%) Faculty Members accessed at their home. It is found that 81.66% of respondents accessed the library portal in their department only.

Table-4: Purpose of using Library Portal

Sl.No.	Purpose	Faculty Members
1	For Research Purpose	16(26.66%)
2	Reference information	8(13.33%)
3	To use databases	3(5%)
4	To use electronic-journals	13(21.66%)
5	To download full text articles	15(25%)
6	Library hours, location, and/or contact information	5(8.33%)
	Total	**60 (100%)**

The purpose of using library portal is differs from one user to another. The above table reveals the purpose for which the library portal is being used. The breakdown of analysis shows that majority of faculty members, 16 (26.66%) of them are using for research purpose followed by 15 (25%) of them for downloading full text articles and 13 (21.66%) for using electronic journals. Similarly, some of the faculty members are also used library portal for the purpose of reference information (13.33%), and also for finding information on library hours, location, and for contact information (8.33%). It can be observed from the above analysis that majority of the respondents use the library portal for the purpose of research work.

Table-5: Use of Resources available through Library Portal

Sl.No.	Information Sources	Faculty Members
1	Web-OPAC	7(11.47%)
2	Electronic-Journals	25(41.66%)
3	Electronic-databases	8(13.33%)
4	Electronic-books	2(10%)
5	Current Journals	2(3.33%)
6	Publications	6(10%)
7	Virtual library	6(10%)
	Total	**60 (100%)**

Respondents were asked to indicate the usage of sources and services available through the library portal. It is evident from the above table that Faculty members were highly satisfied with the ease of use of sources available through library portal. Further indicates that Faculty members used Web OPAC 7(11.47%), followed as electronic-journals 25(41.66%), electronic-database (13.33%), electronic- books 6(10%), current-journals 2(3.33%), publications 6(10%), and virtual library 6(10%). It is found that majority of the respondents i.e. 41.66% were satisfied with quality and access of electronic-journals available on portal.

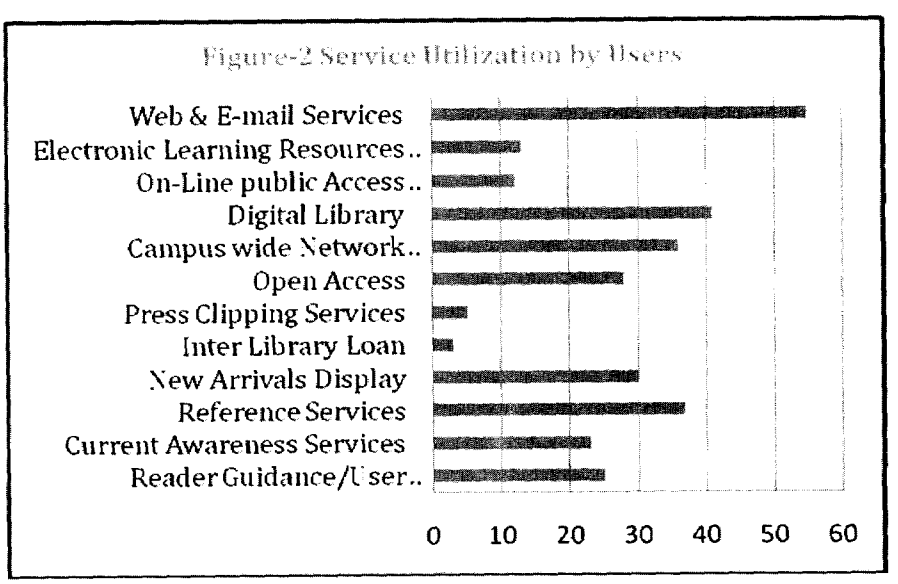


Figure 2 indicates the use of services provided through library portal. It is observed that of the total 25(41.66%) of faculty members used Reader guidance/ user orientation program,

followed by 24(38.33%) of Current awareness service, 37(61.66%) of Reference services, 30(50%) of New Arrivals Display, 3(5%) of Press clipping service, 28(46.66%) of open access, 36(60%) of Campus wide Network management 41(68.33%) of OPAC, 13(21.66%) of ELRC, and 55(91.66%) respondents used Web & E-mail Services.

Table-6: User opinion about Benefits of Library Portal

Sl.No.	Benefits of Library Portal	Faculty Members	
		Yes	No
1	One point access to all library services and resources	17 (28.33%)	43 (71.66%)
2	Improves customization of research tools by users	15 (25.59%)	45 (75%)
3	Enables customization of research tools by users	10 (16.66%)	50 (83.33%)
4	Improves educational scholarly resources access and usage	31 (51.66%)	29 (48.33%)
5	Provides more efficient access to e-resources	38 (63.33%)	22 (36.66%)
6	Improves services efficiency of the library	19 (31.66%)	41 (68.33%)

The study identified some of the benefits of library portal. It is found from the above table that among the total respondents under the study, 17(28.33%) faculty members have opined that portal provides one point access to all library services and resources, followed by15 (25%) of faculty members state that portal improves customization of research tools, 10(16.66%) faculty members expressed that it enables customization of research tools, 38(63.33%) respondents agreed that the portal provides more efficient access to E-resources and 19 (31.66%) respondents are accepted that the portal improves services efficiency of the library. The remaining 58.33% of faculty members did not accept the benefits covered under the study. It is interesting to know the response rate of respondents that majority (63.33%) of them identified the portal provides more efficient access to e-resources.

Table-7: Problems faced in Navigating the Library Portal

Sl.No.	Problems	Faculty Members	
		Yes	No
1	Difficulty in the organization of webpage	13 (21.66%)	47 (78.33%)
2	The terminology is used on the site is not clear	16 (26.66%)	44 (73.33%)
3	Takes much time to navigate the needed information	18 (30%)	42 (70%)
4	Lack of availability of needed information	14 (23.33%)	46 (76.66%)
5	Difficulty in locating desired information	18 (30%)	42 (70.7%)
6	Difficulty in downloading materials	16 (26.66%)	44 (73%)
7	Lack of site map or search options	14 (23.33%)	46 (76.66%)

One of the main objectives of this study is to identify the problems faced by the users in using the library portal. It is identified from this study that 13(21.66%) faculty members found difficulty in the organization of web page, followed by 16(26.66%) respondents have opined that the terminology is used on the site is not clear , 18(30%) respondents state that the webpage takes much time to navigate the needed information. It is also found that 14(23.33%) respondents state that the portal has lack of availability of needed information, followed by 18(30%) respondents found difficulty in locating desired information, 16(26.66%) respondents faced difficulty in downloading materials, and 14(23.33%) respondents have opined that the website does not have

site map or search options. It can be said that 74.04% faculty members did not find any problem in navigating the library portal.

Table-8: Need for Training/Guidance about Library Portal

Sl.No.	Response	Faculty Members
1	Yes	44(73.33%)
2	No	16(26.66%)
	Total	**60(100%)**

Libraries should offer library instruction courses to educate their users in order to utilize the sources and services available on their portal. The respondents were requested to furnish the details regarding the need for training and development programs about the usage of library portal. It is evident from the table 8 that 44(73.13%) of faculty members need training/guidance about the usage of library portal. Remaining 16(26.66%) faculty members did not prefer training/guidance about library portal. It is observed from this study that majority of the faculty members are aware about the usage of library portal.

6. Major Findings of the Study

- It shows that 75% of faculty members use library portal.
- The study found that 45% of respondents used library portal weekly.
- More than one third (81.66%) of the respondents accessed the library portal from their respective departments.
- Research is the major purpose for which majority (26.66%) of respondents use the library portal.
- It is found that majority of the respondents i.e. 41.66% are satisfied with quality of electronic-journals made available on the library portal.
- 55(91.66%) respondents used Web & E-mail Services available through library portal.
- 63.33% of the respondents opined that the portal has provided more efficient access to electronic resources.
- 50% of respondents opined that they faced problems while using the library portal as it takes much time to navigate the web pages and also found difficulty in downloading the information materials.
- Finally, it is found that 44(73.33%) of faculty members felt the need for training/guidance regarding the usage of library portal.

7. Suggestions of the Study

Based on the findings, the study made the following suggestions for further improvement of library portal.

- Proper training should be provided for faculty members in using the resources and services offered through the library portal by means of conducting orientation programmes from time to time.
- Adequate training should be provided for the library staff for updating and maintaining the library portal.

- Announcements should be made by the library about the availability of new e-resources or additions of new databases for the users of the library.
- Library should provide the facilities for the user to get familiar with resources subscribed by the library.
- More high-speed computers/terminals should be made available in the library for better use of resources on the library portal without wasting much of their slot time.

8. Conclusion

A library portal is personalized, customized and integrated information service to aggregate all kinds of library resources and services through a single access and management point for its users. The present study deals with various factors associated with the use of library portal. The study examined the views and opinions towards library portal by faculty members of science departments at Kuvempu University. Looking at the responses of the respondents the study found that majority of the faculty members use library portals but not on a regular basis. Further found that significant proportion of them faced difficulty in navigating the web page and downloading the needed materials form the portal. They also pointed out the need for updating the portal by way of inclusion of new resources from time to time. At the same time the study also pointed out need for more terminals with high bandwidth for speedy access to resources through the portal. Finally, most of the respondents are of the opinion that the library has to conduct more and more information literacy programmes for increasing the level of awareness and use of library portal. However, this study mainly focuses on the faculty members the similar studies on undergraduate, postgraduate students and research scholars at various departments of the university, and a comparative study may also be conducted between other universities.

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Web Content Management System (WCMS)

Deepthi **Tadasad, P.G.**

Abstract

Content Management System (CMS) is a sophisticated tool for building websites and managing web content. It provides a set of integrated tools to help technical and non-technical web publishers in the University to manage, create and maintain websites and/or intranets. Because of the proliferation of the CMS tools and the rapid organizational adoption of them, the term Content Management System became synonymous with Web Content Management System (WCMS). This paper deals with the different aspects of a WCMS like its evolution, objectives, types, importance, components, benefits, limitations, requirements and so on.

Keywords : Web Content Management System, Content Management System

1. Introduction

The core function of content management systems is to present information on web sites. CMS features vary widely from system to system. Simple systems showcase a handful of features, while other releases, notably enterprise systems, offer more complex and powerful functions. Most CMS include Web-based publishing, format management, revision control (version control), indexing, search, and retrieval. The CMS increments the version number when new updates are added to an already-existing file. A CMS may serve as a central repository containing documents, movies, pictures, phone numbers, and scientific data. CMSs can be used for storing, controlling, revising, semantically enriching and publishing documentation. Content Management System is a sophisticated tool for building websites and managing web content. It provides a set of integrated tools to help technical and non-technical web publishers in the University to manage, create and maintain websites and/or intranets.

To implement a content management infrastructure that captures, manages leverages and distributes content in a collaborative fashion that minimizes the need for web authors to have significant technical skills in web design, implementation and publishing.

2. Content Management System

In its simplest term, content management is simply editing a document to add, replace, remove, or modify the content. When you open a new Microsoft Word document on your desktop and type a few lines of text, you are engaging in content management using MS Word as the content management tool. In their early days of distributed content management, CMS tools focused primarily on editing Web pages. These Web Content Management systems allowed non-technical users to create, edit, and publish content to corporate Web sites and Intranet portals without having to know HTML, JavaScript or any other coding languages.

Content management is the set of processes and technologies that support the collection, managing, and publishing of information in any form or medium. In recent times this information is typically referred to as content or, to be precise, digital content. Digital content may take the form of text (such as electronic documents), multimedia files (such as audio or video files), or any other file type that follows a content lifecycle requiring management (1).

According to Wiktionary definition of content management system is "a computer software

system for organizing and facilitating collaborative creation of documents and other content, especially for loading to a website" (2).

In their early days of distributed content management, CMS tools focused primarily on editing Web pages. These Web Content Management systems allowed non-technical users to create, edit, and publish content to corporate Web sites and Intranet portals without having to know HTML, JavaScript or any other coding languages. As a result, organizations were able to empower their business users to take ownership of the content in their Web site and Intranet portals without having to engage IT for each and every change. In addition, the use of user accounts allowed organizations to control which roles were allowed to create content, edit it, and approve for publication

Because of the proliferation of these tools and the rapid organizational adoption of them, the term Content Management System became synonymous with Web Content Management System. But as organizations saw the value of these systems and a variety of different types of content were introduced into the enterprise, new content management tools were needed.

3. Web content management system

A web content management system (web CMS) is a bundled or stand-alone application to create, manage, store and deploy content on Web pages. Web content includes text and embedded graphics, photos, video, audio, and code (e.g., for applications) that displays content or interacts with the user. A web CMS may catalog and index content, select or assemble content at runtime, or deliver content to specific visitors in a requested way, such as other languages. Web CMSs usually allow client control over HTML-based content, files, documents, and web hosting plans based on the system depth and the niche it serves (4).

A Web Content Management System is content management system software, implemented as a Web application, for creating and managing HTML content. It is used to manage and control a large, dynamic collection of Web material. Most systems use a database to store content, metadata, or artifacts that might be needed by the system. Content is frequently, but not universally, stored as XML, to facilitate, reuse, and enable flexible presentation options (5).

Web Content Management (WCM) is a platform for delivering engaging, cross-channel customer experiences to drive online business success. WCM provides a productive, easy-to-learn authoring environment with support for in-place editing; drag-and-drop page composition from a rich library of web components; and intuitive controls for SEO, scheduled delivery, and landing page optimization including real-time A/B and multivariant tests.

Web Content Management Systems (WCMS) consist of applications used to create, manage, store and deploy content on the Web, including text, graphics, video or audio, and application code. The purpose of these standards is to provide implementation guidance to project teams who are undertaking new WCMS projects or investments or are undertaking major upgrades / migrations to existing WCMS implementations.

4. Web Content Management Evolution

The Web Content Management Systems (WCMS) that have appeared more recently are designed to tackle these problems, and make it easier to collaboratively update a website. A WCMS is a web application that facilitates a group of collaborative users, usually from different departments across an enterprise, to maintain and organise web content in an effective and manageable way. Web content can include text, images, audio and video. A modern WCMS can also include workflow features so that the creating, storing, and updating of web pages, along with

approval sub-procedures, can be streamlined. In addition, features such as versioning, check-in/check-out auditing, and so on are useful for managing and tracking the updating of web pages.

5. Characteristics and features of WCMS (6)

- Content management system allows immediate modification of a website content Intuitive operation of the WCMS
- Content management system supports implementation of any web page design
- Content management system includes advanced configurations for SEO - search engine optimization
- Content management system automatically generates XHTML valid websites according to the W3C standards
- Access to CMS using any web browser (Internet Explorer, Firefox, Opera, Safari)
- Ability to interconnect content management system (CMS) with other software systems
- High measure of CMS security - unique multi-level data and access protection (belongs to the most secure in the world)

6. Objectives of Web Content Management

The major objectives of a web content management are as defined below (7):

- Devolve content creation throughout the institution regardless of contributors' skills
- Provide security, governance and approval processes over content published on the web
- Enable the creation, management, and usage of standardised metadata
- Continue to support a diverse array of existing technology platforms
- Consolidate the current technology environment wherever possible
- Improve the quality of web sites through the implementation of standards across presentation, metadata, governance, discovery, and navigation

7. Types of WCMS

There are three major types of WCMS: offline processing, online processing, and hybrid systems. These terms describe the deployment pattern for the WCMS in terms of when presentation templates are applied to render web pages from structured content (8).

- **Offline processing**

These systems, sometimes referred to as "static site generators" (9), pre-process all content, applying templates before publication to generate web pages. Since pre-processing systems do not require a server to apply the templates at request time, they may also exist purely as design-time tools.

- **Online processing**

These systems apply templates on-demand. HTML may be generated when a user visits the page or it is pulled from a web cache.

Most open source WCMSs have the capability to support add-ons, which provide extended capabilities including forums, blog, wiki, web stores, photo galleries, contact management, etc. These are often called modules, nodes, widgets, add-ons, or extensions. Add-ons may be based on an open-source or paid license model.

- **Hybrid systems**

Some systems combine the offline and online approaches. Some systems write out executable code (e.g., JSP, ASP, PHP, ColdFusion, or Perl pages) rather than just static HTML, so that the CMS itself does not need to be deployed on every web server. Other hybrids operate in either an online or offline

8. Importance of WCMS

Web content management system is largely used for managing, storing, controlling and publishing the documents such as sales and marketing guides, news articles, operators' manuals and technical manuals. By making use of web content management systems one can easily manage the content in the website and upload new content that include audio and video files, computer files, and electronic documents. With CMS coming in, one can save lots of time, as it allows users to publish content at a much faster pace and saves then the inconvenience of going through same steps again and again. Another convenience that content management systems offers is that it lets its even those users easily manage content who do not have much technical knowledge. With all the above mentioned advantages that a content management system offers, we can say that it plays a very important role in managing content of a website (10).

WCMS a web application that allows its users to organize, create and edit the content of website without programming, also enables creation, publishing, management and controlling of huge dynamic collection of content. It also aids in streamlining the process of creation and publishing and with this easy-to-use functionality regarding the web content, it helps to extract information quickly to extranet, intranet and internet sites, with a consistent look. Even with very little training, a non-technical user can make changes in the website with WCMS. Generally, a web developer or systems administrator is required for setting up and adding features but chiefly, it is a website maintenance tool for non-technical staff (11).

The content on the World Wide Web consisting of HTML, XML and other document and media files can be manually published by organizing and editing files with exposure to web; and this happens when the file system takes help through web server but it is a tedious task demanding technical expertise (12). WCMS plays the saviour while publishing documents and media with less technical intervention and in a more automated way. Any profession today, demands encounter with smart usage of web and social channels and this invariably implicates the web content management systems.

It is very important for any domain to be updated with good quality of content. Let it be education, travel, technology, real estate, food or any sector, if you have a website, you need to have a configured WCMS so that your website can be updated either by the website designing company or by your publishers. There are three vital elements that are required in web publishing and these are:

- Content Authors: Content authors are the integral participant as these are responsible for content generation and creation for the web.
- Content Editors: Editor is inevitable in any information based website and those websites where information needs to be updated again and again. An editor decides what content will get published and where will it get published.
- Content Publishers: Content publishers are the users that are thorough with the modules used in CMS and publish the content on web. At times, content authors play the role of a content publisher (13).

A web publishing CMS will allow even non-technical authors and/or publishers to easily and quickly publish content on the website without any help from programmers. CMS can also be managed by giving different publishing rights to different authorities.

9. Component content management system

A component web content management system specializes in the creation of documents from component parts (Howard Schwartz). For example, a CCMS that uses DITA XML enables users to assemble individual component topics into a map (document) structure. These components can be reused (rather than copied and pasted) within another document or across multiple documents. This ensures that content is consistent across the entire documentation set.

10. The Common Components of WCMS

Many WCMS are programmed in languages such as Java and PHP, and run on a web server. In addition to the web server, WCMS may also contain additional components such as workflow engines, search engines, and email integration modules. Web content and data is normally stored in data repositories or databases such as MySQL (open source) or Oracle (commercial). This could include text and graphic material to be published. Older versions of web pages from a particular site under management may also be stored in the database. Generally, draft web pages are not uploaded directly to the production web server. Instead, users keep copies of draft pages offline until they are approved for publication. Then, once approved and signed-off, a file transfer program runs automatically, uploading and linking in the final pages on the production web server. A WCMS is essentially a web application supported by a backend database, with other features such as search engine, and perhaps integration with a translation engine. The general security threats applicable to web applications, such as cross-site scripting, injection flaws and/or malicious file execution, can all are applied to a WCMS.

For the purposes of accountability, users normally need to be authenticated before they can access the WCMS. In some situations, users authenticate via an intermediate server called a reverse proxy server, instead of connecting directly to the WCMS server. In addition, content duties are segregated by dividing users into two groups—content editors and content administrators—where only content administrators have final publishing authority. The role of technical personnel would be in building web page templates and maintaining the consistency of web page layouts and a common look-and-feel.

Generally, data and content sent to a web server is considered public information. If it is necessary to store sensitive information on WCMS servers, appropriate data encryption and authentication measures should be put in place.

11. Benefits of WCMS

- This pattern illustrates levels of functionality, any or all of which may be necessary for a project.
- This pattern standardizes conversation between mission and technical teams regarding components and complexity.
- This pattern can be applied to many business scenarios depending on scale and functional requirements.

12. Limitations of WCMS:

- This pattern does not illustrate true complexity of security integration in web environment.

- This pattern does not alleviate the need for requirements and policy analysis (e.g. migration challenges, content strategy, taxonomies, usability, metadata, security and appropriate usage guidelines).
- This pattern does not address the specific workflow, task profiles, or content creation that are necessary for any website project.

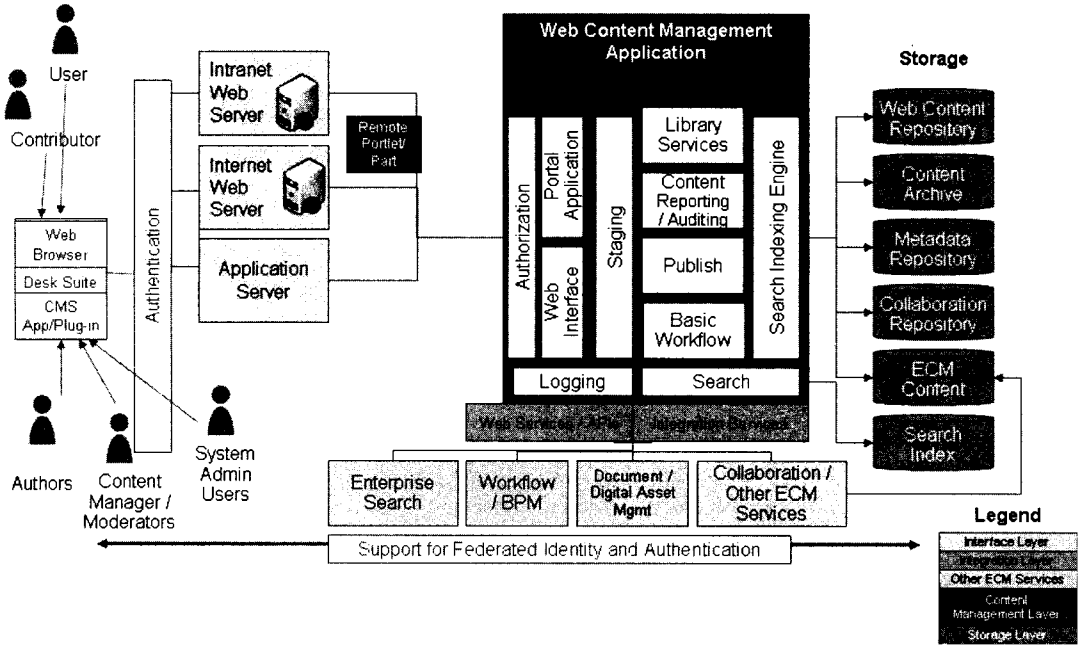


Fig: Web Content Management System Server (Geiler, Seach, et al. (2012).

13. Web Content management system requirements

- ***Key components a WCMS should have***

Since a web content management system allows editing the content of one's site, it is crucial for it to respect key search engine optimisation principles.

Below are a few points which help in assessing the content management system on web developer uses and meets today's requirements:

- Needs to be web-based and doesn't require to be installed on each computer
- Allows not only change but add/remove text, images, videos
- Allows to edit the page titles, descriptions (meta tags) and URLs (address of the page)
- Allows to create/delete new sections and pages on the website
- Allows editing the "Alt" tags of the images.

Since search engines cannot read the content of the images, it is crucial they have access to the image's description (the "Alt" tag). One needs to be able to edit this description every time to upload or change an image

- Allows to create redirects to pages using the 301 standard
- Change the text of navigation bar

Building a website without keeping the above requirements in mind will negatively impact the ability to increase traffic and conversions.

- ***Hosting requirements***

WCMS will have specific requirements that will need to be met by website's hosting package. One of these requirements is a database (e.g MySQL). As your existing hosting package might not be suitable (if you already have a site), web developer should ensure that the host meets the minimum requirements of the CMS. If this isn't the case, it might be able to upgrade to another package. If not, it might need to change hosts.

14. Open Source CMS

There are many CMS on the market. Free open-source CMS are very popular because they allow programmer to adapt the code to suit the website requirements and benefit from the improvements other programmers have made to the system.

Open source CMS, even though they can be downloaded at no cost, will require to be installed on the website by the programmer. In many instances, it is also possible to install a CMS on an existing website.

Open source CMS that are highly recommended by the web developers and users community are:

- Drupal (http://drupal.org)
- DotNetNuke (www.dotnetnuke.com) *
- CMS Made Simple (www.cmsmadesimple.org)
- Joomla! (www.joomla.org)
- SilverStripe (www.silverstripe.com)
- WordPress (www.wordpress.org)

*DotNetNuke is a CMS that requires to be hosted on Microsoft servers (National online strategy committee, 2011).

Any web company will have a favourite CMS that they recommend to their clients. Remember however to take CMS for a test drive and see if one can and enjoy driving it.

15. Conclusion

While a good WCMS can facilitate businesses to better control their web content, making it more responsive in today's dynamic environment, end-users should also be aware of the possible security impact on the enterprise if inappropriate material was published on the site (Web Content Management System. (2008). The Government of the Hong Kong Special Administrative Region.)

Advice to end-users include, be aware of what is being published. Only approved content should be involved in the publishing process. Each user identity (user-ID) should represent only one person at a time. Shared or group user-IDs should not be permitted. Passwords should be promptly changed if they are suspected of being, or have been, compromised or if they have been given to vendors for maintenance and support. Password management practices such as enforcing strong passwords, and regular changes of passwords should be followed. Automatic protection features, such as a password protected screen saver, should be activated if there has been no activity for a predefined period to prevent any attempt at illegal system access. When a member of a content editing and updating group ceases to provide services in that group or organisation, his or her WCMS user-IDs and access privileges should be terminated as soon as possible. Software patches and updates should be applied to user machines regularly, including web browsers, Java runtime environments and so on, on a regular basis.

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Web Portal Development and Management for Academic College Level

Shamkant J.Deshmukh **Kuldeep P.Pawar**

Abstract

Building a good, usable, accessible, attractive college website that meets the needs of students and teachers is every bit as difficult and as complicated as building a good, usable, accessible, attractive college **building** ***that meets the needs of students and teachers. If people built colleges the way they build college websites, there would be rooms with no doors, rooms that nobody used, and hallways that didn't go anywhere. This article an attempt has been made on development of web portals to manage the academic libraries in college level.***

Keywords : Blog, Types of blog, Website, Website Function, New Highlights for Designing Web site

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