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Embedded Librarianship and Technological Challenges of the Digital Age

2015

60th ILA INTERNATIONAL CONFERENCE
(DIAMOND JUBILEE)

CONFERENCE PROCEEDINGS

Embedded Librarianship and Technological Challenges of the Digital Age

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Organised by

A.C.Joshi Library, Panjab University, Chandigarh
&
Indian Library Association, Delhi

2015



Prof. Ramesha is working with Bangalore University, Bangalore. He is one of the **winners of the IFLA WLIC 2015** particpation grants to to attned IFLA Intertnaitonal Conference to be held at South Africa. He was awarded ***"ILA – A.G. Motiwale Award for Young LIS Professionals-2007"*** and **"ILA – Dr. C.D. Sharma Best Paper Award 2009 and 2011"** respectively by the Indian Library Association(ILA), New Delhi. As of today he has published more than 90 research papers both at national and international journals and conference proceedings and participated and guiding 8 Ph.D. students. He was visited Srlanka, Singapore and South Korea on official assignments.



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Embedded Librarianship and Technological Challenges of the Digital Age

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2015

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FOREWORD

It is most inspiriting to know that Indian Library Association (ILA) has another milestone in its service to the LIS profession by organizing its 60th Annual Conference under the theme "Embedded Librarianship and Technological Challenges of the Digital Age" from 8th to 10th April 2015 at Panjab University, Chandigarh. According to Hindu Calendar, 60 Years signifies one life cycle, as the Hindu Almanac marks Sixty Samvastaras (Years) and that imply the rebirth with fresh zeal and prowess. So this conference has a theme that would be a rejuvenator for the profession. The profession of Librarianship, which has emerged from an apprenticeship miniature to a reckoning professional canvas, has adored being most prolific in its creative performance since its inception about 5000 years past. The canvas depicts a montage of many from - Clay tablet Library to the Digital Library. So this International Conference has selected a theme that is primarily focusing on ICT applications in Libraries.

The conference theme is very interesting and has a simile with developments in library and information science. The embedded systems in digital technology have revolutionised the whole world in information and communication technologies, and so the libraries are also embedding in them many of the past and present events to handle the challenges of the future digital age. The functions of libraries have ever been perpetuated with their changing role and the assimilation of technological innovations has been its intrinsic quality. The library associations in every nation are ably supporting the profession for its continuous development by organizing national and international events for professional enlightenment and continuity.

ILA has already completed 80 years of its fruitful existence and it is conjectured with this eventful 60th Conference being organized to propagate its ever concern for the development of LIS profession in this country. The eight sub-themes of this International Conference show the ripeness at which the Association is heading to creative innovations the LIS professionals in this country need to assimilate and bring them into practice.

I wish this 60th International Conference a very grand success and make it most memorable event in the annals of LIS in India.

Bangalore
30th March 2015

Prof. A.Y. Asundi
Professor and Chairman (Ret.)
Dept. of Library and Information Science
and Officer-in-charge, IT Centre,
Bangalore University, Bangalore - 560 056.

PREFACE

The 60th International Conference of ILA signifies its another notable event as the association has completed 80 years of its existence, as it was established in the year 1933. On this solemn occasion it is organizing 60th International Conference on a very appropriate and exciting theme ***"Embedded Librarianship and Technological Challenges of the Digital Age"***. The selection of the subject is quite enriching which will leave indelible mark in the field of Library science. It is so important that there are continual deliberations going around the world on this very timely aspect that envisages what the future of the libraries would be, from its contents, from the stand point of organization and the tools and techniques of providing access to varieties of knowledge resources. The ILA invited papers on below enlisted sub-themes and received an overwhelming response from the LIS professionals across the country. More than 120 papers have been received which stand edited by a group of editors from different institutions. All the accepted papers are distributed under the following sub-themes for the purpose of presentation in the conference.

1. Embedded Librarianship and Technological Innovations
2. Change Management and Leadership
3. User needs, Resource Planning and User Services
4. Environment Friendly Library
5. Technologies and Content Development
6. Capacity Building
7. TQM and TQP
8. Role of Libraries and Information Science Schools & Professional Bodies.

The advent of embedded technologies has impacted on Library's technological applications e.g. the Content Development. The Integrated Library Management Systems are now integrating discovery facilities with the use of CMS and the Library Networking has gradually started removing the compartmentalization of different types of libraries. The new technology must find place in the leadership and we have to build the capabilities among our professionals to handle the new technologies effectively and efficiently. The digital age has infinite potentiality to import technologies and social media facilities into library services. The Library professional have been facing challenges of managing hybrid resources and equally there are *"here today and gone tomorrow" modes of services and products* that Libraries are required to entertain. The users' needs are also changing as more and more young users have gained technological knowledge and discovered enough capabilities that can offer them improved and point to point services. The library use patterns are also on the verge of new demands and horizons. Keeping this in mind, the conference chooses a topic that is contemplated over again and again whether the professionals are required to face new challenges under the sub-themes, Environment

friendly library, Capacity building, Change Management and Leadership and others. The Libraries have been adopting technologies since their early advent and therefore technological advances which have been embedded in the spirit of adoption to changes. These changes demand new services and to manage the new information and knowledge resources to suit the changing needs of the users. 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 is growing from a very early stage. The quality of services needs some benchmarking and to adopt best practices. The papers included in this volume and the authors of these papers have addressed these issues and this International Conference has provided them a suitable platform for proposing these issues for discussion by the learned delegates.

The Organizers of this conference, especially the ILA and the A. C. Joshi Library of Punjab University, Chandigarh need special mention for selecting this wonderful and thought provoking theme for the eventful 60th Conference of the ILA. It is time to look forward on this auspicious occasion to see the transformation of library and information service to the society in the digital age as its future has many challenges and equally opportunities to discover new professional avenues.

The Editorial Committee has spent their useful hours in reviewing/editing the papers and offering their support to organize the papers theme-wise. The Editors acknowledge their help and thank them profusely in this context. The Editorial Committee also thanks Dr. A.Y. Asundi, as well for penning down the "Foreword "to this conference volume. We thank all the authors for contributing to this 60th International Conference of ILA and enriching the professional knowledge with their scholarly papers.

Thank you one and all

Place: Delhi
Date: 30th March 2015

Editors

CONTENTS

Theme I: Embedded Librarianship and Technological Innovations

Sl no	Content	Page No.
1.	Embedded Librarianship in the GNLU Library Context *Lagdhir Rabari*	3
2.	Embedded Librarianship: with Reference to Marathwada Institute of Technology, Aurangabad (MS) *Shakuntala Lomte, Veena Kamble & Arun Thorat*	9
3.	Embedded Librarianship and Technological Innovations in University Libraries: Some Insights *Helen Pushpa Rani*	15
4.	Comparative Study of Research Output of the University of Kashmir and the University of Jammu: A Decadal Analysis *Ramesha Pandita, Shivendra Singh, Ramesha & Sudesh Kumar Tripathi*	21
5.	Assessing Innovation Services in Management School Library: A Case Study *Meeramani N & Krishnamurthy, M*	38
6.	Librarians in the Next Generation: Expectations and Liabilities *Pankaj Kumar Singh*	44
7.	Human Resource Development in the Academic Libraries Capacity Building Skills for LIS Professionals *Sivasankar Prasad, O & Pardeep Rai*	48
8.	Best Practices in Library Environment *Katkar, M K*	58
9.	Big Data and Libraries *Nirupama Chohda & Shiv Kumar*	62

Theme II: Change Management and Leadership

10.	Taking Charge of New Digital Era: Discovery of a Leader within LIS Professionals *Manju Dubey*	71
11.	Change management in academic Libraries in 21st century: issues and Challenges *Vyas Kumar Vajpa & Sanjeev Dutt Sharma*	78
12.	Need of Library and Information Professionals in the Present Scenario: Technological challenges of the Digital Age *Rakesh Kumar*	86
13.	United We Flourish , Divided We Perish *Poonam Chaudhary*	89

14. Barriers in Managing Change In University Libraries In North West Region Of India: A Study 97
Amit Mittal and Arvind Mittal

15. Intrinsic of Motivation and Approach in Academic Library Management: A View 106
Kumar, K & Rajasekar, V

16. Managing Change in Academic Libraries: A Case Study at Learning Resource Centre, Sumandeep Vidyapeeth, Vadodara. 113
Ravi R. Jani

17. Role of Librarian in Digital Environment 120
Sharandeep Kaur

18. Changing Role of Academic Library Professional in ICT Environment: Challenges and Opportunities 124
Sudhir Astunkar and C.N. Hanwante

19. Beyond Libraries: Understanding and Empowering the Vulnerable Adolescent Girls of Bhaskar Colony 129
Indu Dhawan

Theme III: User Needs, Resource Planning and User Services

20. A Survey on Information Need and Information Seeking Behavior of Library Users of NRN Memorial National Law Library of NLSIU, Bangalore 141
Ramesha & Mahesh A Yaranal

21. Perception and Effective use of Search Engines and web Information Storage Systems by the students and faculty members: a comparative study of two Universities in Karnataka 150
Hemavathi, B N, Pravin Kumar Choudhary & Dr. N.S. Shokeen

22. E-governance and Information Literacy: Governments Initiatives in India 159
Archna Saxena & Reena

23. Use of Electronic Information Sources by the Users of MLB Medical College, Jhansi: An Analytical Study 169
Mahendra Kumar & Ashu Shokeen

24. Information Literacy: An Essential Skill to Provide Right Information to Right People at the Right Time 178
Ganapathi Shinde & Prakash Waghmare

25. Study of the Development of Collection and Utilization of Public Library Services in Barrackpore Sub-Division, West Bengal: A Critical Assessment Study 184
Debarati Bhattacharya & Subarna K R. Das

26. The Changing Environment of IIT Libraries: Internet and Users Information Needs 193
Shekhar Singh, O S & Khan, M T M

27. User Awareness and use of E-Journals by Faculty members of Engineering Colleges: a case study of Engineering Colleges of Rajasthan 211
Rajkumar Bhakar & Deepa Sharma

28. Effectiveness of Consortium for e-resources to find information of students: A case study of University of Rajasthan, Jaipur 218
Bhoop Singh & Dinesh Kumar

29. Information Literacy among Postgraduate Students in a Rural University 225
Linsha, M & Varsha K

30. Information Systems Users Satisfaction: A survey of Choudhary Devi Lal University, Sirsa (Haryana) 237
Anil Kumar & Dharmesh Kumar

31. ICT Based Activities and Services in Libraries: A Review 245
Anil Agrawal

32. A Study of Special Students of College Libraries 250
Kulkarni, S A

33. A Study on Information Needs and Information Seeking Behaviour of Rural Population with Special Reference to Barak Valley, South Assam (North East India): A Survey 259
Manoj Kumar Sinha & Pulak Das

34. Information Seeking Behavior of Students and Faculty Members of Punjab Agriculture University, Punjab 269
Rashmi Yadav & Harmanpreet Singh Sandhu

35. Utilization of Resources and Services by the Medical Professionals in Selected College Libraries in Puducherry 276
Sevukan, R, Ramya, V & Srinivasan, R

36. A Study on Digital Library Services in Bharathidasan University 284
Bagavathi, A

37. Electronic Information Seeking Behaviour: A Study of Rajkumari Amrit Kaur College of Nursing, New Delhi 293
Shivendra Singh & Mahapatra, R K

38. Information Seeking Behavior of Post Graduate students and teachers of DSCW Library Ferozepur City: A Case Study 304
Mohinder Kaur Gill

39. Use of E-Resources: a case study of Punjab University Library 309
Deepika Tewari

40. Information Seeking Behaviour in the Digital Era: Users' Survey of A.C. Joshi Library, Panjab University, Chandigarh 317
Seema Sood

41. Use of E-Resources through Consortia: a boon to users of North East University Libraries. 325
Nirmala Borah

42. Use of E-Resources and Services by Research Scholars at Siksha O Anusandhan University: A Study 330
Prangya Das

43. User perception of usability of internet among faculty and Post Graduate student of Arya Kanya Mahavidyalya at Shahabad Markanda (Kurukshetra): A case study 343
Rajinder Kaur Gill

44. Study of user's Satisfaction on Library and Information Services in College Library 349
Sanjeev Kumar

45. Shannon's Information and Communication Model for Information Indexing and Abstraction in Libraries 354
Mohammed Imtiaz Ahmed, Mohammed Bakhtawar Ahmed and Debojit Das

46. E-books in Central University Libraries of Uttar Pradesh 360
Subhash Chandra

47. Information needs and information seeking behaviour of faculty members in electronic environment: A survey of teacher education colleges of Amritsar 365
Prabhjot Kaur Sandhu

48. Emergence of Information Literacy as an Impact of Electronic Media 374
Yogita Sharma

49. Chemical Literacy in Farmers: A Case Study of Bilaspur District 379
Nisha Tiwari, Uaday Kumar Watti & Brajesh Tiwari

50. Management of e-Resources: Issues & Challenges for LIS professionals 387
Venkateswarlu, YCH

51. A Study of E-Resource Acquisition Policies in Consortia: An overview 393
Ravinder, d

52. Challenges for Collection Development and Usages of E-books in Academic Library: a case study of B. H. U. Libraries 400
Singh, D K

53. Use of Internet by the University Students: Review of Literature 408
Taruna Joshi & Jnanendra Narayan Singh

54. E-Resource: Importance, Management, Issues and Challenges in Modern Era Library 413
Vikreshwari Dangwal Bhatt

55. Status and Management of E- resources and Services at present in University Libraries of Uttarakhand– A case study 420
Pandey, S N, Mangay Ram, Arindam Mohanta, Satpal Singh & Harshita Pandey

56. Electronic Resources for Engineering College Libraries: Selected E-Resources 438
Milind B.Anasane

57. Information Literacy and Lifelong Learning: Role of Electronic Media 442
Brajesh Tiwari , Ashok Kumar & Jitender Kumar Gautam

58. Restructuring Academic Libraries through Information Literacy: Redefining the Role of Academic Librarians 449
Prabhat Pandey & Meenu Pandey

59. Assessing the Information Literacy among Agricultural Science Undergraduate Students of BHU 460
Punit Kumar Singh

60. Electronic Resource Management in University and Institutional Libraries of India in Changing Environments: An Overview 470
Manoj Kumar Sinha & Awadhesh Singh Gautam

61. Collection Development of E-Resources of Dr.Babasaheb Ambedkar Marathwada University Knowledge Resource Centre 479
Veena Kamble & Shakuntala Lomte

62. Acquisition and Management of E-books in Bangalore University Library: A study 483
Anjanappa, M. & Rajani, S

63. E-resources: Acquisition and Management 487
Ritu Dhiman

Theme IV: Environment Friendly Library

64. How Technology Friendly are the College Libraries affiliated to Karnataka State Women's University, Vijayapura, Karnataka 495
Tadasad, P G

65. Redesigning Libraries to Handle the Environmental Challenges of the Future: Green Libraries 506
Leena Khullar

66. Green Library: A Conceptual Overview 513
Rashmi Yadav & Sarbjot Kaur

67. Green Library: An Overview 519
Sanjeev Dutt Sharma & Vyas Kumar Vajpa

68. Greening the Libraries for sustainable development: A case study of Technical University libraries in Odisha 527
Sanghamitra Dalbehera

69. Environment Friendly Library: Green Signal for Green Libraries in Digital Environment 536
Uma Rajan

70. Implementation of Kaizen in Library and Information Services Activities 541
Ashwni Kumar Ahluwalia & Balbir Singh Brar

71. What Children Expect from Tomorrow's Urban Libraries of Karnataka State: A Case Study of City Central Library, Vijayapura 546
Rajashree Joshi & Tadasad, P G

72. Evaluation of College Library Buildings in the Light of Five Laws of Library Science: A Study of Medical College Libraries of Vijayapura, Karnataka 557
Deepthi, Shobha Patil & Tadasad, P G

73. Libraries and Space Management : an overview 566
Dr. Dharam Kumar & Dr. Pardeep Rai

Theme V: Technologies and Content Development

74. Application of Technology in to Library Services in changing Scenario: Issues and Challenges 575
Krishnamurthy, M & Ramesha

75. Cloud Computing Applications for Future Library Services 583
Nagalingam, U & Radhakrishna, B R

76. Applications of Cloud Computing Libraries and Information Centers 591
Rajeev R. Paithankar

77. Resource Sharing through Cloud Computing in the Libraries 595
Shuchita Singh

78. Promoting Open Access Movement with Special Reference to Institutional Repositories in University Libraries of Karnataka: An Update 599
Suresh Jange

79. Digital Archival: Principals and Management 606
Murali, T

80. Electronic Theses and Dissertations (ETDs) Repositories initiatives in India: A study 612
Ramani Mohan & Rajani, S

81. Successful Implementation of Open Source Software In Libraries 619
Puspita mishra

82. Role of UGC – Infonet Digital Library Consortium in the Study of Life Sciences 625
Jawahar Lal

83. Digital Library Consortia for MoEFCC Institutions : A concept note 632
Sunita Agarwal

84. ETD Repositories in India: Some Major Initiatives 638
Bidyut K. Mal & Jyoti Kumar Singh

85. ICT Applications and E-resources in Technical College Libraries in Punjab: A Survey 646
Rashmi Yadav & Harmanpreet Singh Sandhu

86. Adoption of Web 2.0 Technologies by Punjab University Library Chandigarh: A Study 655
Nav Jyoti Dhingra, Deepti Madaan & Seema Vasishta

87. Making Library Resources Easily Discoverable: an Overview of Web-Scale Discovery Service as Being Implemented in PEC University of Technology 663
Seema Vasishta, Nav Jyoti Dhingra & Maninder Kaur Dhanda

88. The Technological Change and Discovery in Services in the library in Government College For Men, Kurnool (A.P.) 672
Jahan Ara,S &Damodhar.P

89. The Transition from Print Books to Electronic Books – A Perspective 697
Ravi, A

90. Public Libraries and Digital Scholarship 682
Bharathi, K

91. Open Source Content Management System for Content Development: A Comparative Study 686
Tripathi, D P

92. Metamorphosis of libraries: From Papyrus to Clouds 696
Mohammed Imtiaz Ahmed, Mohammed Bakhtawar Ahmed, Debojit Das, Manjusha & Neelam Soni,Asstt

93. An Overview of Cloud Computing Services in Libraries 703
Garima Bisaria & Babita Jaiswal
94. Cloud Computing and its Application in Libraries 707
Sunaina Khanna
95. Intellectual Property Rights in the Digital Age 715
Singh, B K
96. IPR Issues in e-Learning in Digital Era 723
Doraswamy Naik, B R & Alapati Srinivas
97. Copy right laws of India and USA: an LIS perspective 728
Nasirudheen T & Abdul Azeez T A
98. The Legal Aspects of Data Protection in Digital Libraries 734
Shivakumari, B G
99. Search Engines for Information Retrieval: A Comparative Study of Google, Yahoo, Altavista, Bing, Lycos 738
Vivekavardhan, J, Chandrasekhara Rao, V, Radhika Rani, B & Yadagiri, S
100. Digital Plus Era: Profile of a Law Librarian 746
Harsha P. Patil
101. Research Data Curation in Higher Education Institutions of India 752
Manish Kumar Singh
102. Digital Preservation of Indian cultural Heritage Data: Project Overview 759
Dr. O. N. Chaubey
103. Print Books Vs Digital Book: Challenge for Change Management in Libraries 770
Dr. Rajesh Kumar Bhardwaj

Theme VI: Capacity Building

104. Capacity Building of Library Professionals 779
Dipanwita Ray
105. Growth and Development of Teachers Education Colleges in India: With Special Reference Karnataka: A Study 785
Jayarama Naik, K G
106. Evaluating the Employee's Performance Appraisal System in College Libraries of Mahendergarh District in Haryana 791
Ramchander
107. Techno-Stress Management among Library Personnel in Degree College Libraries of Uttar Pradesh (INDIA) 801
Mange Ram
108. Stress management by library and Information science professionals in University libraries of Bihar: A Study 807
Kaushal Kishor Chaudhary & Diwakar Yadav
109. Stress Management and Library and Information Professionals: Some Insights 813
Nalhe, U P & Sudhir Astunkar
110. EDI Library and Information Centre: the Focal Point for Nascent 816 Entrepreneurs
Ashok Chaudhary

Theme VII: TQM and TQP

111. Total Quality Management and Its Application in University Libraries of Andhra Pradesh: A Study on User's Opinion — 825
D. Konappa and D Chandran

112. Assessing Library Service Quality(LSQ)at Rajiv Gandhi National Law University, Patiala — 836
Rakesh Mohindra, Anil Kumar and Ashu Shokeen

Theme VIII: Role of Library and Information Science Schools & Professional Bodies

113. National Repository of Open Educational Resources: Technology in School Classrooms through Learning Object Repository — 849
Pooja Jain & Parveen Babbar

114. Awards and Honours in the field of Library and Information Science in India — 856
Sood, S P, Pareek, A K & Kapil Singh Hada

115. MOOC: Opportunities, Challenges and Best Practices — 868
Vinod Kumar, Jivesh Bansal & Ashok Kumar

116. Application of Transactional Analysis in Library and Information Profession: Methods and Techniques — 877
Abdul Gafoor Manningachali & Habeeb Koya Thangal

117. Research Trends and Citation Pattern of 'International Journal of Information Technology and Knowledge Management': A Bibliometric Study — 884
Kaushal Chauhan

118. Rattan literature: A scientometric portrait — 889
George, K F

119. Authorship Patterns and Collaborative Research in LIBRES Journal of Library and Information Science, 2004 – 2013 — 898
Prachi Srivastawa & Shard Kumar Sonkar

Poster Presentations

1. Open Source Culture is very helpful for Distance Learning Libraries and Information Centres In 21st Century — 907
Yogesh Sharma & Arvind Kumar Saini

2. Intellectual Property Rights: Technologies and Content Development — 908
Priyanka

3. Media & Information Literacy — 909
Sohan Singh Rana

***

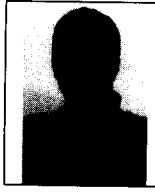
Intellectual Property Rights: *Technologies and Content Development*

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Abstract: Rights issues are prevalent within pretty much anything to do with digital content, from its formation, reproduction, adaptation, negotiation, dissemination and repackaging. In order to limit risks of infringement and take advantage of the benefits that the digital environment presents, it is essential that museums, libraries and archives familiarize themselves with copyright and other issues, as well as train staff in good practice procedures. While the copyright model is being utilized for all manner of texts in digital form, the behavior of authors and readers is being changed by the new digital technologies. It is becoming increasingly likely that some adjustments will have to be made in the copyright model to make digital libraries commercially viable.

Keywords: copyright, infringement, digital technologies, digital libraries.

Author Profile



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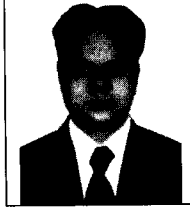
Media and Information Literacy

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Abstract: Information is available in unimaginably large amount and variety. In addition to quantity it is available through multiple media and is of certain quality. Technology is just a tool which does not determine how we must act. Among these circumstances we have to acquire an understanding and adopt meaningful courses of action by employing different literacy. It has been said that media literacy is not a new subject to teach, but a new way to teach all subjects, media & information literacy focuses on a critical approach towards media messages. This article gives an overview of the nature of these literacy. The various context of their functioning are outlined and additional literary are mentioned.

Keywords: Media, Information Literacy and Libraries.

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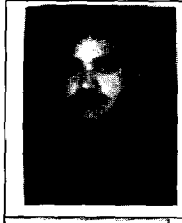
Open Source Culture is very helpful for Distance Learning Libraries and Information Centres in 21st Century

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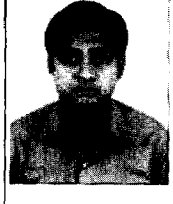
Abstract: This paper explains concept of open source culture has become very popular in libraries in 21st century. The advancement of science and technology has made a tremendous the magnetic word open source. The paper discuss about the user based services in detail. The skills required for managing the new dimensions in the libraries are also effectiveness of library services is now largely depends upon the open source culture. The term usually refers to files created by the program, which would be readable in other applications. Libraries can realize many advantages by using open source culture. Attempts to brief some of the software available open or free in internet world, which can be used for various purpose in library and information centres. Benefits are numerous, including having the ability to create good software that works for you and your library, all while paying a fraction of the cost that you might spend on proprietary software, It help user for learning, research programme etc.

Keywords: Open Source Culture, Internet, WWW, Distance education

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Assessing Innovation Services in Management School Library: *A Case Study*

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Abstract: Innovation transforms the structure and practices of an organization. It improves the performance of established products or services that mainstream customers have historically valued new organizations can use with relative simplicity, convenient, low-cost innovations to create growth and triumph over powerful incumbents. This study reports on the results of interviews conducted in January 2015 to identify innovative service trends in library and information services in the Management School library arenas. survey was undertaken to investigate the adopting technology in thirty college libraries. The findings provided valuable measures of performance for comparing different innovation tools and assessing changes over time.

Key words: Innovation, Technology. Facilities, academic libraries, higher education

1. Introduction

The library is the primary and significant requirement for any educational institution. The basic function of the library is educative. Library is the heart of a university and the character and efficiency of an academic institution can be determined by the treatment given to its central organ namely the library. A systematically developed library collection serves as a major academic facility to the faculty as well as students and facilitates them to conduct research in all fields. So libraries of the universities and colleges are store houses of learning and repositories of scholarship. Academic libraries are the forerunners of modern university libraries. The Universities in India performs its functions keeping in view the objectives of higher education. It plays a significant role in the conservation of knowledge and ideas, teaching, publication, extension services and interpretation of research. The 21st Century library is dominated by innovations and innovative ideas, services and products. There has been a rapid change in the field of library and its comparable institutions in this knowledge society. Information and Communication Technology has been considered as the most instrumental factor for the change in the mode of delivery of library services.

2. Objectives of the study

- To identify how technology is adding value to innovate the concept of libraries.
- To know availability of different types of information sources in academic libraries
- To know the innovative services offered by the college libraries to promote higher education.

- To know the status of ICT facilities the adoption in the administration and organization in college libraries under the study area.
- To identify the various steps to improve the library services
- To introduce new innovative and emerging library services in order to convert the potential user into a habitual user.

3. Limitations of the study

- The findings are limited to the primary and secondary sources
- The focus is only on libraries in higher education
- The study has limitations w r t time, place and resources

4. Methodology

- **Type of research:** Both, field research and library research were undertaken. The objectives were first analysed through field research and then elaborated through library research.
- ***Tool:*** *A Questionnaire was drafted, keeping in mind the objectives of the study as* listed above.
- **Sample Design**

- A sample of **thirty** were chosen for this study
- Men and women were included randomly without preference to either one of them.
- Questions were framed to understand their awareness level as listed in the objectives.

- **Collecting Data**

- Each respondent was asked to answer the questions in the same order as in the questionnaire. Initially, rapport was established with the respondent and he/she was made aware that they were part of research work and his/her co-operation to the fullest extent would make the research meaningful.
- The respondent was asked to give his/her opinion freely. Any doubts raised by the respondents were clarified so as to gain honest answers.

5. Data Analysis and Interpretation

The study began with a thorough review of relevant literature as well as conference presentations and proceedings, webinars, listservs, and blogs. Management School libraries recognized by the library sector as "innovative" based on the libraries' long-term success and demonstrated ability to successfully initiate progressive services were identified. The questionnaire has been circulated to the librarians to focus on several issues

on Library Automation, digital library, and infrastructure like computer, internet, and innovative library services. Statistical methods were used and the data is presented in the form of charts and tables. MS word, Excel and Power point applications have been used to tabulate and present the data.

Table 1- Digital Library Software used in libraries

Greenstone	5
DSpace	11
E-Prints	2
commercial softwares	3
Not using any software	9

Table 1 shows Data about digital library software used in library shows that out of 30 colleges 11 colleges have using D space digital library software, 5 colleges using Greenstone, 2 colleges using E-prints, 3 colleges using commercial software such as easylib, libsoft and 9 colleges are not using any software to provide digital library services.

Table 2 - E-Learning Management Software used in Library

Moodle	9
A Tutor	3
Blackboard Learning System	1
Sharepoint LMS	3
eCollege	4
Not using any software	10

Data about E-Learning Management Software used in library shows that 9 college libraries are using Moodle software, 4 college libraries using eCollege, 6 college libraries are using share point and tutor, and 10 colleges are not using any e-learning management software.

Table 3 - Content Management software used in library

Drupal	10
Joomla	4
open CMS	2
Documentum	2
Not using any software	12

Table 3 shows that 10 college libraries are using Drupal Content Management software, 4 colleges are using Joomla, 4 colleges are using Open CMS and Documentum, and 12 colleges are not using any content management software.

Table 4 - Instant Messaging tools used in library

Skype	5
Google Talk	11
Yahoo Chat	2
Meebo	1
Not using any software	11

Table 4 shows that 11 college libraries are using Google Talk Instant Messaging tool, 5 libraries are using skype, 3 colleges are using Yahoo chat and Meebo and 11 college libraries are not using any instant messaging tool to provide innovative services.

Table 5 - Video sharing software used in library

Edutube	2
Google Video	10
Youtube	12
Mobile service	2
Not using any softeare	4

Data about Video sharing software used in library shows that 12 college libraries are using Youtube Video sharing software, 10 colleges are using Googie Video, 4 colleges are using Edutube and Mobile services and 4 college libraries are not using Video sharing software.

6. Findings, Analysis and Evaluation

6.1 Digital library Software

Some 11 (36%)n=30 of the respondents said that they are using Dspace software in their colleges 5(16.66%) respondents said that they are using Greenstone software , and 9 (30%) of them said that they are not using any software in their college. Due to the unawareness and lack of skills and constraints of budget is main reason for this.

6.2 E-learning Management Software

Respondents were asked to specify the various types of E-learning management software used in their library. 10(33.33%) said that they are using Drupal software and 4(13.33%) were using joomla and 12(40%) respondents said they are not using any e-learning management software. It shows that college libraries are not familiar with e-learning management software

6.3. Instant Messaging Tools

Instant Messaging (IM) is a relatively new means of online communication. The biggest group of IM users are 11 (36,66%) colleges. 5 (16.65) respondents said that they are using

Skype for exchange their ideas. It is found that 11 (36.66%) respondents tend to not use IM as a form of communication

In this study 12(40%) respondent said that they are using your tube for sharing video and 10(33.33%) respondents using Google video to share video information. It is shows that majority of the colleges still not familiarity of this kind of services.

7. Suggestions and conclusions

Based on the findings the focus of the study has been laid on adoption technology among academic libraries especially in management schools.

- Library should adopt technology keeping in view of the development of information communication technology.
- Special training program should be organized for library staff for the maximum of use e-learning tools so that users can subsequently trace relevant information .
- More computers with the latest specifications and multimedia kit should be installed, so that the users can use internet telephony, video conferencing chatting and other useful services of the internet.
- The important roles of academic libraries is to promote and provide instructions to the use of electronic resources, as numerous instant messages and other services like blogs are not still use well utilized in many acidic libraries.

The survey findings provide a snapshot of the state of academic library as February 2015. They will also serve as base line data for future survey as and comparison overtime. Academic libraries are continually rising innovative and creative services to keep pace with the fast changing society. ICT developments, particularly those providing easy access to information on the Web, have significantly increased the expectations of library users, who expect the same speed and comprehensiveness in information services provided by libraries. To meet these challenges, libraries are coming up with specialized, innovative and value -added information services and resources. As the new technologies continue to emerge and find their place in the provision of library and information services and resources there is no escape to introduce the corresponding transformation and restructuring of methods of service delivery. The result is that libraries need to be in a continual state of strategic planning, implementation and assessment and reassessment of their innovative services and resource efforts in consonance with the evolving changes in the technological landscape.

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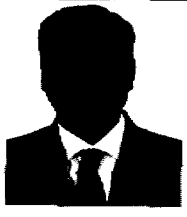
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Best Practices in Library Environment

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Abstract: Library Plays Multi-dimensional role in the Society. It is a Warehouse of knowledge. It is Communication centre and also a mediator between information generators and the information users. In the present days scenario information and communication Technologies (ICT) have made a tremendous impact on the functions of the academic libraries. The digital age has seen a definite change in the role of the library and services expected of it. In particular, users expect quick, one stop service to cover a range of needs. Libraries are light with the introduction to the role of college libraries and the impact of ICT on them in the present context and also the challenges faced by the academic libraries. The paper discuss about best practices in library environment.

Keywords: ICT, college libraries role, Book Exhibition, challenges and best Practices.

1. Introduction

The ways to build collection and services to the end users vary from the recent past practices. To meet the end user's demands effectively. the academic libraries need to identify and adopt good practices and benchmarks. Thus preparing quidlines in a standardized way based on the best practices employed by libraries is significant which will ultimately enhance the value based servics, of academic libraries.

2. Role of College Libraries

Engineering and Medical college Libraries play a central role in enhancing the quality of academic and research environment. Shri H.V.P.Mandal's Vidarbha Ayurved Medical College and Research center Dastur Nagar, Amravati. Maharashtra is a prestigious ayurveda Institution in Amravati City. It was established 1931 and affiliated with CCIM, New Delhi & MUSH Nasik which is the only University in Maharashtra State. The Library has play Major role in achievements be because the library is the center of knowledge, major source of information with 14 various depts. With Dept. libraries our users is U.G.& P.G. Students as well as staff members & researcher's. Each and every library has the best innovative ways and practices, which make your library perfect and users friendly and epicenters of attraction of students. The (CCIM) central council of Indian medicine, New Delhi & Maharashtra Accreditation and assessment council strive for quality and excellence in medical education and advocates for enhancing the role of library and Information services in improving academic environment. Library is the major support for the entire range of academic activities on an educational campus. College library is the pulsating heart which is to quicken every activity which goes on upon the campus, it is the easily accessible mentor to which every alumnus should look for guidance and it is a beacon light whose rays should illuminate more and more the path of those leader's of men who are entrusted with the conservation of equality of opportunity and the solution of problems of civilization that assessment a greater and ever increasing degree of complexity. The library organizing

the library resources in a systematic way, but also feeds the intellect of the students, encourage the researchers of the faculty and thus serve the teaching and research needs of the faculty.

The areas where best practices can be adopted and implemented in a library and information environment are: -

- Library organization and management
- Usage of library services
- Automation and use of technology.

2.1. Challenges faced by college library

- Explosive growth of Information and documents
- Increased cost of document and information materials.
- Increase in users information needs
- New role of the librarian and grater responsibilities
- Latest techniques and concept in handling of Information.
- New electronics information environment.
- Creation of databases and its security.
- Marketing of library and information services.

The library and information center of an institution play a central role in facilitating dissemination and creation of new knowledge. In the present learning environment, the library and information center are learning resource has taken up in cresaingly more academic space and time in the life of the user. thus it is time to identify and adopt the new ways that will lead library and information center to improve their process and activities, there by optimizing the resource utilization and delivering high quality, and value added services to their users.

3. Best Practice Adopted in college library

- Books exhibition program
- Making of a pathfinder to the library.
- Developed of a webpage for the library.
- Partially computerization of library with standard automation software "Libsoft" (prepared by our parent institution)

- Inclusion of sufficient information about the library and resources in the college magazine.
- Arranged information literacy programme for college students as well as outside students.
- Provide the current awareness service to user.
- Current content services of journals. Sending scanned content page of journals to users, this service is save the time of the user and also increases the utilization.
- Provide Internet facility to user.
- Displaying new arrivals and circulating a list of these arrivals to academic departments. (charts, models, illustrations.)
- Organizing book talks by authors and readers.
- Instituting annual 'Best user award' for students.
- Conducting user survey's periodically.
- Establishing linkage with other library and avail free services.
- Staff users meet organizing student and library staff round tables, with faculties coordinators.
- Creation of digital repositories for articles publications thesis, dissertations, seminars/conference papers, course ware etc.
- Initiatives for research projects / turn key projects from the departments library.
- Development of electronic environment of the campus and encouragement to e-deliveries.
- Building a network of college libraries under the aegis of university library
- Developing virtual presence conducting exhibitions, demonstrations-lecture on current issues, audio visual clippings and graphs.

4. Conclusion

Best practices in simple tern known is the practice which pave the way for enhancing the existing function and help in effective implementation or use of the process. The best practices is an attitude, an approach of a philosophy based on the desire for continuous learning and improvement use of technology is designing and delivering the delivering the information products and services is always made good results.

Automation of all in-house operations in academic libraries with bar coding user identifies and web-OPAC facilities is a best practice in totality of library services. Hence adopting new techniques and tools in imparting users education may be of best practices in extent of use of library services.

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Big Data and Libraries

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Abstract: The era of Big data has begun. This paper attempts to explain big data from its use. Big data is much older then the current debates suggest. Science data has been big for a long time and provides the innovations that help to make the big data work.. Today the impact of data abundance extends well beyond scientists but government, sociologists, computer scientist's etc demand for massive information produced by and about people, things and their interactions. This paper explains the role of librarians as data scientists. The nature of libraries changes if they use big data as other businesses uses it.

Keywords: Big data, data revolution, information explosion

1. Introduction

Big data and social media are the new catchphrase in public discussions. Welcome to the 'Age of Big Data.' Big data seems to be everywhere so as social media. Social media appears as the golden answer of more applications and discourses. Both are intrinsically linked and part of the digital ecosystems. Big data is already transforming the study of how social networks functions. Much attention it is gaining because everyone is engaged with social media applications on daily basis such as blogs, facebook etc.

Financial Times special report, big data is empowering individuals, as the analytical techniques that come with it allow them to get a better overview of the distributed knowledge out there, hidden in social media world and elsewhere (Financial Times, 2012a). Businesses are, however, struggling to decode all this data and they are starting to drown in it – Businesses are doing their best to store and use that information. And it seems unclear yet whether they will succeed. (Financial Times, 2012b). According to Financial Times analysis, what is lacking, it is equivalent of a librarian in a library for the corporate world to exploit all the information they need. Masters of Big Data' will be able to navigate the big data space to support this connection. With such masters, users and business gain control over the data tsunami they are faced with. (Financial Times, 2012b)

2. Big Data: A conceptual Framework

In February 2010, The Economist started its special report "Data, data everywhere" with the phrase "the industrial revolution of data" (coined by computer scientist Joe Hellerstein)

and then went to note that "The effect is being felt everywhere, from business to science, from government to the arts" (The Economist, 2010).

Big data is a set of techniques and technologies that require new forms of integration to uncover large hidden values from large datasets that are diverse, complex, and of a massive scale (Hashem, 2015). The rise of digital and mobile communication has made the world become more connected, networked, and traceable and has typically lead to the availability of such large scale data sets (Rainie & Wellman, 2012).

A good definition of big data is to describe "big" in terms of the number of useful permutations of sources making useful querying difficult (like the sensors in an aircraft) and complex interrelationships making purging difficult (as in the toll road example). Big then refers to big unpredictability rather than big volume. Obviously, profitable and complex datasets of this sort commonly have a tendency to grow quickly thus big data rapidly gets to be really gigantic. In other words, Big Data can be very small and not all large datasets are big.

3. Big Data And Libraries

Big data librarians are mainly involved in assisting researchers in data management tasks and assessment data - and importantly, the art of knowing how to present it i.e data visualization.

Owing to their ability quickly to grasp and gain comfort with new technology trends, *academic librarians are poised to emerge as leaders in a new world where data is the coin* of the realm.

- Steven Bell

There is a need to save, curate and make accessible data from papers for other researchers and others who also want to use that same data for other purposes. But librarians face the difficulty in curate the information because many researchers don't want to share their data and challenge lies in improving the data repositories and sharing it with other institutions. Carol Feltes stated that "know what matters and what to asses(s), it now takes an entirely separate skill set to be able to do it!" By paying more attention to the areas of measured potential can lead the libraries to serve functions, helps in achieving the desired goals but also by sharing the data broadly can help the libraries to be more useful. For example, OCLC's Roy Tennant added that with "anonymized circulation information we might be able to do a better job with recommending related items to our users."

4. Role of Libraries

Photography, from its inception, has been dogged by a somewhat peculiar superstition: that by recording your image, a camera steals a part of your soul. There is something to that idea.... Having just a single picture of someone can give you a form of power over that person. Will Big data steal your soul outright?

- Jean-Baptiste Michel and Eric Lieberman Aiden

5Th Law of "Ranganthan's Five Laws" that "Library is the growing organism so as the Librarianship. Librarians have always been great at information management and organization. Kevin Kelly stated that 'As the plant in the windowsill leans towards the sunlight, so technology has its drives or desires as well. Technology – or the "technium", as he calls it – is a living being.' According to Viktor Mayer-Schonberger and Kenneth Cukier, "Big data changes the nature of business, markets, and society". The nature of libraries can be changed if we would use the Big data to the extent that many businesses would like to use Big data. As large libraries take on the issue of data management more and more will they – will you – insist that this is not the core aspect of the library's mission, but only a supplementary aspect – and that any attention given to this task needs to be supported by additional monies in library budgets? (Gitelman, 2013). And as library administrators are asked to assess more and more here and need to walk a fine line between the wisdom in assessment and the futility of assessment. (Gellner, 1974).

Librarians must have confidence to give the "customer" what they need even if they don't want it. This does not mean the librarian presumes he knows everything but rather that he knows something – and something important. The "customer" needs must be wrapped up appealingly they will need to limited degrees. We must also train persons to pay attention and directly tell persons that you mean to cultivate attention in them and to challenge them in a myriad of ways. Kevin Smith's definition of efficiency: "An activity is efficient if it produces the maximum amount of value for the least investment. So the real question is, what do we value?" This definition explains that it should be evaluated not, more quantitatively, measured. Library's relationship with its community and its administration should be such that librarian should not be in absurd position of having to defend his library's existence. Big Data is a big deal, and it is a big opportunity for librarians and information professionals to play a role in the Big Data universe. Why? Librarians have the skills, the knowledge, and the service mentality to help our businesses, governments, universities, and nonprofits capitalize on all that Big data has to offer.

5. Librarians as Data Scientists

"Technology is a gift of God. After the gift of life it is perhaps the greatest of God's gifts. It is the mother of civilizations, of arts and of sciences."

- Freeman Dyson

Technology is one of the reasons for information explosion. The amount of the digital information is increasing tenfold every five years. The quantity of the data continues to flow faster than the ability of the network to carry it. According to The Economist, the "trail of clicks that internet users leave behind from which value can be extracted is becoming a mainstay of the internet economy." Consumers generate vast amounts of data every day through email, searching, browsing, blogging, tweeting, buying, sharing, and texting.

Librarians face the challenge with the ability to manage this information. Librarian's job is to find information, organizing it and making it accessible to others. There are many areas where librarian needs to have expertise such as privacy, collection management, technological skills, etc. One more area has been added to it – Data scientists - the main tasks of a data scientist are finding data and using it to learn new things, usually with nifty visualizations that make their findings easier for others to understand.

The librarian who can put on her data scientist hat and actually use the data she is producing is the ultimate dogfooder."

- Bryan J. Brown

"Eating your own dogfood," or "dogfooding," is the act of using the product you are designing. Librarian's area unit all tied to core work with knowledge and data. Librarians are literally a sort of knowledge soul or a lot of necessary than that. Good data science depends on sensible data, and therefore the role of libraries is speedily shifting towards a brand new goal: producers of the top-grade internet data. Consider it: libraries have dependably been at the epicenter of the craft of portraying things. We even institutionalized the way we portray things so different libraries could read our portrayals. The whole history of libraries has been paving the way to the semantic web where things are depicted so reliably that even machines can read and understand these portrayals. This is no minor undertaking. In any case while the Web 3.0 is still far away in the skyline, libraries are working with whatever remains of the world to establish the framework of the semantic web with innovation like BIBFRAME and linked data.

While it's not dire for most librarians to learn data science, we do our work in a universe of information, data, and metadata. Establishing in the ideas and systems for data science could be unfathomably useful to numerous librarians occupied with delivering quality information for the web. Finding out about data science extends the way we consider information and its uses by benefactors and purchasers, which thusly grows the way we consider our own library data. The librarian who can put on his/her data scientist hat and really utilize the data he/she is delivering is a definitive dogfooder.

The potential outcomes are inestimable for finding out about data science and applying it to your role as a librarian (information education! evaluation! outlines that demonstrate to you merit a raise!). As our world gets to be more data driven, data abilities will just increment in value–for us and for everybody we work with.

6. Conclusion

We have entered an era of Big Data. Through better examination of the extensive volumes of information that are getting to be accessible, there is the potential for making quicker advances in numerous experimental trains and enhancing the gainfulness and achievement of numerous ventures. Analyst Anne Lapkin in a Gartner report: "Big data is not just about MapReduce and Hadoop. Although many organizations consider these distributed processing technologies to be the only relevant "big data technology," there are alternatives. In addition, many organizations are using these technologies for more

traditional use cases, such as preprocessing and the staging of information to be loaded into a data warehouse." In other words, simply making big data sets accessible is not a coveted end point. It is about making the data reusable in blend with other data sets over the Web. Library data if imparted comprehensively is valuable to different groups and is gotten to and repurposed. Because librarians have put on so much time and vitality into legitimately portraying resources, their creators and subjects covered, this data serves a profitable part in joining the numerous aspects of individuals, things, places, occasions, organizations and concepts into a meaningful knowledge graph.

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Comparative Study of Research Output of the University of Kashmir and the University of Jammu: *A Decadal Analysis*

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Abstract: In the present study attempt has been made to evaluate the comparative research output of University of Jammu and University of Kashmir during the period 2004-2013. University of Jammu and University of Kashmir apart from being two sister universities for being carved out of single institution are also the two premier institutions of higher learning in the state of Jammu & Kashmir, India. The key areas studied on comparative basis include, research output, author's analysis, citation analysis, subject analysis etc. and many more similar aspects. The study is purely based on analysis of secondary data retrieved from one of the leading indexing service provider, web of knowledge. The data for the present study was retrieved from the official website of the web of knowledge duly owned and maintained by Thomson and Reuters on January 13, 2014 for the period 2004-2013.

Keywords: Research Output, University of Kashmir, University of Jammu, Citation Analysis

1. Introduction

Human endeavour to explore the vistas of knowledge beyond horizon has there been since ages and had this quest not been there, life would have literally ceased to grow. The quest towards exploring hitherto unexplored areas of knowledge and pressing newly acquired knowledge in the service of humankind is towards which humans get more fascinated. Nations across globe in both academic and non-academic institutions are spending huge money on research and development activities. Public and private sector organizations and industries are equally involved with research and developmental activities at their own level. Given this fact, the research output of all institutions involved with constant and continuous research activities has not only become the parameter to assess their presence and performance but of the nations as well.

India is a developing nation, having a federal structure of governance with over 1.2 billion [1] people and to cater the teaching and other research requirements of this huge population, a network of more than 600 universities & research institutions stand established across 35 states and union territories of the country [2]. Keeping in view the growing and greater demand for institutions of higher learning, Govt., of India has already set a mission of establishing more universities to achieve the objective to increase the gross enrolment ratio by at least 15% by 2015 [3] as recommended by the National Knowledge Commission (NKC). This also somewhere reflects the fact that the existing universities in India are working under greater pressure & beyond their actual delivering capacity. It is pertinent to mention that the Indian higher education system has shown considerable growth over a period of time and this gets corroborated by the fact that India is one of the preferred destinations of educational tourism, as people all across the globe prefer to join Indian universities for research and higher studies. Academic and research activities undertaken by Indian university are second to none and this is evident from the placement records of products from institutions like IIM's & IIT's. Brain drain is equally an area of concern for India, as most of the technical and professional graduates get easily adjusted in any developed country with best pay packages.

In the present study comparison has been drawn between the University of Kashmir and University of Jammu on the research output both the institutions have made during the past decade viz. during the period 2004-2013. Apart from University of Kashmir and University of Jammu, the state is an abode of 07 more Universities and one National Institute of technology, but for being too young to be evaluated with the former two establishments have as such been excluded from the present study. To undertake the present study data was retrieved from the Web of Knowledge on January 13, 2014.

2. Jammu and Kashmir --- Kashmir & Jammu Universities: A Brief Profile

Before independence Jammu & Kashmir like other princely states entered into an accession agreement with the Union of India on October 26, 1947 [4]. The state of Jammu & Kashmir is located on the northern part of the union of India, having an area of 101,387 kms and as per 2011 population census of Govt., of India, the state has a population of 12.54 million people with a 68.70 % literacy rate. Jammu & Kashmir is one of the least densely populated states having 124 persons per sq km [5]. The state shares international border with countries like, China, Tibet, Pakistan and Afghanistan. Mountain ranges like the Himalayas and Pir Panjal has contributed towards the unique geographical diversity of the state for having Jammu, Kashmir and Ladakh Regions which altogether have different culture, language, and temperate zone.

Establishment of Jammu & Kashmir University on the west banks of world famous Dal Lake of Srinagar, Kashmir in the year 1948 is a giant leap towards the promotion and propagation of higher education in the history of the state. To begin with university stated functioning with three post graduate departments' viz. English at Srinagar campus and, Economics & Geology in Jammu campus. This was the humble beginning of higher education in Jammu & Kashmir and in the course to reform higher education in 1965 [6] university was reorganized owing to the geographical diversity of the region, the

institution could not serve the aspirations of the state populace from a single campus with the result south campus in Jammu region was declared as an independent university known and University of Jammu and north campus came to be known as University of Kashmir. Since then, the two independent full-fledged premier educational institutions of higher learning in Jammu & Kashmir are actively involved with teaching and research activities.

3. Objectives of the Study

- To assess the research trend of Kashmir and Jammu University by undertaking research output analysis of both the institutions during the period 2004-2013
- To understand the research trend and the subject areas of the institutions which are majoring in research output among both University of Kashmir and University of Jammu.
- To analyse the citations received by publications of the both the institutions during the period of study.

4. Review of Literature

Analysing the research output of the institutions of higher learning, especially of those which enjoy repute, both at the national and international level had always been the supreme fantasy of researchers specializing is Bibliometrics or Scientometrics. Since the present study confines to two state universities of Jammu & Kashmir, as such, it becomes imperative to study some relevant work done in the areas. Some of the key studies conducted in the area have been reviewed hereunder.

Moed et al. (1985) [7] in their study talked about the need and importance of undertaking bibiliometric studies in setting objectives and framing policies for research institutions and at the same time act as monitoring devices about the research output. In another study Moed (2009) [8] discussed about the increased research activities undertaken in the field of science and technology for the fact that these have actually become the index to evaluate the social, political and economic health of the counties. Moed's observation in both the studies is society centric and rightly so, for the fact that what so ever kind of research we undertake in society, be it in the fields of science and technology or in the field of social sciences, the ultimate aim of every research is well being and betterment of society which comes through sustainable growth and development.

Shuttleworth (2008) [9] described pure and social science as hard and soft sciences and the research as an activity irrespective of the science it has been undertaken acts as its cornerstone. No science can afford to be lenient on the research front and there is every reason that we should add to the existing lot of knowledge which is not possible in the absence of research. Millwater and Hudson (2008) [10] in their study reflected the need and importance of research in the overall growth and development of a nation and its citizens and how actual knowledge plays its part in all round development. The researchers are of

the view that nations which more or less are knowledge societies are more dependent on the research activities as it is only the new knowledge which they can add to the existing knowledge through research activities. The researchers believe that the greater role which society has to play through its sub institutions is in the dissemination and exploitation of the new knowledge so that the end user may get benefited of whom this research is ultimately aimed to.

Siemens and Matheos (2010) [11] in their study have highlighted the role of institutions of higher learning in general and universities in particular towards producing the skilled and trained workforce to shoulder the social responsibility. The researchers are of the view that the research activities of the universities account for the national research output and research activities undertaken in the area of science and technology has become the foremost area to be worked upon. Yamamoto (2001) [12] in his study argued that scientific research is the key function of Universities, which apart from playing a part in refining the existing lot of knowledge by producing new knowledge through research activities do contribute to society through innovations which boost economic activities in countries by targeting industrial development.

Koganuramath et al. (2002) [13] undertook a bibliometric study on the research output of Tata Institute of Social Sciences (TISS) by analysing 663 publications published by scholars affiliated to TISS during the period 1990-2000 with main focus on the growth of research output and the sources they prefer to publish their research results. Kumbar (2008) [14] analysed 1518 publications of University of Mysore published during the period 1996-2006 and observed that there is an annual increase of 23% of the publications output, the areas studied by the researcher included, collaborative research undertaken by the institution, authorship pattern, citation analysis etc. Accordingly Singh et al. (2005) [15] evaluated 901 publications of Indian Institute of Technology, Roorkee for the period 1993-2001 by harvesting data from the science citation index and observed that mathematics, Biology and Clinical Medicine are the three leading areas of the institute actively engaged in research activity. Vasishta (2011) [16] analysed 177 research publications of PEC University of Technology, Chandigarh for the period 1996-2009 by harvesting data from Scopus database and observed steady growth in the publications of the institution during the period of study.

Gupta, Kshitij & Verma (2010) [17] studied about some leading subject areas in the field of sciences actively engaged in research activity, the researchers observed that subject like Chemistry, Physics & Engineering are the dominant ones, while as agriculture, life sciences, clinical medicine, biomedical sciences, earth & environmental science are active in research activity but slightly to a lesser degree in the preceding science subjects. Mathematics and computer science have been rated at the lower end. Gupta and Dhawan (2006) [18] while analysing the scientific research output of India from web of science for the period 1990-2005 observed that over a period of time India has shown steady growth in the research output recording growth of 28603 publications in 2005 from 14405 publications during the year 1990, which in terms of percentage recorded 98.56% growth. Nadim, Sumaira and Iram (2014) [19] gathered the data from SCOPUS and evaluated 1237 research

publications of Jammu University, published during the period 1972-2011 by selected science departments of the University

5. Source and Methodology

To undertake the present study data was retrieved from one of the world's largest indexing services, web of knowledge on January 13, 2014. Given the objectives of the study publications of the researchers affiliated to the University of Kashmir and University of Jammu were mined from the indexing service by using key word search terms for both the institutions. As per the data harvested, during the period of investigation 917 publications were published by the research scholars affiliated with the University of Jammu in as many 41 subject areas and 639 publications by research scholars affiliated to University of Kashmir in as many 51 subject areas. The main areas of analysis include year's wise publication, distribution, subject areas, top cited publications, citation analysis and top contributors from both the Universities.

6. Scope of the Study

The present study is purely confined to the University of Kashmir and University of Jammu as these are the two premier institutions of higher learning in Jammu and Kashmir, India. In order to study and understand the research trend and output in other universities of Jammu and Kashmir or as whole of Jammu & Kashmir the study can be extended to other state universities who still don't have that rich past to cherish on.

7. Discussion and Analysis

Although the data retrieved from the web of knowledge was very much structured, however, in a few places some structuration was required as such was undertaken. To analyse the data some basic statistical tools and techniques were employed. To work out simple arithmetic's like, addition, subtraction, multiplication, division, etc MS excel was employed. Percentage at most of the places has been drawn up to three decimal places.

Table-1 Total Publications

Name of the institution	No of publications (Share %age)
University of Jammu	917 (58.93)
University of Kashmir	639 (41.07)
Total	1556

As per the data retrieved, together University of Jammu and University of Kashmir for the period 2004-2013 have 1556 publications to their credit with University of Jammu having share percentage of 58.93% and University of Kashmir 41.07%.

Table-2: Yearly Publication Distribution

Year	University of Jammu			University of Kashmir			Total Publications (%)	Corrsp. Growth %age	Cumulative Growth (%)
	No of Publications (%)	Corrsp. Growth %age	Cumulative Growth (%)	No of Publications (%)	Corrsp. Growth %age	Cumulative Growth (%)			
2004	74 (8.07)	-	74 (8.07)	21 (3.286)	-	21 (3.28)	95 (6.10)	-	95 (6.10)
2005	76 (8.288)	2.70	150 (16.35)	23 (3.599)	9.52	44 (6.88)	99 (6.36)	4.21	194 (12.46)
2006	92 (10.033)	21.05	242 (26.39)	29 (4.538)	26.08	73 (11.42)	121 (7.77)	22.22	315 (20.24)
2007	94 (10.251)	2.17	336 (36.64)	39 (6.103)	34.48	112 (17.52)	133 (8.54)	9.91	448 (28.79)
2008	74 (8.070)	-21.27	410 (44.71)	59 (9.233)	51.28	171 (26.76)	133 (8.54)	0	581 (37.33)
2009	85 (9.269)	14.86	495 (53.98)	68 (10.642)	15.25	239 (37.40)	153 (9.83)	15.03	734 (47.17)
2010	82 (8.942)	-3.52	577 (62.92)	55 (8.607)	-19.11	294 (46.00)	137 (8.80)	-10.45	871 (55.97)
2011	97 (10.578)	18.29	674 (73.50)	87 (13.615)	58.18	381 (59.62)	184 (11.82)	34.30	1055 (67.80)
2012	130 (14.177)	34.02	804 (87.67)	116 (18.153)	33.33	497 (77.77)	246 (15.80)	33.69	1301 (83.61)
2013	113 (12.323)	-13.07	917 (100)	142 (22.222)	22.41	639 (100)	255 (16.38)	3.65	1556 (100)
	917 (58.93)	55.23		639 (41.07)	231.42		1556	112.56	
		5.52			23.14			11.25	

Except for the year 2013, University of Jammu has outnumbered the University of Kashmir at the publication's front in each year. Negative growth of publications was observed among both institutions, compared to University of Jammu which registered negative growth of -21.27%, -3.52% & -13.07% in publications during the year 2008, 2010 and 2013 respectively, University of Kashmir registered negative growth of -19.11% during the year 2010 only. University of Jammu recorded maximum 34.02% growth in publications during the year 2012, while as University of Kashmir recoded maximum 58.18% growth during the 2011.

Maximum 130 publications constituting 14.177% were published by scholars affiliated to university of Jammu during the year 2012 while as maximum 142 publications constituting 22.222% were published by scholars of University of Kashmir during the year 2013. Publications of University of Jammu grew at 5.52% annually, while as publications of University of Kashmir grew at an average of 23.14% annually, and together the average annual growth of publications of both the institutions was remained at 11.25%.

Table-3 Document Type

University of Jammu		University of Kashmir		Total Document Type	No of Publications (%1556)
Document Type	No of publications (% of 917)	Document Type	No of publications (% of 639)		
Article	870 (94.875)	Article	569 (88.732)	Article	1439 (92.48)
Review	27 (2.944)	Review	29 (4.538)	Review	56 (3.59)
Proceedings paper	15 (1.636)	Editorial material	12 (1.878)	Proceedings paper	22 (1.41)
Meeting abstract	9 (0.981)	Meeting abstract	12 (1.878)	Meeting abstract	21 (1.34)
Letters	3 (0.327)	Letters	10 (1.565)	Editorial material	14 (0.89)
Biographical item	2 (0.218)	Proceedings paper	7 (1.095)	Letters	13 (0.83)
Book review	2 (0.218)	Book review	6 (0.939)	Book review	8 (0.51)
Correction	2 (0.218)	Correction	3 (0.469)	Correction	5 (0.32)
Editorial material	2 (0.218)			Biographical item	2 (0.12)
	917		623		

On the nature of publication distribution, compared to 870 research articles published by the scholars affiliated to the University of Jammu only 569 were published by scholars from the University of Kashmir, accordingly the other publications from scholars of both the universities in the standing order of the universities is 27 & 29 Reviews, 15 & 7 Proceeding Papers, 9 & 12 Meeting Abstract, 3 & 10 Letters, 2 & 6 Book Review, and 2& 3 Corrections respectively. Apart from these, University of Jammu has also two biographical items to its credit. Given the nature of publications from both the universities, 92.48% are research articles of which 60.45% publications were contributed by scholars of the University of Jammu and 39.55% by scholars of University of Kashmir. Accordingly, of the total 3.59% Reviews 48.21% are from the University of Jammu and 51.79% from the University of Kashmir, of the total 1.41% proceeding papers 68.18% are from the University of Jammu and 31.82% from the University of Kashmir. Among Meeting Abstracts (1.34%), editorial Material (0.89%), letters (0.83%), Book Reviews (0.51%),and Corrections (0.32%) University of Kashmir shares better percentage over University of Jammu, while as *Biographical Items constituting 0.12% of total publications is alone credited to University* of Jammu.

Table-4: Subject wise detail of publications

S.No	University of Jammu		University of Kashmir	
	Research Area	No of publications (% of 917)	Research Area	No of publications (% of 639)
01	Physics	287 (31.298)	Chemistry	114 (17.84)
02	Chemistry	250 (27.263)	Physics	72 (11.268)
03	Crystallography	91 (9.924)	Pharmacology, pharmacy	69 (10.798)

04	Materials science	61 (6.652)	Mathematics	49 (7.668)
05	Science, technology other topics	52 (5.671)	Engineering	44 (6.886)
06	Geology	45 (4.907)	Plant sciences	38 (5.947)
07	Spectroscopy	43 (4.689)	Environmental sciences, ecology	35 (5.477)
08	Mathematics	31 (3.381)	Oncology	27 (4.225)
09	Plant sciences	31 (3.381)	Biochemistry molecular biology	26 (4.069)
10	Engineering	23 (2.508)	Geology	23 (3.599)
11	Environmental sciences, ecology	18 (1.963)	Science, technology other topics	23 (3.599)
12	Palaeontology	17 (1.854)	Food science technology	19 (2.973)
13	Biotechnology applied microbiology	16 (1.745)	Agriculture	18 (2.817)
14	Pharmacology, pharmacy	16 (1.745)	Parasitology	18(2.817)
15	Astronomy, astrophysics	13 (1.418)	Astronomy, astrophysics	17 (2.66)
16	Biochemistry molecular biology	13 (1.418)	Biotechnology applied microbiology	17 (2.66)
17	Genetics heredity	13 (1.418)	Life sciences biomedicine other topics	17 (2.66)
18	Life sciences biomedicine other topics	10 (1.091)	Computer science	16 (2.504)
19	Microbiology	10 (1.091)	Integrative complementary medicine	14 (2.191)
20	Agriculture	9 (0.981)	Materials science	14 (2.191)
21	Instruments instrumentation	7 (0.763)	Veterinary sciences	14 (2.191)
22	Geochemistry geophysics	6 (0.654)	Genetics heredity	13 (2.034)
23	Metallurgy metallurgical engineering	6 (0.654)	Zoology	12 (1.878)
24	Nuclear science technology	5 (0.545)	Cell biology	11 (1.721)
25	Anthropology	4 (0.436)	Microbiology	11 (1.721)
26	Business economics	4 (0.436)	Fisheries	10 (1.565)
27	Electrochemistry	4 (0.436)	Toxicology	10 (1.565)
28	Remote sensing	4 (0.436)	Emergency medicine	8 (1.252)
29	Women s studies	4 (0.436)	Neurosciences neurology	8 (1.252)
30	Computer science	3 (0.327)	Telecommunications	8 (1.252)

31	Physical geography	3 (0.327)	Water resources	8 (1.252)
32	Polymer Science	3 (0.327)	Geochemistry geophysics	7 (1.095)
33	Telecommunications	3 (0.327)	Public environmental occupational health	7 (1.095)
34	Water resources	3 (0.327)	Biodiversity conservation	6 (0.939)
35	Biophysics	2 (0.218)	Endocrinology metabolism	6 (0.939)
36	Food science technology	2 (0.218)	Immunology	6 (0.939)
37	Imaging science photographic technology	2 (0.218)	Nutrition dietetics	6 (0.939)
38	Information science, library science	2 (0.218)	Religion	6 (0.939)
39	Meteorology atmospheric sciences	2 (0.218)	Arts, humanities other topics	5 (0.782)
40	Mineralogy	2 (0.218)	Electrochemistry	5 (0.782)
41	Psychology	2 (0.218)	History philosophy of science	5 (0.782)
42			Marine freshwater biology	5 (0.782)
43			Physiology	5 (0.782)
44			Crystallography	4 (0.626)
45			Research experimental medicine	4 (0.626)
46			General internal medicine	3 (0.469)
47			Metallurgy metallurgical engineering	3 (0.469)
48			Mycology	3 (0.469)
49			Orthopedics	3 (0.469)
50			Pathology	3 (0.469)
51			Remote sensing	3 (0.469)
52			Surgery	3 (0.469)
53			Asian studies	2 (0.313)
54			Forestry	2 (0.313)
55			Infectious diseases	2 (0.313)
56			Information science, library science	2 (0.313)
57			Medical laboratory technology	2 (0.313)
58			Polymer Science	2 (0.313)
59			Psychiatry	2 (0.313)

While accounting the subject areas covered, University of Kashmir outnumbered University of Jammu by contributing publications in as many as 59 major subject areas while as University of Jammu contributed in 41 subject categories. From the University of Jammu, a maximum 278 publications constituting 31.298% share percentage of total publications are in the field of Physics, followed by 250 publications constituting 27.263% share percentage in the field of chemistry and 91 publications constituting 9.924% share percentage in the field of crystallography. Of the remaining, 15 subject areas have individual share percentage between 1 to 7 percent and 22 less than 1%. Accordingly from the University of Kashmir, a maximum 114 publications constituting 17.84% share percentage are in the field of Chemistry, followed by 72 publications constituting 11.268% share percentage in the field of Physics and 69 publications constituting 10.798% share percentage in the field of Pharmacology Pharmacy. Of the remaining, 30 subject areas have individual share percentage between 1 to 8 percent and 26 less than 1%

Table-5: Author analysis (Top Twenty)

S.No	University of Jammu			University of Kashmir		
	Author Name	No of publications (% of 917)	Ranking	Author Name	No of publications (% of 639)	Ranking
01	Mohanty B	198 (21.592)	1	Shah N.A	50 (7.825)	1
02	Ahammed Z	196 (21.374)	2	Dar A.A	40 (6.260)	2
03	Raniwala S	196 (21.374)	2	Ahmad F	35 (5.477)	3
04	Raniwala R	195 (21.265)	4	Sheikh J.A	26 (4.069)	4
05	Nandi B.K	193 (21.047)	5	Ganai B.A	25 (3.912)	5
06	Nayak T.K	193 (21.047)	5	Iqbal S.Z	25 (3.912)	5
07	Aggarwal M.M	190 (20.720)	7	Rather G.M	25 (3.912)	5
08	Mahapatra D.P	190 (20.720)	7	Zargar M.A	25 (3.912)	5
09	Sumbera M	190 (20.720)	7	Masood A	24 (3.756)	9
10	Bellwied R	188 (20.502)	10	Qurishi M.A	24 (3.756)	9
11	Chattopadhyay S	188 (20.502)	10	Malik M.A	21 (3.286)	11
12	Smirnov N	187 (20.393)	12	Shawl A.S	21 (3.286)	11
13	Viyogi Y.P	187 (20.393)	12	Reshi Z.A	20 (3.130)	13
14	Caines H	185 (20.174)	14	Chishti M.Z	18 (2.817)	14

15	Harris J.W	185 (20.174)	14	Akbar S	17 (2.660)	15
16	Kisiel A	185 (20.174)	14	Bhat M.A	17 (2.660)	15
17	Lisa M.A	185 (20.174)	14	Rashid L	17 (2.660)	15
18	Pluta J	185 (20.174)	14	Shah M.A	17 (2.660)	15
19	Putschke J	185 (20.174)	14	Dar G.H	16 (2.504)	19
20	Scharenberg R.P	185 (20.174)	14	Khuroo A.A	16 (2.504)	19
	Total authors 2388			Total authors 421		

Above tabulation is the reflection of the individual author contribution from both the institutions under study, while as the listing of names in the above has been confined to top twenty authors only. In all 2809 authors are involved with the publication of as many 1556 articles, of which 2388 are either from the University of Jammu or have contributed as a collaborative author with scholars from the University of Jammu and only 421 authors are either from the University of Kashmir or have contributed with the scholars of University of Kashmir on collaborative basis.

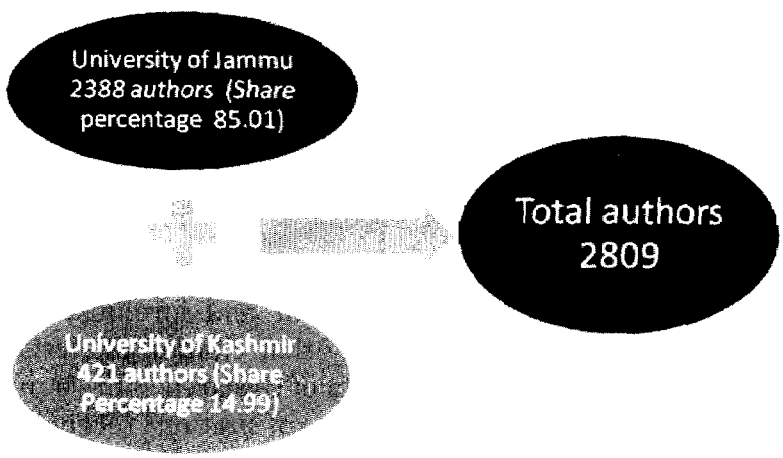


Figure 1

In terms of authorship distribution, University of Jammu has a share of 85.01%, while as, the University of Kashmir has 14.99%. The above authorship distribution is also the reflection of collaborative research work undertaken by scholars of both the Universities. The greater the number of authors involved with the research work done, greater are the chance of their research being carried out on a collaborative basis.

From University of Jammu, Mohanty, B has 198 publications to his credit during the period of study constituting alone 21.592% share percentage, followed by Ahmmed, Z and Rajniwala, S having 196 publications each with share percentage of 21.374% each and Raniwala, R having 195 publications with share percentage of 21.265% while as the rest of

the top sixteen authors have share contribution between 20.174% to 21.047%. Accordingly from University of Kashmir, Shah, N.A has 50 publications to his credit, constituting 7.825% share percentage, followed by Dar, A.A with 40 publications, constituting 6.260% share percentage and Ahmed, F with 38 publications constituting share percentage of 5.477%, while as the rest of the 17 top authors have publication share percentage between 2.504% to 4.069%

Table-6 Citation analysis

Year	University of Kashmir		University of Jammu		Total	
	No. of Citations (%)	Cumulative Growth (%)	No. of Citation (%)	Cumulative Growth (%)	Total Citations (%)	Cumulative Growth (%)
2004	0 (0)	0 (0)	82 (0.63)	82 (0.63)	82 (0.55)	82 (0.55)
2005	12 (0.64)	12 (0.64)	347 (2.70)	429 (3.33)	359 (2.43)	441 (2.99)
2006	18 (0.96)	30 (1.60)	722 (5.61)	1151 (8.95)	740 (5.02)	1181 (8.02)
2007	56 (2.99)	86 (4.60)	970 (7.54)	2121 (16.50)	1026 (6.97)	2207 (14.99)
2008	102 (5.46)	188 (10.06)	1026 (7.98)	3147 (24.48)	1128 (7.66)	3335 (22.65)
2009	174 (9.31)	362 (19.38)	1451 (11.29)	4598 (35.77)	1625 (11.04)	4960 (33.70)
2010	214 (11.46)	576 (30.85)	1292 (10.05)	5890 (45.83)	1506 (10.23)	6466 (43.93)
2011	306 (16.38)	882 (47.24)	2381 (18.52)	8271 (64.36)	2687 (18.25)	9153 (62.18)
2012	441 (23.62)	1323 (70.86)	2270 (17.66)	10541 (82.02)	2711 (18.41)	11864 (80.60)
2013	544 (29.13)	1867 (100)	2310 (17.97)	12851 (100)	2854 (19.39)	14718 (100)
Total	1867 (186.70)*		12851 (1285.10)*		14718 (817.66)	

*-Average citations per year

Citation analysis has become one of the important and foremost aspects of research evaluation, even it won't be inappropriate to say that citation analysis has more or less become one of the parameters to judge the quality of research. More a publication receives citations more it is deemed as quality work. In terms of citations received,

University of Jammu is far ahead of University of Kashmir. During the period of study total citations received by publications from both the institutions are 14718 out of which University of Jammu received 87.31%, while as, the University of Kashmir received meagre 12.69%. In terms of average citations received per annum, University of Jammu received as many 1285.10, while as University of Kashmir received 186.70. Compared to University of Jammu which recorded negative growth in citations during the year 2010 and 2012, University of Kashmir recorded positive growth during each year of the analysis. Compared to University of Jammu which received maximum 2381citation during the year 2010, University of Kashmir received maximum 544 citations during the year 2013, with the share percentage of 18.52% and 29.13% respectively.

Table-7: Top ten cited articles of Jammu University

Title	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total & (Avg)
Adams, J; Aggarwal, MM; Ahammed, Z; et al. (2005). Experimental and theoretical challenges in the search for the quark-gluon plasma: The STAR Collaboration's critical assessment of the evidence from RHIC collisions, NUCLEAR PHYSICS A	-	9	127	192	145	195	160	204	178	132	1342 (149.11)
Adams, J; Adler, C; Aggarwal, MM; et al. (2004). Particle-type dependence of azimuthal anisotropy and nuclear modification of particle production in Au plus Au collisions at root s(NN)=200 GeV PHYSICAL REVIEW LETTERS	24	75	71	49	34	32	21	32	20	16	374 (37.40)
Adams, J; Aggarwal, MM; Ahammed, Z; et al. (2005). Azimuthal anisotropy in Au plus Au collisions at root S-NN=200 GeV. PHYSICAL REVIEW	-	3	42	53	49	44	28	47	35	34	335 (37.22)
Adams, J; Adler, C; Aggarwal, MM; et al (2005). Distributions of charged hadrons associated with high transverse momentum particles in pp and Au plus Au collisions at root(S)(NN)=200 GeV. PHYSICAL REVIEW LETTERS	-	1	27	62	43	57	37	51	23	23	324 (36.00)
Aamodt, K.; Quintana, A. Abrahantes; Achenbach, R.; et al. (2008). The ALICE experiment at the CERN LHC. JOURNAL OF INSTRUMENTATION	-	-	-	-	1	20	33	86	90	85	315 (52.50)
Adams, J; Adler, C; Aggarwal, MM; et al. (2004). Identified particle distributions in pp and Au+Au collisions at root s(NN)=200 GeV PHYSICAL REVIEW LETTERS	10	41	57	31	29	24	15	21	23	11	262 (26.20)

Abelev, B. I.; Aggarwal, M. M.; Ahammed, Z.; et al.(2007). Transverse momentum and centrality dependence of High-p(T) nonphotonic electron suppression in Au plus Au collisions at root(NN)-N-S=200 GeV. PHYSICAL REVIEW LETTERS	-	-	-	7	39	69	27	40	37	23	242 (34.57)
Abelev, B. I.; Aggarwal, M. M.; Ahammed, Z.; et al. (2009). Systematic measurements of identified particle spectra in pp, d plus Au, and Au plus Au collisions at the STAR detector. PHYSICAL REVIEW C	-	-	-	-	-	18	41	54	63	47	223 (44.60)
Adams, J; Adler, C; Aggarwal, MM; et al. (2004). Cross sections and transverse single-spin asymmetries in forward neutral-pion production from proton collisions at root s=200 GeV. PHYSICAL REVIEW LETTERS	9	42	32	36	24	17	12	29	8	10	219 (21.90)
Aamodt, K.; Abrahantes Quintana, A.; Adamova, D.; et al. (2011). Suppression of charged particle production at large transverse momentum in central Pb-Pb collisions at root s(NN)=2.76 TeV.PHYSICS LETTERS	-	-	-	-	-	-	-	63	80	66	209 (69.66)
Total Average	43	171	356	430	364	476	374	627	557	447	3845

On the pattern of analysing top 20 authors from both the University of Jammu and the University of Kashmir, it was conceived to analyse the top ten publications of both the Institutions on the basis of citations received by top ten articles during each year of the analysis. From the University of Jammu, as tabulated the article at first place during the period of study has received as many 1342 citations with an average of 149.11 citations each year.

This is followed by 374 citations with an average of 37.40 citations each year by article in second place and the article at third spot received 335 citations with an average 37.22 citations each year. In all the top ten articles from the university received as many 3845 citations with an average 384.50 citations to each article with an average of 38.45 citations per year. Maximum 627 citations were received during the year 2010, constituting alone 16.30% of the total citations.

Table-8 Top ten cited articles of Kashmir University

Title	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total & (Avg)
Dar, Aijaz Ahmad; Rather, Ghulam Mohammad; Das, Akhil Ranjan. (2007). Mixed micelle formation and solubilization behavior toward polycyclic aromatic hydrocarbons of binary and ternary cationic-nonionic surfactant mixtures. JOURNAL OF PHYSICAL CHEMISTRY	-	-	-	-	6	12	6	13	9	13	59 (9.83)
Kabir-ud-Din; Fatma, Waseefa; Khan, Ziya Ahmad; et al. (2007). H-1 NMR and viscometric studies on cationic gemini surfactants in presence of aromatic acids and salts. JOURNAL OF PHYSICAL CHEMISTRY	-	-	-	-	1	2	9	11	11	5	39 (6.50)
Bhat, BA; Puri, SC; Qurishi, MA; et al. (2005). Synthesis of 3,5-diphenyl-1H-pyrazoles.SYNTHETIC	-	1	1	5	6	5	5	4	6	5	38 (4.22)
de Moraes, Emanuela; Dar, Nazir Ahmad; de Moura Gallo, Claudia Vitoria; et al. (2007). Cross-talks between cyclooxygenase-2 and tumor suppressor protein p53: Balancing life and death during inflammatory stress and carcinogenesis. INTERNATIONAL JOURNAL OF CANCER	-	-	-	-	9	9	8	2	6	3	37 (6.16)
Khuroo, Anzar Ahmad; Rashid, Irfan; Reshi, Zafar; et al. (2007). The alien flora of Kashmir Himalaya. *BIOLOGICAL INVASIONS*	-	-	-	1	3	3	6	5	10	5	33 (4.71)
Murtaza, Imtiyaz; Mushtaq, Dhuha; Margoob, Mushtaq A.; et al. (2006). A study on p53 gene alterations in esophageal squamous cell carcinoma and their correlation to common dietary risk factors among population of the Kashmir valley. WORLD JOURNAL OF GASTROENTEROLOGY	-	-	-	1	1	6	7	7	6	4	32 (4.57)
Farah, MA; Ateeq, B; Ali, MN; et al. (2004). Studies on lethal concentrations and toxicity stress of some xenobiotics on aquatic organisms. CHEMOSPHERE	-	4	3	5	3	9	2	1	3	1	31 (3.44)
Nazir, Nighat; Koul, Surrinder; Qurishi, Mushtaq A.; et al.(2007). Immunomodulatory effect of bergenin and norbergenin against adjuvant-induced arthritis - A flow cytometric study. JOURNAL OF ETHNOPHARMACOLOGY	-	-	-	-	1	5	4	9	5	5	29 (4.83)
Dar, AA; Chatterjee, B; Rather, GM; et al. (2006). Mixed micellization and interfacial properties of dodecyltrimethylammonium bromide and tetraethyleneglycol mono-n-dodecyl ether in absence and presence of sodium propionate. JOURNAL OF COLLOID AND INTERFACE SCIENCE	-	-	1	2	7	6	3	5	2	2	28 (3.50)
Kabir-ud-Din; Siddiqui, US; Kumar, S; et al. (2006). Micellization of monomeric and dimeric (gemini) *surfactants in polar nonaqueouswater- mixed* solvents. COLLOID AND POLYMER SCIENCE	-	-	1	2	1	2	5	4	8	5	28 (3.50)
	-	5	6	16	38	59	55	61	66	48	354

The top ten articles from the University of Kashmir during the period of study in all received 354 citations with an average 35.40 citations to each article with an average of 3.54 citations per year. The article placed in first place from the University of Kashmir received a total of 59 citations with an average of 9.83 citations per year. The number two article received 39 citations with an average of 6.50 citations per year and the article at third place received a total of 38 citations with an average of 4.22 citations each year. Maximum 66 citations were received by all the ten articles during the year 2012, constituting alone 18.64% share percentage of the total citations.

8. Conclusion

Institution of higher learning in whatever part of the world cannot afford to be complacent on the research front, as the constraints of undertaking research in or outside lab which used to be there in the past are almost non-existent. Institutions even in the third world countries are receiving liberal funds to undertake research funded by various govt. and non govt. agencies at both national and international level. Collaborative research has become the order of the day as more and more researchers are coming together and joining hands to carry forward the common research interests. Research results have become more visible and so have increased their applicability and thereby fulfilling the basic purpose and aim for which research is generally undertaken.

The University of Jammu almost outnumbered the University of Kashmir in most of the sphere of research activity which both the sister institutions have been undertaken during the period of investigation individually. Compared to social sciences, arts & humanities, pure sciences have been the dominant subjects of investigation among both the institutions and have recorded maximum research output.

Compared to University of Jammu, University of Kashmir has undertaken research activities in more spheres, but in terms of the total research output, the University of Kashmir is far behind to University of Jammu. Given the research output of both the institutions there is a word of caution for University of Kashmir to boost its research activities preferably by paying more emphasis on the collaborative research. The Same holds true about the teaching and research departments of social sciences, arts and humanities departments of both the institutions, which are almost non-existent on the research front.

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Embedded Librarianship in the GNLU Library Context

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Abstract: The model of embedded librarianship is generating interest in effective means of applying knowledge and skills in the challenging environment of digital age. The idea behind this concept is enable librarian to demonstrate their expertise as a information expert, and apply their skills in the way to have a direct impact in teaching, research and overall in all academic activities. Development of strong relationship, close contact and collaboration involvement is the key to success in embedded librarianship. Direct interaction, depth understanding, and close observation these are the important points in this regard. Liberal structure (LS), collaborative structure is the key to success to implement embedded librarianship. This is the part of modern communication system.

Keywords: Embedded Librarianship, Transactional Roles, GNLU Library

1. Introduction

The term embedded librarian and embedded librarianship popularized in recent research studies, professional literature, books and conference/seminars. This term is used, discussed as a convenient framework for paradigm shift in libraries, in the way library interact with their users, serve their users and contribute to their organisation goals and mission. "Embedded" word some time misleading in other way just like, it is applied to wide range of collaboration from ad hoc collaboration with groups, community and other organisation community.

But the clear and most precise way to understand the concept is to think "intentionally building strong, collaborative work relationship with communities in our organisation". The approach just changed or termed as a collaborative librarianship and we used for that embedded librarianship in place or collaborative interchange.

Libraries are not only collection oriented, library is not known only by its collection but moving from collection to service oriented and that service has added this new concept of collaboration/Embedded librarianship. There is more and more space, scope and involvement of community in libraries and for that library has to work in different way, more active, collaborative way. Paradigm shift from close library system to open access and now, open access to consumer oriented system. Consumer/community is on central point of library. Community/customer centred librarianship. Customer oriented services, and activities are developing by libraries.

Engaging in collaboration has changed the perception and work of librarians by changing dynamics of "them and us". Now, in us process librarian changes the perception of what librarian can do and should do for their organisation, for their users and their values. When we come in close relationship with our internal structure, we have more influences of overall organisation decisions and greater impact of it.

To understand the importance of this shift in collaborative relationship, first we need to identify, look where traditional library services places with us in our organisation.

2. Embedded Vs. Transactional Roles

Traditional interaction with library users in transitional nature. Library provides good services and good resources in response of or in the base of demand of library users. Library users determine their need and ask for or send request to librarians for that. Here the communication limitation to understand the whole will take place. When we are asked for any information or research, librarians are given only that pieces of information not the whole. Without knowledge of whole, the understanding of actual information needs or related part remains unanswered. Which we might have solved or may helped in better way but the traditional role of our system does not take much interest on these other part. Only the service, resources are provided in the channel or transitional way. Transitional relationship is superficial, preventing from the sustained interaction, which could develop deep understanding and knowledge of the customers goals and objectives. Whereas the concept of embedded librarianship transform librarians' role in their organization, making active participation, collaboration and contributively roles with high values. Following are the embedded librarianship characteristics, which set embedded librarians apart from transitional role of traditional librarianship:

- **Relationship:** the most successful embedded librarian and those who enjoy the highest job satisfaction are the person who most adept at building a strong relationship with organizational communities. They adept and develop this relationship for new and meaningful height with their communities work and information interchange. This transactional relationship, strong relationship is the foundation of building knowledge, trust and ingredients for successful collaboration.
- **Result:** the collaboration, work process produce a much more concrete result. Building a good relationship and developing the habit of collaboration work environment gives good result. The result oriented work experiences make their process and work worth.
- **Relevance:** Embedded librarianship take place with relevancy of interaction and services.

3. How Embedded Librarianship Work

- Team player: - Playing with team member is the pre-requisite of embedded librarianship. Team spirit, understating a term culture, and how to play with the team member these characteristic should be developed by the librarian in this embedded environment. Role of other team member, how to interact with them for support and receive support from them are needed to understand.
- Support from organization and colleagues: - Working outside library and beyond traditional library system need support from your colleagues and organization. This is not an easy job to make it active but need to re-define the role and responsibility in this new set up.

- Entrepreneurial skills: - Entrepreneurial skills or mind-set will lead the collaborative activities. This is one of the important characterises that motivate you to take lead and work in this new environment. Those who are habitual to work in traditional way need to develop this entrepreneurial skills for this embedded librarianship.
- Embarrass opportunity with risk: - There is risk when you are putting yourself on new environment, in new initiative or outside on the traditional area. There is risk for return on investment, there is a risk for technological experiments but you should be ready to accept this situation and make more upgrade, aware about the risk associated with it.
- Transform library science to others:- The key component to become embedded librarian is to develop a skills to explain your knowledge skills and expertise to others in a way that are relevant add meaning for others. Transform the techniques of library science, library techniques in a meaningful product. Your skills of LIS transform your work to others.
- Works outside of comfort zone:- The traditional library model composed of numerous practice and workflow with fix and routine practice since long-long time. Even same is followed in digital age also. Those are familiar and comfortable activities but in embedded librarianship environment need to leave the comfort and safety environment aside and take initiatives venture for new services, new activities in different work environment.
- Work outside of the box:- Library means not only collection, space, circulation, and so on. The definition of library is changing. Now library is customer oriented. More space for customer, more space for community and more activities for community. Community centric and collaborative involvement is the new development of library system. Liberian need to think out of box now. Their area of functions and services are vast and wide. Specialize services with special skill is the need of hours. And that is why librarian need special subject oriented expertise, which can help them to serve, guide and interact with their users in better way. These capabilities help them to work out of box. So, working style and environment is main focus in this embedded librarianship.

4. Embedded roles in GNLU library

- Embedding to advance legal assistant: - our library provide legal assistant in addition to our traditional CAS, SDI and reference services. This is specialised services and its gives lot more interaction, collaboration with research scholars, research projects teams, students and faculty members. Specialised knowledge about that particular area is the key to fulfil the research needs of this area. We have appointed one special student (Student Research Associate) to assist this research team. Gujarat National Law University is known as a research based teaching university. Research by faculty members through various project, assignment and as a part of their academic activities carried out. Law students obtain basic research skills through their first year legal research and writing skills. Moot court competition is the special types of research

activities/training carried out by the law students. Ever year our 35 to 65 students visit various universities/law schools in Europe, USA, Australia, Africa, China, Hong Kong and Singapore. In addition to this around 30 to 40 research articles come out from them as a research output in form of various publications. We professional library team joined together with faculty and those research students to instruct them on the topic of their research requirements. The fruitful interaction between librarians, students and faculty members allow them to obtain necessary resources on their research areas. Building our strong research experience become more useful and benefits to research oriented students and faculty members.

- Set embedded standard through RbAU practice:- This is the active participation with institutions mission, vision and all core activities. In every semester we have to prepare RbAU short form of Research Based Administrative University. In this RbAU each of the library staff has to prepare the eight point agenda. Includes consultancy from other institutions librarian, relationship development with outside library professions, review of five books, identification and attendance of library related activities, conference, training programme, identification of emerging issues in the LIS and efficient development in their respective areas. This is the more collaborative and personal involvement activities which help and keep in constant vigilance to fulfil institutions objectives and vision.
- Embedding through course management system: In every semester our faculty members submit their course outline to library with details of related reference resources, which students can refer related to that subject. With the support of our ICT division we have developed system to manage all these course outline and related materials on our intranet, so users can easily access those current and upto date information, resources from the intranet server. This service also maintain the course materials in form of power point presentation which is taught by the faculty members in the class. In this process library keep constant contact with faculty members and involvement with students, faculty members to provide and support services with close contact. This service is not works on one side static way but constant collaboration with information creators and users is the key of this services.
- This is the easiest way to let students know about the resources on topic related to their course work. Link of detailed outline with reference contain availability is the main attraction of this service. Out of the use reference on their particular subject. Library staff guide them which are the useful and more important/authenticate books, journals, database, websites are available on their respective subject. In this useful, convenient, and constant deliberation between user community and potential team make this services closer, fruitful and value added from our side.
- Embedding through websites and lawGuides:- continues research guide is key of this service. There is one special appointed students (Student Research Associate) who works for library and he guide continues in this part. We assign one regular two hrs duty of that student in library and at that time anyone who has any access related issues of any database can contact that students for full assistant. This is in addition to our regular support from library's full time professional staff. During that interaction we come to know more about the situation of users and why they face such type of

difficulties and problems and according we decided our further steps of action. If we feel that more number of users face such type of same difficulties than immediately we organise training session for them in addition to our regular interval training session on electronic resources and related topics.

- Another option for furthering legal research outside classroom is through website or lawGuide that is specially developed for students. In research how to research, research methodology and subject wise guideline is very useful. We have developed our system, website in the way that students can easily access or locate all the related resources physically or electronically.
- Physical embedding outside of the library:- we follow the practice which involve more collaboration beyond our traditional approval of communication. Sometime we sit with students in canteen, or classroom to get their feedback, to know more about their requirements, needs. Here our university follow the mechanism where in every semester they holds batch meeting with all students of that particular semester and in this open forum they ask particular question about the library collection, services, and any issues associated with library services. This is the right platform to interact with the students about their library requirements and many more. The same way during the faculty meetings and meetings with parents of those students librarian take part to know more about their difficulties, requirements and reports them what exactly their status. We visit individual faculty members in regular interval, sit with them and try to know, get information, details about their ongoing research, academic activities and according we provide support, develop our collection, services for them. Provide ultimate resources and services from the globe is our objectives. This type of out of box activities give real feedback provide better understanding and need of the users at large.

5. Conclusion

Gujarat National Law University Library is transcending the traditional service and functions in collaboratively and embedded way. Library is moving beyond the confine boundary of traditional approach and focusing outward on their community services and collaborations, with full involvement in all activities, towards fulfilling the mission, vision and objectives of the organisation.

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Author Profile



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Human Resource Development in the Academic Libraries Capacity Building Skills for LIS Professionals

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Abstract: The purpose of this paper is to discuss an overview of HRM and Human Resource Development for library and information professionals in academic libraries.It emphasizes on the different roles and responsibilitiesof library professionals in academic libraries. It also discussesthe concepts of HRD such as definitions, activities, utilities, need of HRD, HRD as a process, HRD in the academic libraries, capacity building skills for library professionals serving the academic users in the technology based environment and steps in strategic HR.

Key words: Human Resource Management, HRD, Intellectual Capital, Strategic HR.

1. Introduction

The human resources (HR) function within libraries is elaborated beyond administrative and operational roles which include more strategic responsibilities. This change requiresin library professionalsto become HR practitioners and to take on new types of responsibilities for their individual career development as well as development of academic libraries. Theresponsibilities that include redesigning jobs and work, developing performance management systems, managing change, and designing and restructuring departments and organizations. In this article we discussed on how to integrate HRM and HRD to enhance the performance and capacity of the academic libraries and its workforce for organizational development. HRM refers to the management of employeesin an organization.The aim of Human Resources Management (HRM) in academic libraries are plannedand are set in the context of professional activities which further determined by the statuteof each library or another normative act defines its tasks.Academic libraries are facing many challenges due to advancement ICT and information growth in digital environment.

The library and informationsystem is the organization of the work dealing withpersonnel.Most of the libraries does not have a separate human resource professional in the department. Inacademic libraries, librarians with little or no trainingin managing employees hire, evaluate, discipline, and terminate employeesas part of their regular duties as an information professional.Managing human resources without having a background in the library and information science fieldcan be really a big challenge for academic librarians. Attracting skilled professionals for library in-house operations management and achieving the library targets with limited resources in given time is a challenging task.Managing library professionals covers the practical side of humanresources, the everyday situations that come up sooner or later in mostorganizations. It explores the

range of essential HR functions from basicemployment practices to the Human resource development.

2. Human Resource Development (HRD)

One crucial sub-topic of HRM that we also learn about is Human Resource Development (HRD) which is broadly defined by Smith (2003, p. 2) as "developing the workrelated capacity of people – people working as individuals, in teams and in organizations", buildup them with skills, and remunerating them commensurately. He asserts that HRD is a strategic imperative in management. The assumption is that one is recruited already possessing skills for the job; consequently one's skills should be continuously polished, in that way developing that person so that he / she remains relevant and valuable to the job which he / she will perform well, be commensurately remunerated, and be retained.

3. *Activities of HRD*

A formal definition of personnel / HRM is that, it is a function performed in organizations thatfacilitate the most effective use of employee to achieve organizational goals.It comprises the number of activities. They are as under:

- Equal employment opportunity programs;
- Task analysis;
- Human Resource Planning (HRP);
- Employee Retirement, selection and orientation;
- Career development and counseling, performance evaluation and training and development;
- Compensation and benefit;
- Safety and health;
- Employee relation;
- Discipline and control;
- Work scheduling;
- Quality of work etc.

There are three aspects of personnel / HRM are usually stressed as being fundamental to this thinking.They are action oriented, individual oriented andfuture oriented.HRD needs an employment forecast for the right numberand right kinds of people at the right places and the right times to perform activities that will benefitboth the profession and the individual also.

- **Utilities of HRD**

HRD is the process of helping the employee in organization to acquire skills and competencies. This help isgiven to employee in a planned and continuous way to,

- Acquire and sharpen capabilities needed to perform various tasks associated with their presentand expected future roles;
- Develop their general capabilities and discover and exploit their inner potential for their own and ororganizational development purposes;
- Develop an organizational culture in which supervisor-subordinate relationship, teamwork, andcollaboration among sub-units are strong and contribute the professional well-being, and pride ofemployees;
- Facilitate up skilling and improved abilities by the introduction of mechanisms such as, training,performance appraisal, organizational development, feedback, counseling, career development,potential development, job rotation, incentives, awards and rewards.

4. Need of HRD

Personnel constitute the most important and vital key to effective functioning of an organization.Their skill and knowledge have to be constantly upgraded to handle new tasks to achieve pre-statedobjectives of any organization. Not only employee's competencies and abilities have to be enhancedbut their motivation, dedicated involvement, sense of personal participation and above all fullcommitment of organizational goals, objectives and targets are absolutely essential.Therefore, HRD is obligatory due to the followings reasons:

- Survival and stability;
- Growth and development;
- Change and diversification;
- Returning activities to become more effective;
- Providing highest quality in products and services;
- Playing a leadership role in the field;
- Obtain goodwill and reputation through users' satisfaction.

5. HRD as a process

HRD is a continuous process and not merely a set of mechanism, instruments, techniques, such astraining, performance appraisal, counseling, etc. are meant to initiate, facilitate and promote theprocess. However these mechanisms, instruments, techniques need to be constantly reviewed fortheir effectiveness. Organization can facilitate this process of development by planning for it, byallocating organizational resources and exemplify HRD

philosophy that value human being andpromotes their development. HRD is the most important factor for a library regardless its nature using different resources to achieve the targets successfully.The premises to this thinking are based on three basic concepts of HRD:

- Persons working in an organization are regarded as valuable resources implying that there isa need to invest time and effort in their development;
- They are HR with all the special characteristics and hence cannot be treated in the way otherresources are handled. This focuses human value in the organization;
- HR handling does not merely focus on employees as individuals, but also on other humanunits and processes in the library.

This human approach to HRD, therefore deals with six concepts, which should determine HRDprocess in relation to HRD systems and activities. These concepts are superimposed on HRD systems namely Appraisal, Career, Training, Work, Culture and self-renewal systems.

6. Human Resource Development in Academic Libraries

Library sources, services, and operations have been influenced by the rapidtechnological innovations and digital revolution over the years. The way information is disseminated,captured, collected, stored and transferred has provided a new impetus in libraryfunctions and operations (Siddiqui, 2003).As academic libraries are growing, particularly with reference to collection, services and sophistication in terms of computerization and networking, it is necessary to give full attention to personnel development. Some of the aspects, among others that might help academic libraries to contribute substantially their share in supporting efforts towards socio economic activities, may include:

- Personnel planning.
- Orientation, introduction to library goals objectives, targets and activities.
- Productivity; users satisfaction.
- Quality of collections and services.
- Acquisition of new knowledge and skills.
- Task analysis for proper deployment of personnel.
- Performance review and appraisal.
- Motivational aspects.
- Developmental supervision.
- Counseling and monitoring.

7. Capacity Building and Skills Required for LIS Professionals:

Capacity building is defined as the "process of developing and strengthening the skills, instincts, abilities, processes and resources that organizations and communities to survive, adapt, and thrive in the fast changing world." (Ann Philbin, Capacity Building in Social JusticeOrganizations Ford Foundation, 1996).

Capacity building has been defined as "activities which strengthen the knowledge, abilities, skills and behavior of individuals and improve institutional structures and processes such that the organization can efficiently meet its mission and goals in a sustainable way" (WCO 2009). The National Knowledge Commission (2007) recommends minimum skills required for LIS professionals are: (i) Library and Information handling skills; (ii) Service Orientation; (iii) ICT knowledge skills; (iv) Communication and training skills; (v) Marketing and presentation skills; (vi) Understanding of cultural diversity; and (vii) Knowledge mapping skills. Some of the skills needed and roles to play by academiclibrarian are:

- **Leadership and Management:** One of the roles of librarians is to provide leadership and expertise in the design, development, and ethical management of knowledge-based information systems in order to meet the information needs and obligations of the users of academic institution. Librarians should encourage teamwork and involvement by all staffand strive for cost effective utilization of resources of the library. Understanding and using effective team skills to realize the objectives, mission, and visionof the library is very necessary. He / She should be competent enough to develop and implement policies and procedures for the efficient and effective operation oflibrary functions.At present, lot of virtual libraries have been created and managed by various organizations for e-learning and teaching professional. Hence library professionals should enrich their management skills to play leadership role in the digital future, for organizing, managing and disseminating e-literacy to users.
- **Proactive Information Specialist:** The modern trend is, for the role of librarian to move from that of a passive intermediary role, responsible for guiding patrons to appropriate information resources, towards that of a much more proactive professional, which includes analyzing and repackaging information, content information management systems and institute digital repository management systems.
- **Master of Web:** To face challenges of the virtual learning environment (VRE) in educational institutions, librarians are becoming master of the web. Librarians create their own website or blog as an easier way to share with others what they know. They gather electronic information and create electronic pathfinders and front-end search tools to help users for accessing the required information. Library professionals create online tutorials and instructional web pages to help users for performing the best searches. They provide subject gateways and links to websites

on specific topics and lead users to these evaluated sites as a point for retrieving related and relevant information.

- **Information Facilitator:** Rapid growth of information on web and their availability now created exploration of scholarly information to the academicians. Information service is the core of the library system and expectations of the users is increasing in terms of quality services.In order to fulfill the needs and expectations of the users all academic libraries should take up the onus for assessing the demand for quality base library products and services. Printed versions of books, journals and other resources have shifted their platform to online, which includes freely available and paid publications. The librarian must visualize the new innovation in library services and develop new avenues to reach out academic library users.
- **Collection Development skills:** Collection development is the crux of the problem in library management irrespective of the type and size of the library. The services of the good library depend upon the collection development of quality resources acquired. The academic library professionalsshould focus on subscription of more quality e-resources and development of open access portals. Today academic library users' expect access to virtual documents and information from anywhere, anytime via smart phones.
- **Organizational Role:** Subject access to a variety of information types is more important than ever before. These include access through web sites, intranets, subject gate ways, web- enabled databases and portals. This will require information organization through classification, cataloguing, indexing, abstracting and tagging as well as specially created information systems for specific target groups.
- **Archival management:** Academic libraries are equipped well in archival management. Archiving through digital repositories will ensure that the library has a viable system for sustaining digital content. Digital repositories also will facilitate the long term conversion and preservation of print materials, and create new opportunities to structure learning activities around the content.
- **Search Intermediary and technical skills:** Information professionals have adequate knowledge on search processes, search strategies, search techniques, search engines and its technology. They are capable of finding and evaluating the information resources best suited to user needs. They are experts in searching catalogs, databases and web resources. In an organization, though librarians began training end-users to perform their own searches, the demand for searches by information professionals have not decreased. End-users having been trained and having performed some of their own searches became aware of the complexities of searching, the limitations of some of the resources and of the searching process especially on World Wide Web. So, a more educated user who continues to perform simple searches on his own behalf, returns to the librarian or information specialist to perform the more complex searches. Hence, there will always be a role for the search intermediary.Library professionals should have knowledge on technical skillsi.e., UNIMARC, z39.50 and OAI and metadata harvesting, semantic web, Open

Source Software applications, storage technologies including cloud technologies, access to e-resources and consortia, library securities like RFID / EM, Web 2.0 technologies, and web scale discovery services.

- **Evaluation Role:** There is an increasing diversity of information resources from which to choose the most appropriate, and that librarians must widen their selection processes in order to decide on the right medium for each situation. The objective in the evolving virtual library is 'to develop information systems providing access to a coherent collection of material, more and more of which will be in digital form as time goes on' (Lynch and Garcia-Molina, 1995).There is plethora of free resources available on the web, to say nothing of the full-text journals now available. Whether or not to include these in the library catalogue is a challenge facing librarians in the virtual library environment. Librarians continually analyze, investigate and assess the information service needs of the users and evaluate the outcomes of the use of library and information resources and services.
- **Consultant/ Counselor:** The library and information professionals often act as a counselor who recommends the best sources of information and ways in which to access information. This is a consultancy role which deserves recognition. Scattering of information is a kind of challenge experiences by the users. These necessitatethe organization of information sources in a proper way that facilitates easy access to the users. However to play a consultant role, librarian needs to develop high level of soft skills.Effective communication skills are necessary and proper communication helps in controlling misunderstanding conflicts and improving co-ordination in the teams. Academic library professionals should have effective communication skills such as reading, writing, learning, speaking, listening andpresenting.

8. Seven steps to Strategic HR:

Increasingly, the issue of strategic human resource management is gaining popularity.Whether service oriented or production oriented, the performance of any organizationdepends heavily on the performance of its human resources. Human resources aredefined as "the available talents and energies of people who are available to anorganization as potential contributors to the creation and realization of theorganization's mission, vision, strategy, and goals" (Jackson and Schuler, 2000, p. 37).

Being the key resources of an organization, human resources can make theirorganizations dynamic and grow faster, so competent and dynamic human resources add value to the libraries. "If the human resources are functioning well, employeeproductivity rises (which lowers costs) and customer service improves (which raisesperceived value), thereby enabling the company to create more value" (Hill and Jones,2004, p. 86). That is why it is vital to manage and develop human resources effectivelyinacademic libraries.Hence, today, all types of libraries are facing the challenge of how to developand manage their employees strategically in order to achieve more with available limited resources and makeoptimum use of their potential.The seven most important activities thatHR leaders must practice to

leverage their "human assets" to best effect and to get pastbarriers to strategic HR execution (Clinton O. Longenecker and Laurence S. Fink).

- **Progressive strategic HR thinking and planning:** Examine how your HR function activities and workforce assets can be aligned optimally torealizeyour organization's strategic goals and plans.Effective library professionals move from a focus on administrative HR practices to promoteoperational efficiency to a concern with achieving strategic goals. To make this transition, library leaders and their staff need to understand the "value chain" of the organization and thedifferent ways in which the workforce can contribute to strategy execution. Next, librariansmust be able to develop a plan to leverage the workforce and diagnose problems that mightinterfere with the workforce's contribution to value creation.
- **Staff for success:** Study the staffing requirements of the library to make sure you have the required talent,in proper numbers, in appropriate locations, at proper times. Set up programs to ensure thatcritical staff members are retained.Successful academic librarians know how to attract, select and retain top talent in the most efficientmanner. Ineffective manpower planning, recruitment or selection activities lead to over- orunderstaffing in critical positions, or people being placed in positions for which they lack theskills to perform. This can lead to countless problems, all of which damage an organization'sability to serve the users.
- **Foster talent development:** HR leaders understand that talent acquisition and retention must be supplemented with therequisite education, training and development.No matter how extensive the talent or experience of a workforce, to achieve utmostperformance both new hires and existing employees must be trained and retrained, ifnecessary, to fulfill the changing demands of the academicusers.
- **Create results-orientated performance-management and appraisal systems:** Organizations, particularly in academic and research environments, find it necessary from time totime to evaluate whether their performance-management and appraisal systems contributeto achieving organizational objectives or whether changes are necessary. Evaluating performance of employees in academicinstitutes and in service sector is a challenging job and observation from various directions may help to find it. For performance-management and appraisal systems to be effective, they must provideperformance planning, feedback through coaching and formal appraisals that helpemployees to understand how they are really doing and what they need to do to improve.To produce good results, library systems need to provide managers and employees with thetools,processes and training that encourage ownership and engagement.
- **Align your compensation and incentive systems:** Assess the efficacy of the reward systems in place to determine if they are accomplishingthe objectives for which they were designed.Many systems are poorly aligned with the required contributions, ignoring criticalcontributions and potentially encouraging counter-productive behavior.Finance spent on compensation and incentive systems is wasted if it does not yield needed and desired results.

- **Ensure that all managers are HR managers:** Ensure that your organizational employees, at all levels, understand and perform their HRresponsibilities with insight.It is imperative that HR leaders create a culture where all managers see themselves as HRmanagers. Line managers need to understand the organization's HR programs andsystems must be trained to perform their critical HRM responsibilities and need to beassessed on how well they perform these activities.Starting with top leadership, a communication must be put out that these HRM responsibilities arevery important and that the strategic objectives cannot be achieved if they are notproperly followed and executed.

- **Foster an ethical culture:** Truly effective HR leaders build a culture for ethical behavior in their organizations, build insafeguards to protect confidential information and provide a sounding board and safeharbor for employees to come with ethical concerns.Ethical conduct, culture and behaviour in professional activities are an issue that occupies regulatory agencies, educators, and professional associations across all the disciplines, whether focused on research, academia, industry or service. Librarians, in particular, valuetheir need for having a clear guiding philosophy as an important work value (Allen, 1998). Toguide staff behaviors, professional associations and organizations establish codes ofethics. These codes aim to deal with ethical issues that are not addressed by the domain ofcodified law but that should not be left to the domain of free choice. Librarians must be guardians of the ethical culture, be considered the "conscience of theorganization" and must put in place practices that either discourage unethical behavior fromarising or catch perpetrators.The failure of conduct of ethicsto take on and stop unethical behavior can lead to expensive litigation,fines, loss of reputation or "brand", among other serious consequences.

8. Conclusion

The academic library professionalsshould enrich their human resource and technical skills in order to have command over the new information environment andsatisfy the information needs of academic users. The academic library professionalsshould need continuous staff training and professional development activities on emerging technologies to learn improve and develop various kinds of professional skills, knowledge and competencies. From the above it is crystal clear that HRD is an essential part of library. Apparently it seems to someone that, the librarian's days are going to be numbered. To prove it totally wrong being a librarian, each and every library professional should be active in their day to day's work and also try to incorporate HRD in libraries. To sum up, the HRD strategy in academic libraries for the 21st century should be bold in conception, inspire risk taking, have a high tolerance for failure and false starts, it must have adaptability and it must be based on a culture which rewards rather than punishes, which takes recourse to praise more often than punishment and which is built on faith in the most abiding resources of all-the human resources.

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Librarians in the Next Generation: *Expectations and Liabilities*

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Abstract: Today every employer expects his librarian to be well equipped with the technical knowledge of computers so that he may be able to discharge his responsibilities in the workplace in a satisfactory way. For this, most library Schools should provide a healthy combination of theoretical and practical knowledge to the student librarians. At the very outset, they should be taught how to organize, preserve and impart knowledge with the help of computers. Schools of library and information science (LIS) can frame such courses for this as they think to be fit and fundamental. If schools fail to produce such librarians, they will be doing a grave damage to their students and their profession.

Keywords: Next Generation Libraries, Information technology

1. Introduction

In the fast changing world of the modern times, the librarian find themselves in a position of greatest challenge as the academic world expects them to be able to meet their ever-growing demand and they can do so successfully only when they are techno-savvy and skilled in their trade. They must have ample theoretical and practical knowledge in the field of library science in order to be able to provide knowledge and information to those who are in need of them. Today schools of Library and Information Science (LIS) are faced with the tension between teaching theory and practice. They are of the view that librarians need a firm grounding in the foundational theories of the profession, while employers of information professionals opine that library schools should be teaching students the practical skills is they need to succeed in the workplace.

Most library schools offer a combination of the theoretical and the practical in their curricula. It is important to provide the librarians the knowledge how to organize preserve and impart information. Regardless of where you stand on the issue of theory versus practice, however, library school graduates have to face an increasingly competitive job market, many armed only with the knowledge and skills they develop in graduate school. If they lack the skills employers are looking for, they will find it very difficult to get a job. Library schools can offer whatever courses they feel to be important, but if they stray further from teaching students what they need to know to be successful librarians in the real world, they will be doing a grave disservice both to their students and to the profession.

2. Importance of Technology in Libraries

Now-a-days, knowledge of computer technologies is a must for a librarian in public services, technical services, systems or administration. Technology is now interwoven throughout every aspect of the library profession. The librarian should be able to designing web content search data bases and evaluate new library technologies as well as to troubleshoot printer problems. Most libraries have access to at least a few electronic

databases, which has led to increased interest in the quality of the library's web presence. In academia, the enormous growth in distance learning over the past decade has forced public service librarians to learn how to translate their traditional services into the online medium.

The growth of content in digital form has led to concerns about how to preserve and provide access to that content. Librarians in all settings will need to become more comfortable with and knowledgeable about technology, in order to do their jobs and to meet the needs of an increasingly techno-savvy population.

2.1. Expectations of a Librarian

Today's librarians are expected to have the following skills:

- "Basic familiarity with computer programming, strong web development skills."
- "Familiarity with course management software such as WebCT."
- Ability to adapt to rapidly changing technologies."
- "Experience with Web page creation and editing, including familiarity with various tagging and scripting languages such as XML, HTML, PHP, etc."
- "Experience in integrating new technologies into the delivery of information services."
- "Experience instructing adult learners, particularly in the area of computer literacy."
- "Participates in the creation, enhancement, and implementation of technological tools, products, and interfaces that facilitate 24/7 study and research and promote student engagement."
- "Experience with innovative uses of technology in support of reference and instruction."
- "Experience providing virtual reference services."
- "Play an active role in the development of institutional repository programs and digital collections."
- "Experience working with an integrated library system,"
- "Knowledge of instructional design principles and techniques for both in-person and distance learners in a higher education setting."

In the present times librarians are supposed to have the skill to translate traditional reference and instructional services to the online medium. Many create their own online pathfinders and subject guides. They should be able develop online tutorials using HTML and screen-casting software (which generates a flash movie of one's desktop for demonstration purposes).

They should use social software tools to communicate with their patrons and deliver better online library services. They provide reference services via online chat and instruction via

co-browsing. While at the reference desk, they may be asked to do everything from online research, to troubleshooting a remote student's database access problem, to dealing with a printer jam.

3. Problems of Librarians

Though the expectations of librarians is on the rise, they find it hard to carry out their responsibilities due to shortage of funds, in adequate staff, lack of competent hands and technological devices viz, computes and other electronic aids. No doubt, things have began to change, but it will take some time for the job to be done successfully. The librarians must be provided adequate funds to get the relevant equipment for his library.

In the absence of well-equipped, they cannot imagine an atmosphere conducive to satisfactory performance. Also, all the library staff including the librarian will be able to master their trade if there is proper infrastructure available for them. They will be able to design and maintain website, create online tutorials and do any other computer related work. So is both private and public sectors. Systems as well as administrations, the problem of the librarians need to be removed will immediate effect for the proper functioning of the library.

4. Liabilities of Librarian

In the present seen view, we witness a host of new posts that were non-existent some years ago. In academic libraries, in particular, but also in some larger public libraries, we are seeing a growing number of Digital Services Librarians, Distance Learning Librarians, Electronic Resources Librarians, Metadata Librarians, Web Services Librarians, e Branch Librarians, and Digital Repository Services Librarians. Libraries that create positions like this recognize the need to keep up with the latest technologies and with their patrons who may be accessing resources remotely.

New library and information professionals can work outside of libraries as consultant, technology evangelists, and knowledge managers. All of these positions tend to require a high comfort level with bleeding edge technologies –something rarely taught in library schools.

It is high time the librarians began playing a leading role in shaping new technologies, rather than simply being swept along with the tide. The lack of usability in most OPACs is due, in part, to librarians asking for the wrong things and not thinking enough about usability on the patron's side. They need to understand usability principles and how their library systems work so that they can advocate for things that would benefit their patrons.

5. Conclusion

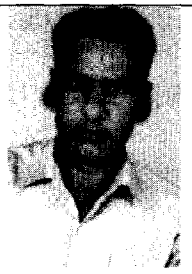
In conclusion, it can be said that in the present situation the role of the librarians in private as well as public sector, in system and administration has acquired considerable importance and no librarian as with superficial knowledge will be able to discharge his responsibilities in a fitting manner.

The ideal librarian is expected to be conversant with the knowledge and technical skill of his area his res Equipped with ample technical skills and with awareness of his role in academic world, the ideal librarian will be comfortable with technology he has in hand. He will also have the vision to see how technologies can be applied in their environment to provide better services to patrons. It is p to our LIS schools to nurture these skills in the library leaders of tomorrow.

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Barriers in Managing Change in University Libraries in North West Region of India: *A Study*

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Abstract: This paper examines the barriers in managing change and some insight into the change adoption and adaption in the university libraries in North West region of India and the problems faced by them in managing change are discussed here. Some strategies for effectively managing changes are also discussed. This paper carries out a survey how the librarians are taking the change barriers and managing them in their libraries. The data gathered from the university libraries show that the university libraries in North West region of India are adopting and adapting change and are able to manage the barriers faced by them effectively. This paper draws upon survey data not previously available for research.

Keywords: University libraries, Change Adoption, Change Adaptation, Change barriers, Change management, India.

1. Introduction

Academic institutions around the globe are undergoing a radical change and the Indian university libraries no longer remain an untouched to this. Today academic librarians are facing much challenging work-environment where change is driven by technological innovations, growing client expectations, shifts in government policies and financial pressures. The privatisation of higher education in India has already led to an increase in the competition among different universities. The competition among higher education service providers is becoming tougher and the job of university libraries is also becoming more challenging. In such a competitive environment the user has become more demanding, thereby imposing a threat to university libraries which put up resistance to change. The amount, diversity and speed of information available through the state-of-the-art technological developments, have forced the libraries to change the mode of services and operations for the benefit of library users. On the one hand changes bring about growth and experience, but on the other hand, there is strong resistance to changes (Siddiqui, 2003). The challenge for librarians, therefore, is how to control and implement the change-process (Curzon, 1989; Diedrichs, 1996). Unprecedented change in scholarly communication, management strategy, global connectivity, and rise in digital libraries constitute a very short list of major trends that make information work in higher education a fascinating and challenging prospect (Tucker, 2000). Library philosophy and practice have shifted from purchasing materials and offering services "just in case" to "just in time". The cost of access appears to be more affordable than the cost of ownership, though it

comes with the accompanying risk of loss if no one purchases or preserves an item (ending the viability of interlibrary loan) or if no one archives or converts digital collections to the new formats and platforms that the future will bring. The widespread adoption of technology and reduced barriers to its access accounts for these trends and also for the speculation that the digital divide is disappearing (Singleton and Mast, 2000).

To cope up with these problems greater managerial skills are required. The participative management, proper and timely communication, "top down" to "bottom up" managerial style are required. Continuous training is needed to maintain employment prospects in an increasingly competitive workplace. Librarians must adopt the idea of a user-centered culture. The library managers should bring about these changes in such a way that these are evolutionary ones and not revolutionary ones.

2. Literature Survey

Change, by its nature, is unpredictable, and often unmanageable, yet an organisation's success depends on an ability to predict and control change in some way. To derive maximum benefit from new opportunities and avoid reactive situations, it is essential to manage change. Further, as change accelerates, the problem of managing it gets complicated and stressful. The proliferation of change management literature in the library and information field indicates that these issues are becoming increasingly important as more and more libraries are developing a virtual presence (Higuchi[6], 1990; Lee[7], 1993; Riggs[8], 1997; Meyer[9], 1997; Nozero and Vaughn[10], 2000). Nearly two decade ago, Dougherty and Dougherty[11] (1993) observed that the current rate of change in information field was higher than ever before, while libraries' ability to respond quickly and decisively had never been more constrained. Every organization likes to think that it lives in a time of unique challenge and change. To stay fit and compete, every organization needs to go through the process of change. Technology has been one of the key factors influencing the pace of change, often driving change itself while making it possible to do more with fewer resources, allowing the distribution of value-added services to users (Riggs and Sykes; 1993). Academic librarians face a challenging work environment where change is driven by technological innovation, growing client expectations, shift in government policies and financial pressures. Providing effective services and products demands a willingness to adapt to these realities (Bryson; 2006). Growing electronic resources and declining library budgets, leadership-deficit, widening digital divide, resistance to change, poor interpersonal skill, declining culture of reading and assimilation and lack of team-spirit (Jagtar; 2009) are a some of the major barriers in the adoption and adaptation of change. Changes imposed by the technology add disruption and uncertainty, which is never comfortable.

For the successful implementation of change, attitude of staff needs to be positive to ICT (Fine; 1986; Evald; 1996). The resistance the staff can be overcome by training and external education programs. These steps can help in increasing individual's knowledge about the technological skill and reducing barriers to the acceptance of change (Igbaria, 1997). Successful training can enable us to appreciate that staff having different needs and

so require different training methods. Resistance is also a natural response to change that managers should try to understand, as and when it occurs (Spacey; 2003).

To overcome these barriers librarians require the dynamic, ruthless pursuit of new roles if they wish to survive yet at the same time they are also cognizant of their need to retain empathy, tireless dedication, commitment and a service-for-free orientation within their staff (Sidorko and Yang; 2009). Empowering staff to shape responses to the changing environment is vital. Sims (2002) is of the view that maximizing employee involvement as essential to it. Readiness to change exists when the security level is neither very high nor very low (Clark; 1994). Bryson (2006) identifies strategic and scenario planning as two tools which help organizations to understand the change and to develop its effectiveness. To remain competitive libraries must have intrinsically-motivated and high–performance employees. Frequent orientation programs can generate passion for the organizational vision (Rolfe, Jo; 2010).

3. Objectives of the Study

- To identify the key barriers of changes management in university libraries of North-West region of India.
- To identify the ways adopted by university libraries to overcome the barriers of change.
- To suggest some actions to overcome the barriers of change.

4. Scope of the Study

This study was limited to general universities located in North-Western region of India (states and territories covered in this region include Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab and Rajasthan). Only those universities in this region were covered in the study that were at least twenty years old at the time of study. Only general universities were covered in the study excluding agricultural, engineering, medical, open and technical universities.

5. Method

Questionnaire method was used to obtain information from the chief librarians and section heads of university libraries. A total number of 70 questionnaires were distributed personally to chief librarians as well as section heads in university libraries. A total of 63 (90%) questionnaires were returned and considered usable. The data were analyzed using simple percentages and frequencies.

6. Results and Discussions

Among the 63 (100%) respondents, 24% were from Delhi, 19% were from Haryana, 16% from Jammu and Kashmir, 14% were from Punjab state,11% were from Rajasthan State, 10% were from Chandigarh and remaining 6% were from Himachal Pradesh. The state-wise break-up is shown in figure 1.

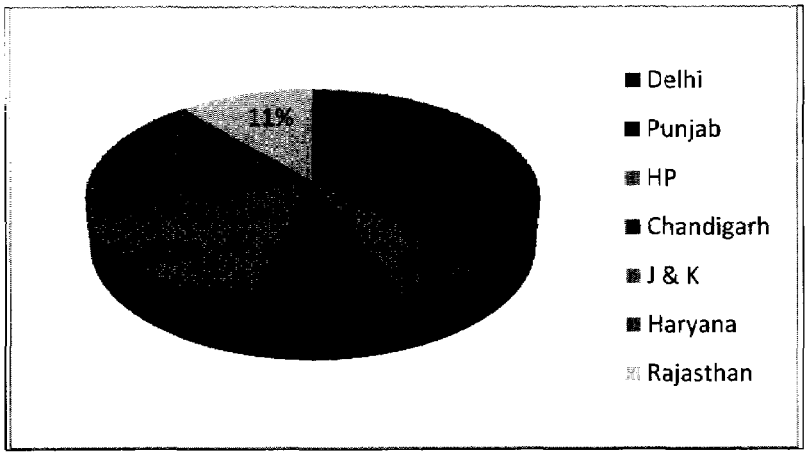


Figure 1- State- wise break-up of responses

6.1. Barriers to Change adoption

The data regarding the relative severity of various possible barriers of change adoption were collected through the survey. After thoroughly reviewing the literature, seven probable barriers to change adoption were identified. Responses and relative scores of these are summarized in table 1.1.

Table 1.1: Severity score of barriers to Change adoption

	Barriers to Change adoption	Not at all 1	To some extent 2	To a considerable extent 3	To a large extent 4	Weighted score	%
1.	Shrinking budget	16	29	7	11	139	55.1
2.	Staff resistance	13	31	15	4	136	54
3.	Problem with compatibility of technology	4	46	10	3	138	54.8
4.	Lack of support from university authority	27	24	9	3	114	45.2
5.	Risk of failure	24	34	4	1	108	42.9
6.	Lack of skilled staff or shortage of staff	14	24	16	9	137	54.4
7.	Disruption in services	24	31	7	1	111	44

6.1.1 Critical barriers to Change Adoption

The most severe barrier has been found to be the "shrinking budget" with the score of 55.1 %. It is then followed by the barrier "Problem with compatibility of technology" with the score of 54.8 %. The problem with the compatibility of technology has always been one of

the biggest barriers to change adoption and it has to be justified at the outset. The new technology is usually adopted when existing technology cannot cope up with existing requirements. At the same time, new technology implementation disrupts the routine work, which is highly undesirable. 'Lack of skilled staff or shortage of staff' has been found to be the third barrier to technology adoption from the severity point of view. The library may not have enough technical and skilled staff to cater to the requirements of new technology. So without strengthening the work force with adequate technically qualified and skilled personnel, the skill deficiency acts as the barrier to technology adoption.

Another severe barrier is 'Staff resistance' because the new technology being highly productive and involving high degree of automation may require less people to work with it, thus resulting in some layoffs. Or sometimes, new technology is associated with new services and practices, for which staff has to be trained, so the staff offers resistance to adoption of new technology. But this can be minimized by communicating benefits of new technologies among the staff as well as assuring them of easier and safer procedures associated with change adoption.
"Lack of support from the university authorities' is the barrier that comes next with score of 45.2%. For some libraries, the regulations may not be flexible enough to introduce new technologies. Moreover, because of the lack valid and clear justification, the change may not be implemented.

Among the less severe barriers to change adoption are 'Risk of failure' and "Disruption in Services". The users usually show their responses to new and improved services, which are produced by new technologies. It has been found out that in Indian libraries 'Risk of failure' is not a big barrier to technology adoption and has severity score of 42.9%. It can be concluded from the above discussion that among the listed barriers to technology adoption, none has got a score over 80% or below 20%, which implies that no severe barrier to technology adoption exists. At the same time no barrier is purely insignificant. Further, this analysis has indicated only the relative severity of barriers to technology adoption in Indian university libraries.

6.1.2 Actions required for overcoming the barriers to change adoption

The following are the critical barriers to change adoption (in order of severity):

- Shrinking budget
- Problem with compatibility of technology
- Lack of skilled staff or shortage of staff
- Staff resistance

'Shrinking budget' has been found to be the most critical barrier in change adoption. There is no doubt that change adoption is associated with a lot of expenditure on acquisition of new technology, but if it is successfully adopted, adapted and utilized, it payoff very easily. The librarians often view advanced technology as an expense rather than a strategic

investment. They also fear that technology adoption can be a never-ending process. Many librarians convinced about the ability of technological change.

6.2. Barriers to Change Adaptation

Data regarding the severity of various possible barriers to change adaptation were collected through the questionnaire. After thoroughly reviewing the research studies, five possible barriers to change adoption were identified. Respondents' responses and score of these are summarized in table 1.3.

Table 1.3 - Severity score of barriers to change adaptation

Barriers to Change adaptation		Not at all	To some extent	To a considerable extent	To a large extent	Weighted score	%
		1	2	3	4		
1	Problem with compatibility of technology	17	37	6	3	121	47.3
2	Staff resistance	16	38	6	3	122	47.6
3	Lack of in-house technical support	17	35	8	3	123	48
4	Lack of skilled staff	7	36	18	2	141	55.1
5	Lack of support from vendors	24	33	5	1	109	42.6

Among these five barriers, the ranking has been done on the basis of their score or percentages. The overall scoring of all the barriers is moderate and none of the barriers scored very high. This implies that though the barriers do exist yet these can be overcome by the libraries.

6.2.1 Critical barriers to change adaptation

'Lack of skilled staff" is the most severe barrier to change adaptation with score of 55.1%. The routine work is normally disturbed and disruption in services due to lack of skilled staff. The second major barrier has been found to be the lack of in-house technical support with a scoring of 48%. Since the adaptation involves the modification of technology and processes to suit local conditions, technical support is a must for this process. Though the vendors of technology may help in initial adaptation of technology, yet for day-to-day routine operations and minor problems, in-house technical support is required.

Other major barriers are 'Staff Resistance and 'Problems with compatibility of equipment', with average score of 47.6% and 47.3% respectively. The least important barrier has been found to be 'the lack of support from vendors'.

6.2.2 Actions required for overcoming the barriers to change adaptation

The following are the critical barriers are:

- Lack of skilled staff
- Lack of in-house technical support
- Staff resistance
- Problems with compatibility of equipment

Severe barriers which come out to notice through this research are lack of skilled staff and lack of in-house technical support. This lack may be on account of incapability of in-house technical team in handling the new sophisticated technology or sometimes, their attitude of not providing support. The following steps can be taken to overcome them:

- Providing training and education for internal technical team.
- Motivating the concerned people.
- Empowering in-house technical team
- Recognizing and rewarding the interested, sincere and hardworking people.

The third most severe barrier has been found to be the 'staff resistance'. Whenever the change is adapted, it takes some time. During this period, the organisation may have to face the opposition from staff. According to research studies, organization can overcome this barrier to change adaptation by:

- Involving the staff in the process of managing change.
- Making the staff aware of the objectives and benefits of change adoption in a clear manner
- Motivating the staff to accept changes.
- Preventing misunderstandings, clarifying objectives, and establishing measurable guidelines for results.
- Providing job security
- Developing a mechanism for recognitions and rewards.
- Developing a culture of open communication.

The forth most severe barrier to change adaptation is 'problems with compatibility of equipment'. Most of the advanced technologies (hard or soft) adopted by libraries are commercially available ones. In general, new technologies require an organization either to adapt to the change to suit local environment or modify their processes and procedures to fit the change. However, if the required changes are very extensive and pervasive, they indicate a lack of suitability to save the staff from dissatisfaction and discouragement. According to research studies, organizations can overcome this barrier by:

- Providing strong in-house technical support to make new technological components compatible with the existing one.
- Planning workshops and tutorials in case of soft technologies.
- Critically analyzing change before adoption to check, and planning for all incompatible issues.

7. Conclusion

Based on the conclusions derived on issues identified at the beginning of the study, it can be concluded that the barriers of change adoption and change adaptation are not very significant in these university libraries. These barriers can be easily overcome. Overall change adoption, and adaptation and technological change in the university libraries in India is going on at a slow pace, but there is also a lot of scope for further improvements in these, so that the libraries get prepared for facing the complex information challenges at local and global levels. Efficient management of all these shall lead these libraries to build their change capabilities to overcome these barriers and meet the complex information requirements of users in the change-intensive information environment across the globe.

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Beyond Libraries: *Understanding and Empowering the Vulnerable Adolescent Girls of Bhaskar Colony*

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Abstract: The paper is divided in three parts, the first is to go beyond libraries means that people are more important than books as they use books. The vision of International Federation of Library Associations and Institutions (IFLA) is not only focus of libraries on information and data but to use libraries as force of social change in the society. In this light, it is necessary to give a thought to know the real human situations. This lead to a strategic plan during the period 2010 to 2015 and the themes of various congresses of IFLA also prove this. Secondly, what should be the base of going beyond libraries? Social justice should be the base of going beyond libraries. Then question arises, how it could be achieved? It could be achieved by considering the most vulnerable as human capital. Who is the most vulnerable? It is generally understood that adolescent girls are the most vulnerable section and when they are from marginalized groups of society then they are even more so. In this context, it is necessary to understand above mentioned concepts. In the third section, in the light of above mentioned background, I have done a study of a small group of young girls of marginalized section from the society living in a who are deprived of the opportunities nearby colony of university. The study has been done during the period of Nirbhaya as well as Gudia tragic cases that occurred in Delhi. The transformation, I witnessed, during that period in them in their own capacity building process, I wish to share with my co- researchers and believe that if these girls are considered human capital, they would not only be helping themselves but also their family, nation, world and the future generations as well.

Keywords: IFLA, Libraries Social justice, Human capital, Vulnerability, Adolescent Girls Empowerment

1. Introduction

The United Nations Human Development Report (2014) desired to reduce vulnerabilities and build resilience in the world. Though the United Nations Human Development Report (2013) informed about the rise of the South (it is about a few countries) yet the Millennium Development Goals Report (2012) viewed South Asia as one of the poorest regions of the world where four out of five would live in poverty in 2015. Pio and Syed informed (2013) the countries of this region have complex aspects of caste, class, patriarchy, religion, education, skill, agriculture, technology, terrorism and violence.

The World Economic Forum (2014) ranked these countries far behind in its Global Gender Gap Index on the basis of economic participation and opportunities, educational attainment, health and survival and political empowerment, Bangladesh 68, India 114, Maldives 105, Nepal112, Pakistan141, Sri Lanka 62, respectively. Pio and Syed viewed (2013) that though these countries gave women leaders to the world like Indira Gandhi (India) Benazir Bhutto, (Pakistan) Sirimavo Bandarnaike and Chandrika Kumaratunga (Sri

Lanka) Khaleda Zia and Sheikh Hasina Wajed (Bangladesh) yet they were exceptions as they were being backed by the powerful, elite ruling class families.

2. Women as Human capital

The oxford Dictionary defines, human capital as the skills, knowledge, and experience possessed by an individual or population, viewed in terms of their value or cost to an organization or country. If we discuss woman in the light of human capital in a family, in an organization, country or in the world, it means her value to family, organization, country and world. When women and girls earn income, they invest 90% of it on their families. If we had taken care of our females, the need of signing the Millennium Development Goals (MDGs)as well as The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)would not have been arisen. World Economic Forum and various other international and national organizations would have painted a different picture of women. Today 70% of world's poorest are females. The gender equality is desirable. Klasen (2006 in Bucciarlli 2011) mentioned that gender inequality shows that there is reduction in the human capital and it restrained the female to perform what they want to choose even if they do not develop them, there will be negative impact on the next generations.

3. Vulnerability

World Health Organization (2002) states that Children, pregnant women, elderly people and malnourished people, who are ill or immune compromised, are particularly vulnerable. Poverty and its common consequences such as malnutrition, homelessness, poor housing and destitution is a major contributor to vulnerability. Nussbaum (2005) informs that no woman in the world is secure against violence. Throughout the world women bodies are vulnerable to a range of violent assaults that include domestic violence, rape in marriage, rape by acquaintance of dates, rape by strangers, rape in wars, honor killing ,trafficking, forced prostitution, child sexual abuse, female infanticide, female genital mutilation and sex selection abortion.

4. Adolescent

United Nations defines adolescents as those who fall between the age of 10 to19 years. Joint (2009) defines it as the transition period between childhood immaturity and legal adulthood of different ranges according to cultural, social, and legal norms in each country, along with different cultural and social challenges. It is a critical period of life when relationships are formed, rules and cultural norms are tested. (2010). The population of adolescents girl in the developing countries is 600 million. Child marriage, before age of 18, has been practiced in most of the regions of the world and due to these practices 100 million girls are projected to become child brides, 1.3millon adolescents died in 2012, mostly from preventable or treatable diseases. 62 million around the world are not in school.

WHO Report "Health for the world adolescents" (2014) informs that nearly half of all women age 20 to 24 in South Central Asia and Western Africa were married by age of 18 and because of early marriage, they were at higher risk of early pregnancy, maternal

disability and death, and limiting their access to education and employment. Two million adolescents are in the grab of HIV. Globally 30% of girls experience violence from partner.

5. Empowerment

Mohajer (2009) informed that Paulo Freire was a Brazilian who won international fame as he developed a consciousness or awareness among peasants with whom he worked. He told them their value in the world and being able to act upon in transforming the world to which he humbly called a pedagogy. In the similar sense,it is also desirable to empower the women by telling their value, and role in the society which has been also discussed in various international organizations. According to Fukkudar-Parr (2003 in Zheng and Walsham 2008) women inequality can be measured by women deprivation in terms of access to health care, education, participation in economic life and autonomy in decision making.

6. India

World Economic Forum (2014) ranked India 114 out of 142countries in Gender Gap. The report is based on gaps in four areas; economic participation and opportunities 134; education attainment 126; political empowerment 15; health and survival 141. Census of India **(2011)** shows the ratio of female 940 to males1000. Female literacy is 65.46%. According to a report on Landscaping Women's Empowerment through Learning and Education, (2010 in Dasra)total adolescent population of Indian girls is 113 million which is approximately 20% of the world's adolescent girls. These girls are more vulnerable in Bihar, Rajasthan and Uttar Pradesh, where over 50% of population is married before the age of 18, up to 95% of drop outs of schools and 50% face domestic violence. There is also much violence occurred against Indian women is in the shape, dowry deaths, acid attacks, honor killings, rapes, abduction, and cruelty by husbands and in-laws. However, India still has one of the lowest sex ratios in the world with approximately 35 million women "missing" through feticide and infanticide. The highest number of missing women at birth is in the north-western states of Punjab, Rajasthan Haryana, etc., According to the National Crime Records Bureau (2013), in 2012, dowry deaths – or murders of women by the groom or in-laws because of unmet high dowry expectations – constituted 3.4% of all crimes against women. Adolescent girls in India, is a largely neglected group vulnerable to early marriage, violence and unemployment. The group accounts for nearly 11% of the Indian population, yet remains invisible. Bihar, Rajasthan and Uttar Pradesh, have the highest rate of child marriages in India, with 64%, 58% and 52%respectively of adolescent girls married before the age of 18. The NCRB statistics indicate that an Indian woman is most unsafe in her marital home with 43.6% of all crimes against women being "cruelty" inflicted by her husband and relatives. These numbers do not include incidences of marital rape, as India does not recognize marital rape as an offence. NCRB (2013) reveals that out of the 24,923 rape incidences in India in 2012, 98% of the offenders were known to the victim, which is higher than the global average of approximately 90%. This may also mean that children – boys and girls – in India grow up in a situation where they see violence against women as the norm. In Bihar more than half of adults age 15 to 49 (57%) believe it is justifiable for a husband to beat his wife under specific circumstances.

7. Chandigarh

Chandigarh is a Union Territory which came in to existence on 1st November 1966. Census of India (2011) informs the total population of Chandigarh is 10,054,686and out of that males are 580282 and females are 4,74404 and ratio of females is 888 to males 1000. Literacy rate is 86.43%. Male literacy rate is 90.54% and female literacy rate is 81.38%. Like other cities of developing countries, the city beautiful has also marginalized population and has poverty, illiteracy, unemployment, lack of land ownership. This population lives in its villages, slums and resettlement colonies. There are colonies like no 4, Bhapu Dham, Nehru Colony, Faida Colony, Adarsh Colony, Ambedkar Colony Bhaskar Colony, 25 etc. Women of these areas are always busy in fulfilling the needs of city people who are largely both husband and wife are working in the offices as maids. They are busy in clearing up the places to make beautiful by sweeping it in the morning, collecting the rags, plastic, papers etc. There are also kabari-walas to collect glass bottles, plastic magazines newspapers, metals etc.

Here, I am highlighting particularly about Bhaskar Colony which is a mixture of resettlement colony as well as slum area. There are approximately (4500) pucca ghars of one room as well Kachche ghars 1084 (juggis) and more than twenty thousand population is residing in this area and people are doing the above mentioned work along with dealing their social problems. It seems, 80% of people are from schedule castes, 10% poor people from general category of weaker sections and10% are from schedule tribes.

There are Balmikies, Bajigars, Chamars, Ramdasis, ravidasis, kumhar, Dhaniks, Sansis, etc. Normally Kumhars like to reside in Kacha Ghar as they keep animals with them like horses.I was told that the plot of one room was given by the government on lease at Rs. 254/- annually for twenty years. The electricity bill has been collected by the Contractor but water supply bill is issued by the department and could be deposited in the E-Sampark. There are few studies related to different aspect of marginalized areas of cities Zia and others (2008) conducted a study of dump pickers to know about their socio-economic conditions. Das (2012) informs about slum area of Delhi that it is not often assumed that ability of poor to think and act in the way that all are too-human both spontaneous - and rational. Suha and Haque (2013) conducted a study about adolescent girls of Tejgoan Railgate in slum area of Dacca and found that they were losing their capabilities due to gradual degradation of the environment.

Here I am reminding you the two sad incidents; the gang rape tragedy of Nirbhaya on 16th December 2012 as well as rape of minor girl Gudia on15th April 2013 that occurred in Delhi and these incidents were covered by not only national news channels but also international news channels .The unnamed 23 years old girl as well as her male friend were offered a lift in a mini bus. She was raped though they tirelessly fought backed. She was assaulted with iron rods and later succumbed to her injuries. The nation got disturbed and perhaps we wanted to resetrengthen ourselves and one afternoon as I was sad as well as upset. I wanted to meet the young girls, who are most vulnerable to know their state of mind at this juncture after all. I went to the Bhaskar Colony through a small gate which divides between opportunities and deprivation of opportunities, means the gate between

university and Bhaskar Colony. I saw a young girl in a small shop who was taking care of the shop in the absence of her father. I tried to make acquaintance with her while asking for a notebook .I told my name and asked about her name and incidentally both of us had similar names and we smiled which perhaps helped in building relations spontaneously, I asked about Delhi incident and she was familiar with it. Then I asked her whether she could help me in introducing with her friends. She responded positively and made a few calls on her mobile. She suggested me to come next day.

According to Mills (1959), those who study sociology are sociologists and every working social scientist must be having his own methodological way. Actually, I went with the thought to know their reaction about this incident as well as to know about their well being but going there changed my mind. Now I wanted to know deep inside (their entitlements and political liberalism which a decent political order must secure for all the citizens at threshold). There is a growing body of research pertaining to the women studies, and it builds an environment where research can gain deeper understanding of people experiences. As gender studies help us to understand the relations between men and women and women are at marginalization, here my interest was to understand the situation of girls between the age of 14 to 18 years in this area where they were again in more marginalization. Few questions were prepared to understand their environment. (eve-teasing, their education, quality of education, and role of political party in power and its availability in the area). It was Sunday morning, I reached at the shop at 11.00 am. She had ten friends with her almost of her age and then both of us went from house to house till evening and the total number of girls met was 64. But the answers were given by 56between the age of 14to 18years.

Methodology used was based on semi- structured method. An interview schedule was prepared for the data collection. Secondary data was used as well. And it was taken care of that biased questions were not to be asked. Following questions were asked to know about their environment in which they were growing up for data collection purpose.

Are you studying?
Is there any eve- teasing?
Who is the Prime Minister of the country?
Who is the Member of Parliament from Chandigarh?
Table: Girls between 14to 18years in Bhaskar Colony Sector 25

Sr. No.	Total Respondents 56		Percentage (%)
1	Schooling Status		
	In	50	89.3
	out	6	10.7
	(4 studied up to 6th or 7th Standard		7.1
	2 illiterate)		**3.5**
2	Eve-teasing	=32	57.1
	No eve-teasing	=14	25

	Did not reply	=07	12.5
	Going to school with father	=03	5.3
3	Name of the Prime Minister		
	Knowing the name	=17	30.3
	Not knowing the name	=39	69.7
4	Name of the Member Parliament		
	Knowing the name	=03	5.4
	Not knowing the name	=53	94.6

Out of fifty six respondents, fifty were going to school. Six girls were not studying and among six, two never attend the school and four could study up to sixth or seventh standard. The percentage of girls, in the school was 89.3% and the percentage of girls those who were out of school is 10.7. % and in this category 7.1% who studied up to 6th or 7th Standard and 3.5% who did not attend the school ever.

Out of fifty six respondents, thirty two told that there was eve-teasing, fourteen replied no and seven did not reply. Three told that they were going to school with their fathers. The percentage of girls told that there was eve- teasing is 57.1%. The percentage of girls told that there was no eve- teasing is 25%.The percentage of girls who did not reply is 12.5%.The percentage of girls who told that they were going to school with their fathers is 5.3%.

Out of fifty six, only seventeen knew the name of Prime Minister and thirty nine and did not know the name. The percentage of girls who knew the name of Prime Minister is 30.3% and did not know the name is 69.7%.
Out of fifty six, fifty one did not know the name of Member of Parliament just three knew the name .One took the name of Chief Minister of Punjab and other said that congress won. The percentage of girls who knew the name of Member of Parliament5.4%.and who did not know the name is 94.6%.

From their replies I felt that that their environment is not supportive towards them and they could never be part of the national development. Eve -teasing was a big obstacle in their routine activities, they were studying but the quality of education was too poor to reply the name of Prime Minister. The role of political party was negligible in the area as only three girls knew the name the Member of Parliament.

Within a period of four months again, a tragedy occurred with minor girl named Gudia I again met them I asked them how they feel .They were furious, disturbed and numbed. They wanted to do something for the dignity of women as whole. They suggested different ways to participate like organize a rally in the area, a protest, and with no time they brought few posters pens and got busy in making posters themselves. I saw a flame invoked in them feeling of doing a valuable work for the dignity of womanhood. They marched towards the university campus and raised slogans for the dignity of women. Surprisingly, they requested the students at the student centre that the boys should respect the females. There must not be eve –teasing, as they could not reply back especially girls

from their like areas because of the fear of leaving the school which is otherwise always a predominant question of the home because of other reasons. Few girls were burst in to tears while few kept mum. To change the environment again one girl raised the slogans. It impacted a lot on the students and they were carefully listening to the girls between the age 14 to 18 years. Though it was a small participation but it started helping them in their capacity building process which is very much desirable.

8. Conclusion

In the end, it can be said that libraries have to be more responsive towards what is going on nearby as IFLA suggests. In this sense during the two incidents; tragedy of Nirbhaya as well as Gudia ,I went to Bhaskar Colony, Sector 25-D and later understand the situation by studying the 56 adolescent girls which resulted in that throughout the world, women bodies are vulnerable as Nussbaum says. Even UN country team along with its agencies like UNESCO, UNICEF, UNDP and UNFPA first time initiated for joint advocacy and communications on the Global Education in India during the month of September 2014. If we desire that our generations should be better than us then definitely at national and international level we have to invest on our adolescent girls to make them educated .The policies at implementation level must be effective. Need of effective implementation of right to education. They must be skilled. It will also help in delaying the marriage. Delay in marriage and in first pregnancy means giving more opportunities to adolescent girls to understand their adulthood and taking responsibilities. It will also help in better health as well as reproductive system. They must be saved from all type of violence either in home or out. The Government must take care of the Justice Verma's Committee report which has reflected the different patterns of violence against women. Understanding this and participating in it may perhaps lead to social change as Parent, our former president of IFLA expects from professionals.

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Change management in academic Libraries in 21st century: *Issues and Challenges*

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Abstract: This paper deals with the concept of Change Management in Academic Libraries. It discusses how to market the Library to the Customer. It emphasis on the importance of customer centered Library services in 21st Century. It also discusses the competencies of Librarian to cope up with the changes in the today's era to make ourselves more relevant and remain a vital element in higher education.

Keywords: Change Management, academic library, Library 2.0 and academic library, Leadership qualities of librarian

• Introduction

If Libraries are to be an essential part of higher education in the future then library activities and functions have to be changed. Libraries are struggling to redefine their role and to maintain their value in today change environment. The pace of knowledge is being created is posing challenges to academic libraries. Users are giving preferences to Internet over libraries. Information technology is also posing challenges to the libraries. In OCLC survey 64 % users have preferred search engines, 30% preferred online library, 24 % preferred proper library. Library profession have to reinvent the library by their professional approach through which things can be put on right track to make ourselves more relevant and remain a vital element in higher education. Library is a more integral part of the academic community and the academic community has a greater influence in determine how the library develops.

• Library 2.0

The Library 2.0 has refocused their effects and opened up new vistas of library service. Technology has brought rapid changes in academic library. Availability of Journal article online and other resources has had a greater impact on academic usage. Library 2.0 is concerned specially with improving the customer experience. Library must work in collaboration with customer using Blog, WIKIS, Instant messaging, social software and other forms of digital communication to serve our user community better.

Library 2.0 emphasizes this philosophy that in order to progress , Library must consult the customers in planning so that what customer want can be known and they feel that they are involved in planning process, development of library services . Customers must be consulted about their likes and dislikes.

- **Librarian and Leadership**

  - Librarian possess wealth of knowledge and experience
  - Librarian must contact and communicate with library staff effectively
  - Librarian has to perform supervisory, responsibility
  - Librarians must know how to delegate responsibility and manage people effectively.
  - Librarian should be down to earth, experience; practical solution should be given by the librarian
  - Team work is essential to a successful library
  - Leadership is rarely find among librarians
  - Librarians must assume leadership role and bring change
  - Librarian must be able to play key role in academic institution like Dean of Colleges like.
  - How many hours a day or how many hours a week librarians actually interacting with students and faculty.
  - Librarian must use **information literacy skills** for helping the users as to how information can be searched:
  - Defining & a limiting a topic
  - Finding the text
  - Evaluating resources
  - Choosing the most appropriate ones for a given topic
  - Citing sources completely & accurately
  - Libraries must adopt information literacy programme.
  - Fact is that most faculty members have little or no interaction with librarian and if don't interact with librarian then it is clear that their students are not active library user.
  - Library staff must be groomed in such a way that they have maximum interaction with our customers
  - We should be doing good only if the staff who is committed to spending time with our customers. We must create such an environment in which public service staff can be productive.
  - In libraries treasure of intelligence, creativity and people skills are available. Only thing is that we have to take inputs from their customers and change accordingly to their needs then Academic library can not only survive but thrive – excel in society also.
  - User's survey indicated that few library users approach Reference or information desk, then why don't alarm bells rings? We have a serious problem.
  - Librarian as leader
  - Library culture
  - Librarian taking responsibility

- **Ignoring Customer Convenience**

  - Photocopy Machine should be in working condition

- Reference librarian should user friendly and be ready to help the user locating the documents
- Not more than 10% of the printed journal collection is actually used or needed.
- All journals cost a fortunate and they have scarcely been used.
- University library and college library even continue to bind recent issues, even though there is little possibility that online database will ever cease to exist.
- Staff Members are not there in the library to help the customer in the Reference library.
- Customer will not visit the library again if nobody is there to help them.
- The library has to accept change either willingly or unwillingly. Only those libraries which accepts change are prospering and evolving deliberately and rapidly to keep pace with both universities and with society at large.
- In planning we must take into account the importance of active participation of users , students , staff , faculty through face to face communication and virtually to make effective use of information which library have.

- **Academic Library: What Should It Do To Revitalize The Library?**

  - Library must work in harmony with the academic programme
  - Providing / acquiring the material that supplement the classroom experience
  - Support faculty and student research
  - Focusing the needs of their customer libraries can create an environment that is physically inviting, intellectually stimulating and a focal point to which all members of the academic community are drawn.
  - Library instruction programme is an important library value because it mirrors the work of the teaching faculty.
  - Building digital libraries but at the same time it is costly venture.
  - Presenting paper at conferences
  - Preparing pathfinders and subject guides.
  - Librarian and other staff members must be visible which can have far more influence on customer's perception of the library.
  - Librarian must be leaders: professionalism is that librarians must understand library's mission and needs of users.

- **Customer Services**

  - Circulation Desk
  - Computerization
  - Challenge of multitasking
  - Email
  - When change is painful
  - Customer Eye – view
  - LibQUAL – A programme developed by the Association of Research Libraries to evaluate customer service

- **Marketing the Academic library**

  - Marketing starts with users need
  - To offer better, faster or cheaper information and assistance to users
  - Users don't know whom they turn for resources and to whom would they complain about the inevitable delays and inconvenience
  - Academic library should be responsive to what users want and need
  - Focus on the need of our customers rather than the ownership
  - Librarian must build a relationship with the customers, become involved with customer.
  - Service must anticipate customer needs, be available for 24 hours a day and seven days a week
  - Service must be delivered in timely fashion
  - Brand image: Libraries should clearly define and differentiate their relevant place in the information era. Rejuvenating the brands depends on reconstructing the experience of using the library.
  - Library's services and collection both physical, virtual environment
  - Electronics resources and web based services
  - Promotion: communicating with users: there should be maximum communication such as ListServ. Promotional methods and different medias are:
  - E-mail
  - ListServ communication
  - Ads in the campus paper posters
  - Endorsement from classrooms
  - Newsletter to target the undergraduate or PG Students
  - Effective message: Introduction of new services like – Electronic resources, on campus document delivery.
  - Library must be responsive to what users wanted and needed
  - Staff should be taught they should be polite, accessible, when faculty and students face problem in using the library.
  - Begin the process of planning and implementing library service with customer's view of what matters rather than working from the library's perspective of what is important, cost effective.
  - Clear and regular input from customer about what they value and how they behave in seeking and using information.
  - User defined is the mantra for marketing concept as far as library is concerned.

- **To bring more students in the library following methods can be used**

Placing posters in the union room, sports, Web announcement not only on Library website but also on university portal.

- **Redesign the library**

Train and committed staff who possess the skills, determination will help the users in their information needs and satisfied them. Decision makers of library, staff must build a trust among the users community to redefine and redesign the library. Staff must possess research skills to tackle the different type of users like inexperienced, uninformed, and ignorant about the library.

- **Limitation of Academic Library**

  - Budget is not enough
  - Staff is inadequate
  - Librarian are not getting faculty status as compared to teachers
  - Librarians are not well equipped with technology. Digital library projects must possess IT skills to do their work effectively which will elevate their status.
  - Academic libraries does not have information desk, staff to assist customers immediately upon entering the library.
  - Circulation staff is not there to help the customers – they should be present to supervise the student workers and solve the problems they encounter.
  - Outdated signage.
  - Ignoring Customers Convenience- In the library evening hours only one staff is available therefore for customers no one is there to help them with a difficult database search, no one to help them. How the library could be of enormous help in meeting their academic needs.

- **Reference section in Academic library**

Academic library must have reference desk which will-

  - Assist customers
  - Select books
  - Created pathfinders
  - Contribute to the library newsletter
  - Evaluation of periodical holdings

- **What Library should be do?**

  - Libraries must develop new strategies to attract customers
  - We must give thought to our mission so that we can attract new customers

- **Strategic Planning**

This tool is beneficial for libraries:

  - First aligning resources with the most promising opportunities

- Communicating to upper administration and staff alike what resources are needed and what broad courses of action are paramount to achieving both short term success and long term viability.
- Maximizing favorable operating and performance out comes in times of scare resources.

- **Organisation Development In Academic Libraries**

  - A correcting system of people
  - Collaborative management of organizational process
  - Diagnosing and solving organizational problems
  - OD is continuous process of change
  - Process of rethinking priorities and deputed persons that matches their training , skills, abilities and redistribute personnel to most vital functions.
  - Organizational Change:
  - Involve staff
  - Think long term
  - Focus on mission critical aspects
  - Set attainable goals
  - Articulate a clear change
  - Provide a supportive environment
  - Develop a shared vision
  - Training
  - Communication

  - **Change in users behaviors**

  - The Formats and nature of information
  - New information technology
  - Network access services in order to transform to organisation that can thrive in difficult conditions.
  - Change must be managed and directed. It cannot be imposed and expect that everyone will adopt it with a great enthusiasm.

  - **Changes include**

  - Marketing your library
  - Strategic planning
  - Accountability
  - Customers is god: customer library relationship , involve customer in planning
  - Users must be asked what they want
  - Libraries now have to accept change, if they are to survive in the present era. The whole world is developing / progressing by accepting change.

- Information explosion has pressurized to change ourselves. There are limitations like budget is decreasing, but the focus of library activity have to change if libraries want to be the integral part of higher education.
- OCLC Report (DE Rosa et al. 2005) says that college students ranked libraries low as compared to with search engines , 1345 students were asked about what source of information were perfect for their lifestyle, 64% students respondent chose search engines
    1. 30% said online library fits best
    2. 24% chose the library proper
    3. 21% responded that book store were their top lifestyle choice

  Answers: we need improved library services
- What users feel in terms of library services and what they are actively getting : survey should be conducted by the library to know the users perception about library, strong and weak areas of libraries , how to improve the library.
- Changes in living and learning spaces: changes interiors with cafes
- Trendy furniture
- Changes in academic library: library where research database can help students
- Portals can take researchers straight to their favorable resources.

4. Reinventing the library

The traditional library is facing challenges posed by the availability of scholarly material available online and easy accessibility from any computer. Academic librarian can prepare themselves by

- Developing new services as per identified new needs
- Total rethinking of the nature of the library
- Role of librarians
- Develop success strategies to succeed in the challenging environment of 21st century academy
- Library which is filled with endless stack ranges but nearly empty of students. How Librarian will evolve so that this space could be better used.
- A library is struggling for its survival is unable to meet the academic needs of its community
- The most important in this is that if customer is satisfied after using the library and communicates others then library is very much alive in the 21st century.

5.1. Technology and Modernization in the Library

- Impact of technology on the library:
- Online cataloguing: users have access in many different ways
- Circulation: Automated the circulation functions
- Reference: Reference Librarian is supposed to know how to use the systems but train the faculty and students in their use.

- Require Hybrid Librarian who has knowledge of Scholarly research tools as well as knowledge of how to use technology to transform the way research Teaching can be done.

5.2. User Education

- Information Literacy programme are required. Library in information age where internet, computer software, scholarly research and communication are changing so fast that it must integrate its services to help the users. We must undertake user education classes.
- Creation and access to Digital content in the Academic Library.
- Marketing the Library : Libraries must go out and promote themselves
- Announcement of New Services
- Creating Digital Repository in the Library
- Library of Tomorrow

5. Conclusion

As the world is changing on a very fast pace and the demands of the Library users are also changing. To fulfill the demands of the users and to meet the fast changing world we the library fraternity must change ourselves to remain relevant in the society.

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Changing Role of Academic Library Professional in ICT Environment: *Challenges and Opportunities*

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Abstract: This paper deals with the implications and challenges posed to librarians and their profession in the use of ICT. The impact of ICT environment has influenced every facet of library and information services in academic libraries and providing new opportunities and challenges to the library professional. The information revolution and the knowledge that is available on the Web have created new challenges to these traditional professional ethics.

Keywords: ICT, Academic Library Professional, technology Challenges

1. Introduction

Information Technology (IT), also known as Information and Communication Technology (ICT), is concerned with the use of technology in managing and processing information, especially in large organizations. ICT deals with the use of electronic computers and computer software to convert, store, protect, process, transmit and retrieve information. New computing and communications technologies are starting to make an impact on the libraries.

The biggest challenges facing the library profession today is preparing the professionals to use technology effectively. An academic library professional will be required to serve as an information service consultant with specific information technology skills. As technology has saturated all levels of library's operations and services, the library professional in an academic institution has to anticipate the changing expectations of users, and be flexible in adapting and adopting new skills and levels of awareness. While being trained in IT skills, what every library professional chooses to ignore is the management aspect of a library. In addition to the technical and professional skills, commitment to user centered services and skills for effective oral and written communication; they must have other skills, including business and management, teaching, leadership, etc.

2. Objectives

- To the changing roles of future academic library professionals accordingly to meet the changes and challenges in the ICT environment.
- To discuss about the various skills needed for the library professional to meet the present online and digital needs of the user.

3. Changing Information Environment

Electronic networks and different information formats are changing information access operations worldwide. The role of the Universities and Colleges in preparing students to handle the rapidly expanding range of information formats. Information and knowledge are the high value tools of the present age . The rise of the Internet has led to 'free information services. The academic libraries and library staff need to adapt swiftly to the new learning environment. The changing information format and the access mode is the crux of the issue in this information age.

New Information and Communication Technologies are transforming Scholarly Communication. The digital era has revolutionized the methods for the organization and automated handling of information. The web documents are significantly different from traditional versions in their presentation and also the ways to organize and retrieve them.

4. Changing Role of Library Professional in ICT Environment

The ready availability of information on the Internet, and its widespread use, really presents Librarians with an opportunity, not a threat. Technology Savvy users realize they need help, which Librarians can provide. Librarians now face difficulties and complicity challenges due to new trends in information access. In the present technological/Internet era the professionals have to change themselves as the information profession is being changed. Now information specialists have to work as e-information resources in which various professional groups are expected to map a strategy that leads to produce, manage, maintain and service the information. Information professional has to work as a librarian, as a Information Manager, as Information adviser etc.

Current developments are directly affecting the knowledge, competencies and skill requirements of the information professionals to do their job effectively. These changes are occurring at such a fast pace that each day new skills and approaches are required to handle the information and unfurl the new ideas. The changing perception of users and the technological advancements have forced the library and information professionals to enhance their knowledge and acquire new competencies, skills and develop themselves in accordance to the new environment to avoid becoming obsolete and outdated. Thus, it has become imperative to have generic and traditional skills in addition to acquisition of ICT skills, which must be continuously updated. All this demands for environment al scanning, market responsiveness, fast developments, high level of creativity, innovation, collaboration and efficiency.

5. Library Resources and Services in ICT Environment

The innovations in information communication technology have influenced academic libraries to serve better and adapt the changes. The libraries also changed drastically with service provision, collection development, human resource planning and training. The librarians also have changed their mind set towards service and the management of libraries. One of the major developments in the libraries and information services in the

last 10 years has been the introduction and spread of electronic information sources (EIS). The progress in information technology has offered today's information seekers different opportunities to access to information resources in an increasing array and format. An academic library is expected to provide materials for courses, research projects and institutional academic activity to satisfy the needs of the well defined specialized clientele like faculty, students, researchers, administrators.

Student s served by academic libraries need access to a wide variety of resources, which have been traditionally provided by the campus library. However, the newest generation of tech-savvy students has transformed the role of the academic libraries. Students often use online resources because they are convenient. College students today expect "the flexibility, geographic independence, speed of response, time shifting, interactivity, multitasking, and time savings that digital networked services provide".

Librarians must consider the changing ways that students are adopting for accessing their information. Therefore the modern academic library has to bring a change in their collection development policy, role of acquisition librarian, information search strategies, reference service and emerging delivery media. Here libraries have to play a great role in providing information literacy to their users. They have to ensure that libraries are the partners of educational system and working for the same goal and for this, good relationship is being required between different component of university system and libraries, by asking what they want rather telling or suggesting them what to do. For this, academic librarians must focus on environmental scanning, user needs, effective self-assessment and collaboration with different faculties.

5.1. Library Services in an ICT Environment

- Automated Library System;
- Services for e-on site resources: CD-ROM, E-Journals on subscription, e-books;
- Internet Services;
- Information Services: SDI, Repackage of Information;
- Resource sharing activities: Interlibrary loan, document delivery.

6. Qualities of Library Professionals in ICT Environment Awareness:

It is important to be aware of current trends and be flexible in dealing with user new demand. Library professionals need new knowledge specifically about information needs and information seeking behavior as well as subject knowledge, since information seeking behavior is dependent on the existing knowledge base of the searcher. In as electronic or digital environment Library Professionals can be referred to as information specialists.

7. The major challenge in ICTs are:

- Application of new technologies in libraries.
- Growth and usage of web resources.

- Computerization and networking of all library operations, resources and services.
- Use of digital resources.
- User's expectations.
- Online bookshops and information services.
- Develop both print and electronic information resources.
- Providing an access to the content of local and global resources and services.
- Provide guidance and training in the usage of digital resources.
- Provide responsive products and services to meet the user needs and expectations.
- More attention and funds must be required for implementation and procurement of ICT infrastructure in libraries.
- Training should be aimed at the upcoming computerization of libraries
- Library administrators should seek funds from the many foreign agencies and foundations who give financial assistance and equipment to libraries.

8. Opportunities

There are definitely opportunities for Academic Library professional

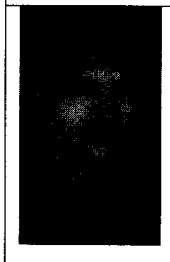
- Learning and Improvement of ICT Skills: Library professional can now get informal online education regarding about trends in librarianship on their desktops. They may improve their ability to retrieve information and serve users. Self learning regarding the use as well as understanding of new tools, acquisition of e-resources, and efficiency of retrieving information, dissemination, leadership qualities, and better use of human and financial resources can help meet digital library challenges.
- Improve the Image of Library
- Awareness of Use of E-Resources and Researchers' Orientation
- Design of Library Web Page
- Better Reference Service

9. Conclusion

ICT has engendered a new approach to work and service delivery, and is a technological development that has come changed work and job expectations. It is imperative that librarians in the properly trained to acquire ICT skills. Library professionals and libraries must adapt to new roles and skills to cope with change. Library professionals and libraries must do this to remain relevant in the face of challenges and changes.

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Intrinsic of Motivation and Approach in Academic Library Management: *A View*

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Abstract: This requires researches that recognize ways for library media high-quality to integrate effective motivational interference into their instruction. This article will present some of the speculation and concepts of motivation and how they communicate to academic library management, a systematic model for designing motivating instruction, ways to incorporate and apply motivation premise and models to academic library management.

Keywords: Motivation, Academic, Library Management

1. Introduction

Organisations, private and public, are set up to achieve their have goals and objectives such as the condition of goods and services. Organisations necessitate people of various backgrounds, both expert and inexpert to exert their energies towards the exploit of their goals. People[1] are the greatest single asset available to an organization. In actual terms, an institute is group. They constitute the only asset that can work towards an organizational goal Motivation[2] is the internal condition that activates behavior and gives it direction, energizes and purpose oriented behavior.

The expression is usually worn for individual motivation. Motivation is the most important factor to affecting modern management because the modern management theory is completely based on Human oriented. This article will present some of the theories and concepts of motivation and how they relate to academic library management.

2. Academic Library

Academic libraries serve colleges and universities, their students, staff and faculty. Because better institutions may have numerous libraries on their campuses dedicated to serving particular schools such as law and science libraries, academic librarianship offers a great opportunity to utilize subject expertise. Professional status differs by institution, but several academic librarians have faculty status including tenure. Nowadays academic librarians are concerned in a diversity of challenging activities.

- consult with individuals in analyzing, identifying, and fulfilling their information needs
- create campus wide information literacy programs and deliver classroom instruction to strengthen information literacy skills

- select, organize, and facilitate access to information in a variety of formats
- keep abreast of technological advancements and develop strategies to take advantage of them
- plan, implement, and administer computer based systems, electronic databases design and manage Web sites
- collaborate with classroom faculty, computer specialists, and instructional developers
- contribute to effective teamwork among colleagues
- participate in and lead public relations efforts to promote and raise funds for academic libraries

3. Motivation

Internal and external factors that stimulate desire and energy in people to be frequently interested and committed to a job, role or subject, or to make an effort to attain a goal. Motivation[4] results from the interaction of both conscious and insensible factors such as the (1) intensity of desire or need, (2) incentive or reward value of the goal, and (3) expectations of the individual and of his or her peers. These factors are the reasons one has for behaving a certain way. An example is a student that spends extra time studying for a test because he or she wants a better grade in the class. There are two techniques of motivation;

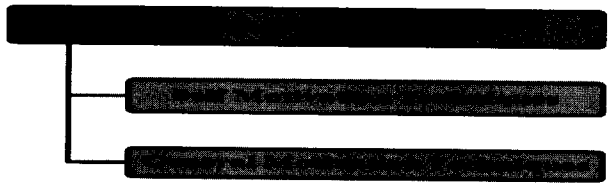


Figure 1 - Types of Motivation

3.1. Self-Motivation Techniques

- Learning new technology.
- Participation in own interested field.
- Positive thinking.
- Reading motivational books or reading material.
- Attending motivational seminars and lectures.

3.2. General Motivation Techniques

- Give generous rewards (Pay and other benefits)
- Rewards don't only have to be money all the time.

- Provide proper training about new technology.
- Show recognition (Expressing appreciation).
- Accept suggestions from employees.
- Encourage for their great suggestions.
- Establish a positive working environment.
- Treat your employees with respect and dignity.
- Encourage for team work among them.
- Allow employees to grow professionally
- Organize the motivational lectures time to time.
- Invite all the staff members for the every functions or programs of institution.
- Exhibitions of motivational audio and video materials

4. Library Management

Library management is a process which consist all the works of library to organize library product and service for achieving organizational[5] goal. We can easily organize library housekeeping operations and services with the help of management. Origin of POSDCORB History: Gulick and Urwick built their ideas on the earlier 14 Principles of Management by Fayol. Note that in 1937, the prevalent thinking was the separation of politics and administration. Gulick advocated that it was impossible to separate the two.

- **Planning:** Working out the board[6] outline the things that need to be done and the methods for doing them to accomplish the purpose which is set for the enterprise.
- **Organizing:** The establishment of the formal structure of authority through which work subdivisions are arranged, defined and coordinated for the defined objective of the organization.
- **Staffing:** The whole personnel function of bringing in and training the staff and maintaining favorable conditions of work. Both qualitative and quantitative.
- **Directing:** The continuous task of making decisions and embodying them in specific and general orders and instructions and serving as the leader of the enterprise.
- **Coordinating:** Interrelating the various entities and processes of the work.
- **Reporting:** Keeping those to whom the executive is responsible as well as subordinates informed through records, research and inspections.
- **Budgeting:** With all that goes with budgeting in the form of planning to ensure sources of income, accounting and control on expenditures.

Strength of POSDCORB: POSDCORB generally fits into the Classical Management[7] movement, being classified as an element of scientific management. Gulick POSDCORB

principles were instrumental in highlighting the theory of span of control, or limits on the number of people one manager could supervise, as well as unity of command to the fields of management and public administration.

- The strength of POSDCORB is as follows:
- Division of Work
- Authority and Responsibility
- Discipline
- Unity of Command
- Unity of Direction
- Subordination of Individual Interest to General Interest
- Remuneration of Personnel
- Centralization
- Scalar Chain (line of authority with peer level communication)
- Order
- Equity
- Stability of Tenure of Personnel
- Initiative
- Esprit de Corps

4.1. Limitation

- The study covers only for Top 50 engineering institutional librarians in India.
- The Study not covers of other Library Professionals like (Asst. Librarian, Library Asst, etc)

5. Opinion of Motivation on recital of librarians in Engineering College Libraries

The present study was carried out to assess the opinion of motivation on performance in selected engineering Libraries in India. So I have take opinion only Engineering College Librarians of India. The total engineering College librarians is **50 (100%)** Structured Questionnaires were distributed (Simple Random Methods) to college librarians, out of which **39 (78%)** responses were received. This constitutes of total responses and it was used for the below table 1.

Table 1: Gender wise Response Rate Motivation on recital of librarians in Engineering College Libraries

S.No	Gender	Positively	Negatively	Neutral	Total
1	Male	13 (33.33)	12 (30.77)	5 (12.82)	30 (76.92)
2	Female	5 (12.82)	3 (7.69)	1 (2.56)	9 (23.08)
Total		**18 (46.15)**	**15 (38.46)**	**6 (15.39)**	**39 (100)**

(Figures in Parentheses indicate percentage) **N=39 Response Rate (78%)**

Table 1 shows that 33.33% male was positively, while 30.77 negatively is given responds. The 12.82% female positively, while 7.69% negatively responds of Motivation on recital of librarians in Engineering College Libraries.

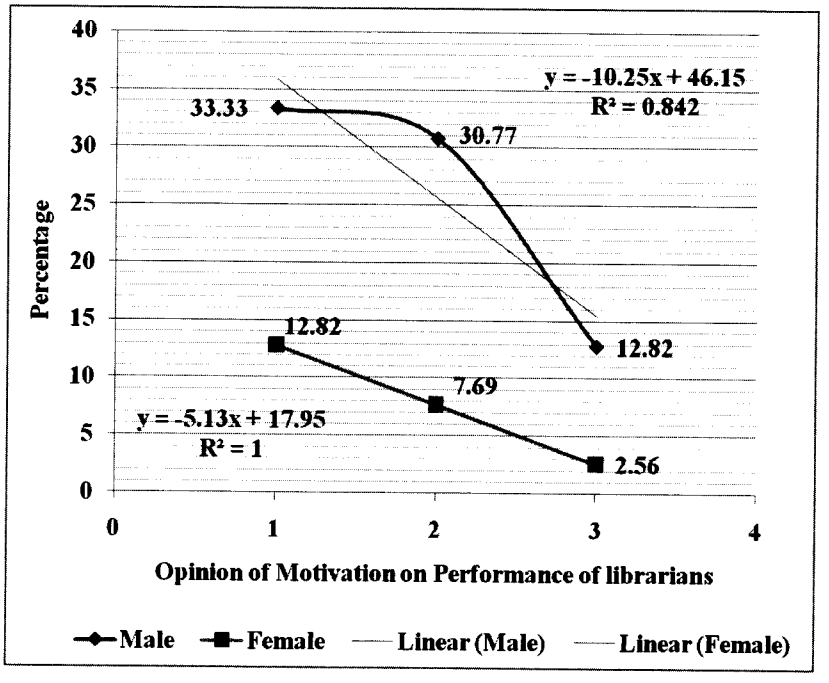


Figure 1 - Scatter plot for Constraints of Electronic Resources

Figure 1 shows scatter plot which is a tool for analyzing relationships between two variables. One variable is plotted on the horizontal axis and the other is plotted on the vertical axis. The pattern of their intersecting points can graphically show relationship patterns. Variable unit is equal to the slope of the line. In addition a scatter plot can show that two variables are from a common cause that is unknown or that one variable could be

used as a surrogate for the other. Take two points (x1, y1) and (x2, y2) on the line and calculate variable using the following formula:

Male: $R^2 = 0.843$ (y = -10.25x+46.15)
Female: $R^2 = 1$ (y = -5.13x+17.95)

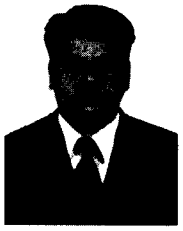
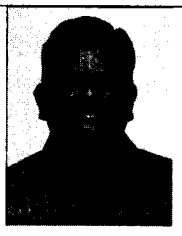
The above scatter plot shows that there exists a Complex Correlation the value of Y seems to be related to the value of X, but the relationship is not easily determined, which indicates that users are more contended for performance of motivation of male, but female was excellent correction of motivation factors.

6. Conclusion

The study auxiliary revealed that majority of the librarians are youthful and within the middle age group. These categories of librarians are more eager, with more needs such as marriage, family and social responsibilities to satisfy and thus are willing to leave one institution for another if their expectations are not met. Alternatively, if measures are implemented to motivate them to meet their expectations they could be retained and developed to constitute competitive benefit for their institutions.

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Managing Change in Academic Libraries: *A Case Study at Learning Resource Centre, Sumandeep Vidyapeeth, Vadodara*

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Abstract: Change is one of the critical aspects of effective management. Academic libraries need to managing change in order to derive maximum benefit from new opportunities and to avoid reactive situations. The research was based on questionnaires with library staff. Based on the research, some suggestions were made which includes the need to recognize people reactions to change in order to reduce resistance, identifies the risks level of a change and builds change planning requirements.

Keywords: Managing Change, Learning Resource Centre, factors, skill, resistance

1. Introduction

Libraries and Information Centre need change. These change pressures come from outside as well as from inside the libraries themselves. The pressure includes potential threats to the library viability and security, as well as opportunities to consolidate the library position and it development. During the last decades, libraries and many other institutions, have experiencing change at an accelerating rate. Nearly everyone in the field has experienced at least one major change. For example:

- In recent years, most libraries have implemented the initial automation of Library functions. (e.g. fully on-line library system or on-line catalog, circulation, etc.)
- Many libraries have migrated from older automated to new, more sophisticated systems.
- In addition to hardcopy, most libraries are now acquiring at least some materials in alternative formats, acquiring at least some materials in alternative formats, such as e-books and e-journals.
- Problems or changes in physical facilities have become common place in today's libraries.
- Restructuring, layoffs, loss of staff position, and doing more with fewer people has become increasingly common.
- The period of general uncertainty about the future of libraries and information distribution.[1]

The effective management of change is a crucial issue for academic libraries in the 1990 and beyond, as change is impairing every aspect of their work.

2. What is Change Management?

According to Society for Human Resource Management, 2007 Change Management-Survey Report, [2] "Change Management is the formal process for organizational change, including a

systematic approach and application of knowledge. Change Management means defining and adopting corporate strategies, structures, procedures, and technologies to deal with change streaming from internal and external conditions."

3. Literature Review of Change Management

Change Management is a topic and major debate and discussions and discussions among librarians and information managers over the years. The library as the single repository of information needed for teaching, learning and research is changing its roles and functions. Morgan (2000) mention that there are four key areas where significant and longer lasting changes in academic library. These areas are, cope

- Lifelong learning
- Frontline Services and their quality
- Electronic Library Development
- Coping with continuous change[3]

Change has permeated through every aspects of work in academic libraries in the 1990s, yet it is not only the changes themselves that make this a crucial time, but also the rate at which they are occurring. Libraries, like other organizations, must respond proactively to their changing environment in order to take advantage of the opportunities that exist.

3. Objectives of Study

- To identify and study how LRC managed change.
- To identify and study the potential and benefits of change to be gained by LRC.
- To identify the issues relating to change management process in academic libraries particularly at LRC.
- To identify and examine the factors which cause staff resistance to change.
- To identify library staff's opinion towards more effective change management process in LRC.
- To identify the response of the library staff in the implementation of change management process at LRC.
- To provide recommendations to LRC in managing change particularly in addressing the issues and problems.

4. Scope of Study

- General overview of change in LRC and about the change management process.
- The concept of Change Management and the change management process in LRC.
- Issues, problems and challenges that arise from the change management process.

5. Methodology

This research is based on survey method. Data and information on which the research findings will be based on the questionnaire to library staff. Based on the data that are collected through the questionnaires, and then will be coded, and analyzed.

6. Significance of Study

The effective management of change is a crucial issue for academic libraries, as change is impinging on every aspect of their work. The study will provide useful information the aspect of managing change at LRC will make it easier for librarians to manage change and find solutions that are derived from the same situations. **Sumandeep Vidyapeeth, Vadodara**[4] **Sumandeep Vidyapeeth** stands as a testimony to the grit, determination, enthusiasm, vision and 'never say die' attitude of **Dr. Mansukh Shah**, a dentist and a philanthropist, who dared to dream big and translate it into reality. A man of humble beginnings, with sheer persistence he has converted a patch of barren land into a sprawling, pulsating educational centre. Starting with a small clinic with two dental chairs, the KM Shah Charitable Trust created by him and other benefactors, has slowly metamorphosed into a health care and educational centre which can pride itself as one amongst the best in the country. Having been awarded the status of "Deemed to be University "for having introduced a unique and innovative Evidence Based Education System , it has meticulously worked for implementing this system in true word and spirit, and in the process has created parameters for other institutions to emulate. Today all its constituent colleges: Medical, Dental. Pharmacy, Physiotherapy, Nursing and MBA-(Health Care) Management, are utilizing this system in the teaching and learning processes, thereby not only creating a paradigm shift in education, but also giving a natural impetus to research activities. At Sumandeep Vidyapeeth, patient care encompasses the entire spread from community activity to state of the art super specialty management, and education takes all the hues of traditional to innovative, and conventional to high impact research.

1981	Dental Clinic at Vadodara
1999	K.M. Shah Dental College and Hospital
2001	College of Physiotherapy
2002	Dhiraj General Hospital
2003	SBKS Medical Institute & Research Centre
2005	Sumandeep College of Nursing
2006	PG courses in Dental Sciences
2007	Awarded the status of Deemed to be University (De-Novo) u/s.3 of the UGC Act, 1956
2008	PG courses in Physiotherapy, Management and Pharmacy
2009	PG courses in Medical Sciences, Nursing , Paramedical courses. Dental Mechanics
2011	Nursing Programs – ANM , GNM & Post basic Diploma
2012	Recognition of all PG courses in Medical Faculty. Permitted to increase PG seats from 94 to 138 in Medical Faculty
2013	Super specialty courses in Cardiology , Plastic surgery , Neurosurgery Pharm.D. (integrated 6 Yr. programme.)
2014	Super specialty course in Neurology , Cardiothoracic surgery

7. Learning Resource Centre5

The Library System of Sumandeep Vidyapeeth is rapidly growing one of the leading learning and research library. It started its service in the year 1999. All bibliographic details of books, Journals and CD-ROM database are accessible through the campus wide network. The library has vast number of printed documents, and it subscribes to over 265+ National and International journals. It has established contacts with other organizations for exchange of the Institute's publications and Inter Library Loan (ILL) arrangement.

- **E-Journals and Online Databases:** Electronic journals and online databases are accessible on campus as they are register on static IP addresses. However, E-Resources on our LRC software shall be accessible globally.
- **Book Exhibitions:** SVU library arrange book exhibitions by inviting vendors and publishers to display books for sale. Students and teachers shall select and purchase such publications or recommended for LRC.
- **CAS (Current Awareness Service):** LRC provides CAS on need base; LRC software itself has provision for it under 'Ask Librarian'.
- **SDI (Selective Dissemination of Information):** LRC provides SDI on need base; LRC software itself has provision for it under 'Ask Librarian'.
- **Document Delivery Service:** LRC provides document delivery service to their clientele; LRC is member of developing library network wherein 5000 plus libraries are participating across the world & Library Forum which is very active in our profession to very useful for LRC users.
- **Reprographic facility:** A photocopier is available in the library. Students can avail of the service at nominal charge per copy. Scanner, Lamination, Spiral binding facility is also provided.
- **Library Orientation:** Library System provides library orientation to new entrant students about the facility available in libraries and how best they exploit library resources for perusing their education and research activity. Library guides about their privileges.
- **Question Papers:** LRC keeps all previous years question Papers to be refer by the students.
- **Downloads:** Users can access its in-house databases and CD-ROMs and other electronic resources available in the library, users may download require information from computer lab and as LRC is fully wifi students may use their own gadgets to access internet facility for academic and research purpose.
- **Reading list/ Bibliography compilation:** Library provides bibliographic service through library Management Software, it has facilities to have online bibliography service exported in excel.
- **In-house/remote access to e-resources:** Users can access its in-house databases and CD-ROMs and other electronic resources available in the library. All PCs are connected with Local Area Network (LAN) to reduce the time of the user.

- **Reading Rooms:** There are 3 Reading Rooms in the LRC. Two main Reading Rooms are in the First Floor. In the Ground floor there is a reading room for the faculty member and refer current Journals. For reference books, students are advised to consult the reading room of the Reference Section which is in the Ground Floor. For consulting, the Bound Volume Journals & Dissertations are in Mezzanine Floor; Bound Vol. Journals are in Ground Floor.
- **Suggestions and Feed forward:** Members of the library may recommend resources for procurement through the Library will procure the material on approval by respective authorities. Feedback is also facilitated.

7.1. Library Management Software

LRC has adopted library software "LIBTECH 1.4" where all the details of library housekeeping operations are made available and used for circulation the books and non book material to the users. LRC has provided the OPAC (on-line public access catalogue) for users to save the time purpose by searching books by title, author, publisher, keywords. LRC has also providing on-line circulation with the help of Barcode technology.

8. Data Collection and Analysis

A survey was done for the purpose of findings the result of managing change at the Learning Resource Centre, Sumandeep Vidyapeeth, Vadodara. The following analysis will try to look at the current issues pertaining to change management and managing change at the library. The study was a success with just a few minor adjustment made to the original survey. The researcher has circulated the questionnaire among the professional, semi professional and pera professional staff of Learning Resource Centre, Sumandeep Vidyapeeth. The total strength of the staff is 21, out of which 12 a professional is having minimum Masters Degree in Library and Information Science, Semi professional strength is 3 having minimum qualification of the Bachelor Degree in Library and Information Science whereas Learning Resource Centre of the Sumandeep Vidyapeeth as 6 per professional staff. In this survey a questionnaire was give to all of them and the researcher got 100% respondent. The analyses of the data are as under:

9. Analysis & Findings

- The mission and vision of any institution plays vital role in bringing the change in the management of the any institution. While making an analysis of the "Mission, vision and objectives of the Sumandeep Vidyapith" out of 21 agrees that is 100% that mission, vision and objectives of the university they have understood properly.
- While knowing the opinion of the staff are the support change management process out of 21, 15 (71.42%) are found affirmative whereas 6 (28.58%) are found to be negative and none of among them are found to be neutral.
- The findings shows that 12 (57.14%) of the respondents choose staffing and staff development as the factors affecting management of change at Learning Resource Centre, Sumandeep Vidyapeeth followed by information technology, job specifications and vision and mission of Learning Resource Centre, Sumandeep

Vidyapith 9 (42.86%) and finally library funding of Learning Resource Centre, Sumandeep Vidyapith 3 (14.28%).

- Most of the respondents 18 (85.71%) find that the effect of change management makes their job easier and satisfying.
- 15 (71.42%) respondents feel that it replaces old task and skill with new one.
- 6 (28.58%) respondents feel that it makes their job harder.
- 3 (14.29%) find that it doesn't make any different.
- The result from this questions shows that 18 (85.71%) believes that the communication skills is the most needed factor in managing change, while 12 (57.14%) of the respondents mentioned that the attitude needed and IT skills, leadership skills professional uplift ant 9 (42.86%) needed, 6 (28.57%) respondents need to professional competency and 3 (14.28%) mentioned that adoptability is needed in managing change at LRC, SVU.
- For this question the study revealed that the majority of the respondents 18 (85.71%) feels that training and development is important for an effective and successful change management. This was followed by good communication with 15 (71.43%) response and 9 (42.86%) of the respondents believes that information sharing are as important for an effective and successful change management. 6 (28.57%) respondents choose staff involvement and participation and decided job description clarity description as the factor for effective and successful change management.
- There are several reasons for which the library staff might resist to change. The reason for this question was to determine the likely response of people to change situations and the causes of resistance. From the data, 15 (71.43%) respondents highlight that they do not agree to change but force to participate is factor which causes them resist to change. While unclear reason for change are behind with 9 (42.86%) respondents. 6 (28.57%) of the respondents believe in increased workload as a reason for resisting change and 3 (14.28%) of the respondent communication failure and lack of faith and respect of person who make the change.
- This question focuses on the outcomes and benefits of change management process to library and the library staff. The survey shows that 12 (57.14%) of the respondents find that higher staff morale while 9 (42.86%) of the respondents mentioned that felt improve team work amongst staff, quality of services improved and achieved higher customer satisfaction. Finally, 6 (28.57%) mentioned that staff competence in IT increased.

10. Suggestion

The change management must take into account the components of human factors, the management and the library's mission and vision. The survey reveals that library staff

accepted the change process and understand the benefits brought forward by the change. From examining the results of the finding, some suggestions were made:

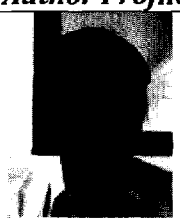
- Participation can help reduce resistance. Participation creates ownership of the proposed change and creates better awareness of the change.
- Training is needed to help library staff cope with new environment.
- Involve all staff impacted by the change in the planning process such that their commitment is gained and they are motivated to support the change.
- Observe and document the impact of the change on the problem.

11.Conclusion

In order to understand change and to be able to manage it effectively, we need to consider people's reaction to change. Managing change requires knowledge about motivation, leadership, group dynamics, organizational politics, conflict, determinations of behavior and communication which are all important in understanding how processes can be managed effectively[6]. The management of change will be most effective if it occurs in an environment which is open and flexible and receptive to innovation. A certain attitude towards change must be cultivated in the organization, which views changes as necessary for an effective and responsive organization and which embarrass change as a condition of success. Resistance to change has positive advantages as far as management is concerned. It can identify areas of low morale, motivation and poor communications. Staff needs to be taught how to cope with external pressures and how to keep up with recent developments and these skills will play an important role in encouraging positive attitudes.

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Need of Library and Information Professionals in the Present Scenario: *Technological challenges of the Digital Age*

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Abstract: This paper discussed about the emerging needs for library and information professionals and job market expectations for library and information science professionals in 21st century. Library and Information Science attained the status of a scientific field and emerged as one of the professional subject which is dealing with information service to society. It has developed theories, philosophical basis, methodologies and body of literature. LIS education underwent enormous changes due to social, economic, and technological progress in the 21st century. Information Technology has made substantial impact on Library and Information Science education. The advent of Internet and information communication technologies stepped up flows of electronic information and practice of library services in digital era. "Today it has entered into the era of 'virtual library' using digital technology. In the process, these contemporary changes required to be incorporated into the educational curriculum and course content.

Keywords: Library and Information Science education, Job market expectations, Academic Libraries, Special libraries, Library Networks, Digital Library Projects.

1. Introduction

Library science in the Indian context, has almost being recognised an established discipline now at par with other social sciences in the university education system. Library science is an interdisciplinary science incorporating all the disciplines like the humanities, law and applied science to study all the functions related to libraries, Information centres, Information Analysis Centres, Documentation Centres the functions like collection, organization, preservation and dissemination of information resources, storage and retrieval of information etc. There is no generally agreed distinction between the terms library science, librarianship, library and information science and information science, and to a certain extent they are interchangeable, perhaps differing most significantly in connotation. The term library and information science is often used; most library and information science professionals consider it as only a terminological variation. It is pertinent to mention here that Information and Communication Technology completely entered in the discipline of Library and Information Science.

2. Library and Information Schools running all over the country

The job market expectations for these Schools are as one should have background of Information and communication Technology and its applications in Libraries and information centres, Information literacy skills and competent in teaching, research methodology and one should have background of research related to Library and Information Science.

Libraries and information Centres established in training centres of banks like SBI, PNB,

RBI, and academies of training like IAS, IPS, NDA, IFS, IMA etc. :- Various Libraries and Information centres are established in training centres, the job requirements in these libraries as one should be expertise in library automation, internet information resources, digital reference service etc.

Digital Library Projects:- Various digital library projects are running all over the country, the job market expectations for such type of projects as one should be competent in handling software packages for digitalization like Green stone and D space etc. and also one should be competent in assigning appropriate keywords orMetadata to digitalized documents.

3. Overall Job Market Expectations in the Present Scenario and Technological Changes

The overall job market expectations in present scenario for Library and Information Science Professionals for almost all the kinds of Libraries as one must be competent in handling software packages for library automation, competent in handling software packages for Digitalization of Information resources like Green Stone and D space etc., competent in imparting Information Literacy skills, competent in searching of information in networked and digital environment, he/she should be search engine guru, he/she should be Information architecture specialist, he/she should be information evaluator and marketer, he/ she should be webmaster, he/she should be disseminator of Digital information, he/ should be trainer in information and communication technology, he/she should be researcher in information and communication technology, he/she should be master of the contents of all the world resources, he/she should be Purveyor of information and knowledge acting as a gateway to a wide range and variety of information resources services which are in constant flux.

In addition to it one should be competent in handling official matters in Government Sector i.e. administrative skills. Moreover one should be competent in communication skills both in writing as well as in speaking.

4. Conclusion

It is hereby concluded that Library and Information Science professional have great values if they possess all the requirements which are required in different kinds of libraries in 21st century and job market expectations demands modernization of the teaching and learning pattern of library and information science education.

Change is the natural phenomena which should be adopted by all the Library Science Schools, all the kinds of Libraries and all the working Professionals in the different fields Conclusively, the policy implications of the research findings are essential for putting up a prioritized list of activities to be taken up to ameliorate the infrastructure and curricula of LIS institutions in the country.

A gradual shift from the current status of 'developing' to the position of 'developed' at some future date can be brought about in a phased manner taking care of the priorities such as design and development of digital library, web based LIS courses, e-contents creation etc.

individually and collectively. Such an approach would fulfil the basic requisites of the LIS sector besides ensuring work development of needs based LIS manpower. The significant contribution of this research work has been more on the lines of a milestone that require to achieve and give direction for model curriculum to meet requirement of the 21st century skills and knowledge.

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Role of Librarian in Digital Environment

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Abstract: The basic foundation of librarian's work lies in pursuit of his duties in accordance with the known expectations of society in general and needs of digital users in particularly in a large multidisciplinary library and information science discipline. due to the emergence of digital world in the web environment in response to the growing digital collection, distributing learning and multi and extra disciplinary research environment and the changing behavior of digital users. The paper mainly presents a brief an overview of librarian's role in digital era.

Keywords: Digital, information system, Librarian, Information Communication

1. Introduction

The convergences of computer and communication technologies and amazing development in technology for information storage, processing and communication have resulted in various forms of networks. The emergence and rapid growth of these networks have made significant impact on teaching, learning, publication, research and development work. Providing access to quality information in low cost in the digital environment is one of the biggest challenges of the librarian. Librarianship is caught in the midst sea of dynamic changes with respect to collection, the preservation, control and dissemination of recorded, knowledge appear to be at risk in a word where uncertainty impact specially electronic media and internet, 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. (Gandhi. 2007)

2. Digital Library: An overview

The concept of digital library is outcomes of the popular use of information technology. The actual definition of 'Digital Library' may be "remote access from any point in the work at library content and services, combining bibliographic news, electronic texts, image banks and all kinds of information by means of a computer network." The digital library can be called a 'well free' electronic workstation to access universal knowledge irrespective of distant location of information. Digital library is a user friendly interface and provides an institute means of presenting information, scanning the volumes insides the library itself and data getting from sources using at office and homes. So, searching into digital library is really searching into networking information system.

This network opens up information to library professional and others users all over the world from all sectors of the community. With the expansion of infiltration of information, automations, network and digital to every field of the human society, the modernization of

knowledge and information are becoming the world trends. Hence, the concept of digital library incarnates. The digital library as it is called is an informative trans regional or even transmittal space for effective keeping, disseminating information by means of the modern information technologies such communication on the network data bank techniques.

3. *Librarian in the digital Environment*

The role of librarian in the digital environment of exponentially growing Internet and WWW has been addressed by a number of authors. On one hand, it has been postulated that librarian would play a more dynamic role than at present as guides to the information seekers in an exploding universe of information. In another way, the rise of digitized information is an opportunity to elevate the role of librarian and leads to the emergence of a new breed of librarian: "The Cyber Librarian" or "Cybrarian"- specialist in locating information on the Internet (Hathorn 1997). At the extreme of the spectrum, on the other hand, total obsolescence and eclipse of library professionals in a scenario where in the field like Artificial Intelligence, Neural Networks result in powerful, cost effective, user-friendly search strategies and methods (Brodie 1995). Lgun (2010) who declares that the ICT/digital librarian must be able to:

- Select, acquire, preserve, organize and manage ICT/digital collection;
- Design the technical architecture of ICT/digital library;
- Plan, implement, and support ICT/digital services such as information navigation,
- Consultation and transmit services;
- Establish friendly user interface over network;
- Set up relative standards and policies for the ICT/digital library;
- Design, maintain and transmit added-value information products;
- Protect digital intellectual property in network environment; and
- Ensure information security.

Nevertheless, the duties of digital librarians can also be viewed from different perspective. This may mean the same as roles expected of them in achieving open access to knowledge. For instance, Sreenivasulu, (2000) says that the digital librarian is a guardian of the information superhighway and acts as "a symbiotic human-machine guru". Breaks (2005) report that digital librarians will among other things believe in themselves, learn from each other to develop, find out what they can offer and never take their existence for granted. But Suber (2004) and Bailey (2007) agree that the role of a digital librarian in open access to knowledge is more than having ICT skills. Their works suggest that the role of a digital librarian in open access to knowledge can be accomplished through two complementary strategies. One is "self archiving" and the other is "open access journal".

The role of a digital librarian in *digital information system management* refers to the overall competencies (knowledge, know-how, skills and attitudes) necessary to create,

store, analyze, organize, retrieve and disseminate digital information (text, images, sounds) in digital libraries or any type of information. To describe the role of the digital librarian, the following concepts are introduced to understand further.

The universal digital library - the digital library is really a transitory phase towards the universal digital library, a vast distributed information and active repository accessible from anywhere with increasing improved indexing, extraction and summarization techniques. It will be a library without walls or national boundaries.

Digital librarian acts as an intermediary in the task of massive digitization of information, its storage, dissemination, managing the archive, and making available digitized networked information to the end users. Digital librarians and computers depends each other for processing and dissemination of digital information and both are interrelated.

A fundamental role of a digital library in digital libraries is to act as an intermediary who brings together users and information. Digital library access tools are the right set of tools used in novel ways to tackle a plethora of challenges and opportunities for information access technology and faster access (Kikuchi et al., 1996).

There is a variety of information retrieval techniques, including metadata searching, full-text document searching. In knowing what can or cannot be retrieved from the digital library information sources, the digital librarian acts as an expert in the acquisition of digital information. The method used to store, find and retrieve digital information is called the access method. The technology used to access information digitally provides ``navigation paths or digital library access tools'' through the digital information system.

The ability to access information on demand at any location confers competitive advantage on individuals in an increasingly mobile world. The data from shared file systems; relational databases, object-oriented databases, and other repositories must be accessible to programs running on mobile computers.

Conclusion

The digital revolution has altered the way the societies functions at the global, local and personal level. In this revolution, we have seen radical changes in information field, especially in relation to collection, storing, processing and transmitting of information. Effective leadership practices, change management, communication, and continuing dialogue with librarians are the key in order to fully realize the role of librarian as educator.

The final outcomes of becoming aware of and recognize opportunities for liaison still need to be realized. While some libraries are naturally more suitable for and comfortable with this role, others need active encouragement, positive experiences and a supportive environment to realize their full potential.

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Taking Charge of New Digital Era: *Discovery of a Leader within LIS Professionals*

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Abstract: The present paper is an attempt to explain the need of Leadership amongst LIS professionals to address the changing digital environment. It is an attempt to explore role of attitude in developing leadership quality in an individual. A leadership configuration pattern needed and the requisite skills needed for leadership trait have been elaborated. Leadership quality is need of the hour for LIS professionals to carve a niche for themselves as well as to prove their importance in the digital era.

Keywords: Leadership, Attitude, Digital environment, LIS Professionals

1. Introduction

In the rapidly changing world change is a universal phenomenon sweeping each and every field of human endeavor. Envisaged by the growing importance as well as dire necessity to incorporate with concepts of " Digital Libraries", ICT, Networking, Globalization and many related terms which have made the world a global village where everyone is in the " Stay Connected " virtual framework even though physically at the extreme end of the pole. With the changing environment in there is a sea change in the whole gamut of activities of LIS profession. As per the Darwin theory of evolution of "Survival of the fittest", the profession of librarianship beholds major expectation to rejuvenate it aura by incorporating a perfect blend of these changes .The new digital era brought numerous changes in the functioning, services, user community expectations and over all image of libraries and librarians. Empowered by current technological tools and simulated predictions of futuristic consequences, new breed of creative leaders can effectively eliminate confusion and pave the path to clear and bright future of the profession. Librarians in this internet era are under the constant thrust of exploring many skills amongst them in order to cope with the constant changing scenario of the profession. There is a need to enhance and inculcate leadership functionalities /skill amongst the LIS professionals.

2. Leadership: Developing a leader attitude

Leadership is infact an right attitude which can be developed with experiences and time. As Attitude plays a very big role in decision making .This role of attitude plays a major role in developing leadership and it can be differentiated into four sub attributes namely:

- Attitude towards self-Initiative for growth: Breaking the barrier of one's own growth and progress, willingness to learn from anyone anywhere at all the times

- Attitude towards Others (Users and staff): Developing consistent and clear relationships
- Attitude towards work: our work our identity through creative excellence
- Attitude towards consumption: need to discipline oneself for providing all the services to achieve success in our professional life (prosperity)
- Attitude towards thinking: Independent Thought Process, Open mindedness to maximize the all round knowledge, taking charge of decision making to decide the best possible outcome for the benefit of all the concerned.

The new digital, networked and internet era encompassed with interactive tools of web 2.0 provides with immense opportunities to create a new enterprise of LIS professionals and move on as Leaders who face the interesting and challenging changes and converting them into noble possibilities for sustainability of the profession with robust image building possibilities of the LIS professionals. Library is an enterprise focused on providing services to the user. Librapreneurship or rather librarianship is accompanied with so many dynamic task which requires professional competence .Leadership skills relates to development of the state of mind which helps to understand the unknown (changes),to help understand our path of action as well as to define our purpose of work. If we assess the changing need and requirement of today LIS profession, we will come across following observation with regards to the rapid changed scenario. Also the changes can be trifurcated in to the

- Changes related to information resources (Print to Digital)
- Changes related to User or patrons of library
- Changes related to technology and the work environment
- And the overall outcome of this culminated into the Change needed for the Librarians for their professional sustainability.

3. Effective leadership configuration

To reach the pinnacle of excellence, the LIS professionals should strategize their activities, development plans and their work process by incorporating following key aspects:

- Positive attitude formation: Changes are universal but then with a positive attitude LIs professionals can win over the situation and can prove their worth. Eg: Technological changes, Digital Era of libraries resulted in more skilful professionals with more refined capabilities and knowledge
- Aptitude exploration: Aptitude exploration works to maximize the potential of Librarians proving their niche to adapt to many changes and sustain suitably well with charged capacities.
- Self-Learning Skills: A librarian is a Lifelong learner and hence self
- Develop life values scientifically
- Individualization of the content (User need specific)
- Evaluation Methodology

- Delivery modes

Five distinct parameters forms the linking bridge to generate an effective leadership domain for anybody including LIS professionals

- **Attitude:** Orientation of mind to think towards any issue or aspect of life leading to firm and near to accurate decision making
- **Knowledge**: Once Librarians will be able to understand the changing situations happening around them. In relation to that they will achieve and update their knowledge to satisfy their patrons
- **Skills**: Functional competence or skills to upgrade our IT skills as well as latest development of our field.
- **Aptitude**: It refers to zeal and passion for our profession and urge to do simple things indifferently leading to excellence and fulfillment of total potential.
- **Value**: Personal Integrity to the professional ways and means for attaining our goal is most needed factor which result in emergence of dynamic leader.

Table1- showing stage wise pattern of effective leadership in LIS Professionals

Stages	Relevance For LIS Professionals
Become a worker with initiative	LIS profession is witnessing changes from traditional to digital to virtual platform hence taking initiating to work with the changes is the need of the hour
Become an efficient and effective task manager	LIS professional has to update themselves with latest technology, resources available online, new access mechanism and the new thrusts and development to become effective and able to take responsibility for completing a task within specified time and resources
Become a value creator	A curious mind, Passion to explore the causes of why and how things happen leads to understand the changing situation and changing expectations and improvishment of identifying and creating intangible wealth of information resources in digital environment
Become a Team Builder	Need to inspire mutual trust and nurture user to develop their aptitude by way of LIs services and gain trust n faith of the patrons as well as mutual trust amongst staff
Evolution of a leader with a purpose	Taking charge of self-growth and accordingly working for it by way of training, development, gaining and updating new knowledge by way of • Becoming a frontline researcher • Institutional leader • Enterprise(Library) Leader • And all these will pertain to a definite vision and mission and with the aim to providing a suitable platform to work with the change to user to empower themselves with required information as well as it will reconsolidate the need and importance of libraries and LIs professionals
Becoming a Creator of Leaders	Continuous exploration with all changes taking place, redefining the roles, services and oneself and able to facilitate other individuals to be a leader

4. Leadership for LIS professionals: Why and How?

Library is a service oriented organization and service to the humanity has been the motto of librarianship to enrich and enlighten the society with nascent information. This is on par with other service sectors like medicine, wherein the treatment of society is done using information as a medicine. Libraries are social agencies and they exist to serve specific needs in our society.

Today's librarians will work in a broad spectrum of libraries and information centers, and must be able to understand and interpret an increasingly complex information environment; they must be able to collaborate effectively with other information professionals; they must be able to articulate the value of the knowledge and skills of librarianship in a rapidly changing information environment; and they must be competent managers capable of innovation, efficiency, and leadership as they meet the demands of their clientele. (Jange, 2012)

Leadership potential is needed to covers competencies in Library as an organizational and its related challenges, Societal needs and expectations should be addressed thoroughly by maintaining collateral coordination with the changes thereof and also competition arisen due to upcoming technological and changing digital and virtual environ affecting libraries. This is not only applicable to library profession but also to every sector, particularly whether these leaders are chief information officers, Information technology officers, University librarians or college librarians with responsibility for managing an institution's digital resources and information technology. (Jange, 2012).

We are facing technological changes, technological innovations, for instance digitization, electronic publishing, Web 2.0, Library 2.0, RSS, Blogs, Wikis, SMS, Podcasting, Mashups, Tagging, Folksonomies, OSS, OA, etc., libraries worldwide have been adjusting to the shift from the printed era to the digital era. (Nonthacumjane, 2011) All these changes are need of the hour but effective use of these will in no way lessen the importance of the LIS professionals by rational use of these technologies by an abled leadership approach

5. Leadership: A Culmination of many skills

Broadly speaking LIS profession has been always inspired by the management principles and hence lots of capabilities and capacities which ensure a strong foundation of quality leadership are derived from management perspectives. If the skills which are utmostly needed in development of effective LIS leadership can be classified then it can be broadly grouped under the following three categories: (Orme, 2008)

Generic: interpersonal/communication; general computing; team work.

Professional: professional related experience; customer service; chartered librarian; cataloging, classification and Metadata.

Personal: enthusiasm; flexibility; self-motivation.

- Generic Skills: A few generic skills which can be adjudged as most prominently needed by LIs professionals includes information literacy, lifelong learning, teamwork, communication, ethics and social responsibility, project management, critical thinking, problem solving, business acumen, and self management were considered to be significant in the needed framework of an information professional.
- Professional Skills: Tennant (1999) presented a list of discipline-specific knowledge which the digital librarians should know and be qualified in. Tennant classified the vital skills needed to create and manage digital library collections and services namely imaging technologies, optical character recognition (OCR), markup languages, including HTML, SGML, and XML, cataloging and metadata, indexing and database technology, user interface design, programming, Web technology and project management. (Tennant, 1999)
- Personal skills: Personal skills are in totality meant to provide the "Human touch" interface while providing the services to the library patrons. It is essential for upcoming LIS professionals to enhance their overall mind related analytical, creative, technical skill and also incorporate flexibility, reflective thinking, ability to deal with a range of users, curious and exploratory mindset, adaptable, responsive to others' needs, enthusiastic and self-motivated are

Key aspect which ensures rich dividends to LIS professionals surging them ahead in this competition world

Table 2 - showing Personal Skill required for LIs professionals

Creative skills	Able to create and innovate by using technologies and resources in hand for more sustainable options.Eg-
Adaptability Skills	Refining own self with updating knowledge about new developments, skills and technology
Analytical skills	Analyzing the present status -quo of the problem or the situation thereof and analyzing it to find best possible response to it
Multifaceted	LIs profession has multidisclipnary dimensions and so multifaceted outlook clicks for a better solution
Technical skills	Technological skills in all aspects of range of services offered by the profession pays rich dividends in image building
Flexibility	Flexibility in use of different ways and means, in using different viable options, in range of services, in linking with user community and technological flexibility
Curious and reflective mind	Logical reasoning, open ended response, able to discover and rediscover new methods n ways, mindful actions
Adaptability	Able to cope to sudden change and adapt
Motivated initiator, committed	To reorient with the changes for continuous improvement of the services even in digital way

Table 3 - showing Generic Skills required for LIS professionals

Communication skills	Soft skills as essential prerequisite as these are lifeline of this professional endeavor
As information Messenger	Information literacy programmes for creating awareness about the bridging role of the libraries between its patrons and the information resources
Problem Solving	New challenges, new technologies, new expectations should infuses news tricks and methods of problem solving...Eg-Institutional repositories to address problem of funds
\Critical thinking	Thinking beyond the resources and the commons is the method to pave the way for generating unique solution to make once presence felt.
Sense of responsibility	Responsibility of public service as well as taking cognizance of the changing user interest, responding to remote access services etc
Team thinking and leadership	Team work and leadership approach to generate best possible services and best possible resolve to the digital challenges.

As elaborated above LIS professionals have to emerge as Leader or rather to discover the leader amongst themselves to sustain and evolve in the digital environment.

6. Conclusions

Taking on leadership is taking charge of digital opportunities for the revolutionizing Profession into a new dimension. LIS professionals should imbibe the leadership traits which lead them to the pursuit of self growth with a supreme purpose of the serving the society in large. As libraries transforms their ways of providing information services, putting libraries into the broader context of the publishing market, LIS professionals need to explore the leader within them to offer current, relevant and personalized services with the incorporation of new advances technologies with the traditional humanistic touch. Thus leadership is an area that deserves attention and promotion in library and Information Science professionals and if properly cultivated it can results into rich dividends surpassing any changes (Print to Digital to Virtual).

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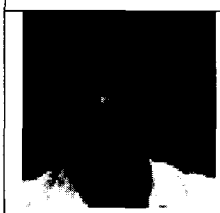
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United We Flourish, Divided We Perish

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Abstract: We started living in groups right from the dawn of civilization. To associate with others is one of our basic needs. Profesional associations, socities, academies and foundations form back bone of professional development. Professional associations provide excellent opportunities to improve skills. Library associations have had presence in India since Nineteen Thirties. A great leader in an association develops many other great leaders. Our associations can benefit immensely by studying their Strengths, Weaknesses, Opportunities and Threats. Respect the Panchtantra maxim " Sanghe Shakti Kaliyuge". Library association should explore new ideas, such as Marketing , Promotion of Professional Management Consultancy, Training Programs etc., and need to show their concern over corrupt practices in library system.

Keywords: Professional Associations, Professional Development, Knowledge Society, Strength in Unity.

1. Introduction

An Urge To Associate - *"Better our associations, stronger we are"*

Association word is derived from the English word to associate which means to unite or bring into relation those persons who share actively in anything as business, enterprises or undertakings. It means to unite or to combine the persons with common feelings, pursuit and thought. Asscoiations are relevant sources of current information. The purpose of association is also to develop, exchange, expand and enhance the professional knowledge and status of the Profession. Associations and professional societies are powerful forces representing the voice of the professional community to solve the problem related to the welfare, status, working conditions, physical facilities, education and training including the research and development activities. The central purpose of the associations has always been to serve the needs and to protect the interests of the community, they strive to broaden the purpose and serve the over all needs of the nation. In the contemporary situations due to rapid social change, associations are important as means of organizing people in order to achieve new ends. They are also of great significance to the professionals in that they reveal cultural values and goals, which individual members themselves are unable to formulate. Another important aspect of rapid social change is the way new forms of organizations create new roles and relationships.

2. Need of an Association

There are many advantages in joining professional associations. It promotes our professional development and provides great prospects for advancing our competency. Joining a professional association may well be one important catalyst for our career.

A profession gains health with the establishment of professional associations. Library and information associations are playing vital role in the development of the library and information science profession. By organizing librarians and information professionals, library associations create a forum for meeting, exchange of views, sharing and solving problems and learning from each other. When crisis demands, the associations lobby with the decision makers in the government and gain better status for the professionals, good and healthy practices and proven potential of the profession.

The library associations are instrumental in carrying out good messages, formulate code of ethics for the practitioners, standardize library services and practices, secure better service conditions for librarians and thereby raise esteem for profession in the eyes of the society. The Advisory Committee for Libraries, appointed by Government of India, in its report published in 1961, has laid down that a library association has to perform five functions, viz,

- It tries to build up a sense of brotherhood among librarians.
- Library associations, explicitly or implicitly, help to build up for individual librarians a code of ethics to conduct vis-à-vis their communities. In this profession, where contact with independent users is frequent and sustained, this code helps to place the librarians on a platform of respectability in his community.
- Library associations make an earnest effort to raise the standards of training of librarians to enable them to perform their task with greater competence and for the larger benefit of the society.
- A library association is a kind of trade union fighting for better conditions of service of librarians.
- It is the standard bearer of library extensions in every country where it exists.

In a study of librarians, it had been observed that majority number of them considered 'networking with other colleagues' could be the most important reason for their joining professional associations, while others held that the professional membership is important for their professional retention, tenure, or promotion. The members of Associations use their memberships to influence professional goals and to keep update with development in the field through professional publications. Some members use LIS association membership to speak loudly or publish. Through associations, librarians and members of LIS field contribute to the profession's body of learning by publishing in association's journals, newsletters, conferences and seminars and by participating in programs of continuing education.

3. Library Associations in Information Age

We form a library association to provide a leading role in discussions and decision making process about the welfare and development of member library workers, open access to information, user rights, freedom of expression, management of intellectual property and the problems of copy right; and promote the development and advancements of the

profession as well libraries as service institutions. The transformation of libraries from store house to information institution and later to knowledge centers started with the end of World War II. The world, especially the western part, was in a hurry to rebuild the devastated economy. The setting up of massive number of new industries and many new discoveries attributed to a sudden thrust in publications in science and technology. In return this led to the so called "Information Explosion." The libraries were quick to respond to the sweeping demands, and took a new avatar/ birth in the form of information service institutions: drifting away from traditional job of serving with books and documents to its new role in repackaging and supplying information contained in a variety of information sources. In the contemporary situation of rapid social changes, the associations became important means of organizing people in order to achieve new ends. Associations create a framework that enables libraries and librarians to increase their effectiveness in empowering the user community to participate in a knowledge society.

The birth of American Library Association on 5th October 1876, marked the beginning of a new era of library associations in the modern times. It is the oldest and largest national library association. The American Library Association strongly protested against the intervention of federal government in the lending rights of public libraries in the country. They became advocate of democratic functioning and provided a forum and vehicle that allows the voice of all libraries to be heard. According to the former President of ALA Nancy Kranich "An informed public constitutes the very foundation of a democracy. Libraries are the cornerstone of democracy in our communities because they assist the public in locating diversity of resources and in developing the information literacy skills necessary to become responsible, informed citizens who can participate in our democracy."

Then, only one year later, the Library Association of United Kingdom was founded on 5th October 1877.

4. Developments In India

In India, Padmashree Dr. S.R.Ranganathan, the Father of library movement with his multifaceted professionalism guided the activities of Madras Library Association (established 1928) since its inception. The impetus of library movement in India was initiated by Dr. Ranganathan with the establishment of Indian Library Association in 1933 and many other library associations in different parts of India. His contributions to the development of national consciousness about library needs of the country are immense and deserve to be remembered and acknowledged by the present and future generation of library professionals. Dr. S.R.Ranganathan, realized the necessity of library associations not only to unite and educate library professionals but also to popularize libraries and library services. Members of the library associations represent many regions, many places and libraries of all sizes and types. Library users belong to the people of all age groups, all religions and all races. However, the common language of the librarians is the language of the information. It is heartening to note that almost all the states, with only a few exceptions, have their library associations. Because associations is a yardstick for measuring the growth of awareness of problems and needs of a country within a given time. There are associations of groups of professionals (Medical, Agricultural, Teachers of LIS, Students of LIS, Alumni of LIS, Universities , College, Schools, Public Libraries,

Government Libraries and Many more). According to a rough estimate there are about 200 library associations in the country, it is a good response to spread library culture, which is now visible in our country. The main aims of Library Associations in India are furthering library services, profession of librarianship, and the social and cultural welfare of the country. Consequently, an important role of the library associations is to encourage acts of pioneering, planning and projecting beyond what meets the present and immediate library needs of society and to prepare for what society will require tomorrow.

It is observed that the associations meticulously work

- To promote the spirit of Professionalism.
- To bring together smaller organizations and associations in the neighborhood.
- To see that the gaps in the professional activities are filled.
- To bring professional talents together.
- To nourish the profession and inculcate professional ethics.
- To augment professional education and training.

5. Ideals of LIS Association

The basic objectives of any LIS Association need to include

- To invoke the maxim "The best reading, for the largest number at the least cost."
- To provide leadership for the development, promotion and improvement of library and information services and the profession of librarianship in order to enhance learning and ensure access to information for all.
- To be the leading voice for information, library and knowledge practitioners, working to advocate strongly, provide unity through shared values and develop skills and excellence.
- To publish bulletins, journals, books etc. which will tend to realization of the objectives of the associations.
- To organize meetings, lectures, workshops, seminars and visits to promote effective LIS profession.
- To foster mutual cooperation and assistance among libraries and appreciation of brotherhood among fellow librarians.
- To provide professionals advice and to promote, facilitate and assist in the use of new technologies in the field.
- To safeguard the professional status of librarians and information scientists by making recommendations to Government on legislation and other matters affecting libraries.

- To encourage and assist professionals to maintain the integrity and competence of the profession.
- To co-operate and co-ordinate with other establishments and associations at both national and international level.

For accomplishment of such sane objectives, the library associations plan and organize many programs/ activities as meetings of study circles, workshops, convention and talks, lectures, power point presentations and panel discussions. Some of the library associations have established specific awards in appreciation of the outstanding performances and contributions by professionals, students and others. One may respect the maxim - 'An association is what its members make it by their active collaboration and participation in its programs and activities, no more, no less'. This reminds us another time tested Panchtantra maxim – 'Sanghe Shakti Kaliyuge'

6. Leaders : Most Wanted

According to Karrissidappa (2002), library associations can contribute to the development of information societies by promoting enhanced library and information services by supporting the development of information literacy skills and by helping to create an enforceable legislative and regulatory framework. Library associations need to be steered by four principles, namely,

- Clear vision of the future.
- Non- Parochial policies.
- Bringing on board other stakeholders in an information society; and
- Building on national and international partnership.

The important and most wanting mission of any library association is to provide development of effective leadership and capacity building skills among the LIS professionals with the following roles and responsibilities:

- Create a shared vision.
- Unite the professionals in one direction.
- Enhance the skills and broaden the vision of professionals.
- Prepare the professionals to cope with the change and turn challenges and opportunities.
- Create a sense of importance to belong your professional organization / associations.
- Safeguard the public interest.
- Represent the interest of the professionals.

- Act to maintain their own privileged and powerful position as a controlling body.

Leadership, administration, management and supervision are interdependent concepts and practices. All are concerned with behaviours and interaction patterns, role relationships, influence, motivation and goals or desired outcomes. Effective communication and leadership skills are learned or enhanced. The leaders bring a vision and broad outline of services and programmes to an organization and supply a healthy environment, the culture and the attitudes through which the services are offered. The performance of the managerial leadership determines the success or failure of the organization.

7. Barriers and Problems

In India, as in other service sectors, library associations suffer from many problems, some are stated as follows.

- Library associations in India suffer from the financial assistance both from the professionals and the government. They thrive only on membership fees and sale of their publications.
- It is most common that the association's office overflow with old and unsold publications. These publications were printed years ago, but could not be sold because of poor marketing and book trade policies.
- Library associations in India have not given serious thought to the aspects of standardization, accreditation, curriculum development, providing a choice based credit system, interdisciplinary researches, collaboration and linkage with national and internationals organizations and associations, etc.
- The spirit of cooperation and understanding among members is not very high and the transparency in formulation of policies and implementation thereof is lacking. These are some but real bottlenecks. To make them much more popular, effective and acceptable our library associations need to constantly introspect their performance.

8. Tasks Ahead

It is strongly felt that the associations should take a broad outlook and consider the following aspects in order to gain the National and International recognition.

- To develop the quality and quantity of membership and conducting need based education and training progammes will go a long way in making the associations to strengthen further.
- LIS professional associations in India can work for promotion of library management consultancy, marketing of LIS products and services to all categories of the library and information personnel.

- Our library associations should go ahead to provide a congenial environment for interaction among information innovation, industry, technology management and services which are socially relevant in the interest of the nation.
- Promoting the lifelong learning in a networked environment.
- To create a framework that enables libraries and librarians to contribute their best in empowering the user community to participate in a knowledge society.
- LIS associations should work as a watch dog against the corrupt practices.
- Developing standards, grade and quality labeling to help the professionals to choose right products to serve the needs of the user.
- Maintaining the task force of members to analyze professional problems and to find ways to solve them.
- Representing the government formed task forces for nation building.
- To formulate National Information Policy and impressively advocate for its implementation.
- There is a test of **SWOT**, Wherein S = Strength, W= Weaknesses, O= Oppurtunities and T= Threats . The purpose of the SWOT study is to identify and pursue opportunities that build strengths, to overcome/ minimizes weaknesses and to meet boldly the potential threats/challenges all the times. Our professional associations need to encourage SWOT studies

9. Conclusion

The role and responsibilities of professional associations are varied and numerous. If the associations are going to continue to provide realistic opportunities to learn and to participate actively, they must be responsive to their members. There is no doubt that library associations provide an opportunity for library professionals to meet and share experiences and learn from each other. It is high time that the library professionals come united through their associations and make strong themselves and their fraternities and give a new dimension and vision to the knowledge society in 21st century through their revitalized roles. India needs a federation of library association in order to bring all scattered associations at national and regional levels on a single plateform for smoothening cooperation, coordination, standardization and development in one upward direction. This reminds us the Panchtantra maxim – "Sanghe Shakti Kaliyuge." Otherwise too -

"Coming together is a beginning, keeping together is progress, and working together is success."

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A Study of E-Resource Acquisition Policies in Consortia: *An overview*

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Abstract: In this paper, discussed broad features of the acquisition policy which generally cover the e-resources to be selected, acquired, mode of acquisition, infrastructure required for its optimum use, collection development, availability of funds, priority to be given to e-resources to be acquired, intellectual access, ILL, technical compatibility, archival policy, contract negotiation and pricing policy, consortia acquisition, licensing, free e-resources, de-selection, exclusion of free e-resources, duplication, types of e-resources, digital collection, etc. To impart awareness among the learners and users located in remote areas, Government should take initiative to develop a network which provides information and other e-resources up to that level.

Keywords: E-resource, Acquisition Policy, Consortia Access, UGC-INFONET

1. Introduction

In this era of rapid developments, progress and invention of newer technology every day, every one is striving and determined to keep pace with the technology and developments that take place everywhere in the world. In this period of time, traditional, conventional and old pattern of accessing information and knowledge is becoming outdated as accessing information, database and knowledge resource from a book collection in a library is more time consuming, troublesome and dependent on the place, person, and availability of concerned person and resource. Whereas the e-resource is easily accessible from anywhere round the world, it does not require availability of a specific person at a specific time. Moreover, it saves time of user, service provider, librarians and is the fastest mode of transmitting acquired information from one to another. The requirement of e-resource becomes most important when same information is to be accessed/ required by many readers, users, persons located at various places in the world that too even at the same time; in that situation, e-resources play very important role to provide access to each and every user. Therefore, as compared to traditional library resource, e-resource is more useful, time saving, and easy to access. This prompted people all over the universe to prompt towards e-resource and this has been proven the best source available to users.

2. E-resources

Electronic resources mean materials that require electronic devices for access of data i.e. through microcomputer, mainframe or other type of computers or devices. The data (e-resources) may be stored at a remote server in electronic form and could be accessed electronically using internet.

3. Acquisition

E-resources are acquired by libraries by various ways available, viz. through publishers, information/ service providers, vendors, consortia infonet [INFLIBNET, UGC Infonet, etc. in India], individual or associates of institutes, and institutional access to e-resources. The consortia infonet i.e. UGC Infonet, INFLIBNET, individual license, etc. is provided to

libraries and its users at no charge. But, the publishers, service/information providers, vendors, provide th e e-resources on payment for a specified period. Apart from this, the library may accept donation of e-resource from a person having a license to access the e-resource subject to the condition that it does not violate or infringe the Copyright Laws of the land. Like a gratis item, in traditional library system, so many sites (e-resources) available from different organization/Institute which is available free of cost. As OJS from INFLIBNET Centre etc.,

4. Selection of e-resource

While selecting e-resources, following points have to be considered

- The e-resource must support syllabus/curricula and research need of the institute as required by users.
- The resource will provide deeper and wider knowledge on the subject than existing sources.
- A balance has to be maintained among various disciplines and levels e.g. science, commerce, law, etc. and levels like undergraduate, graduate, higher studies, faculty etc.
- The information to be selected should be updated and be maintained such all the time.
- The contents of e-resources should be from renowned authoritative authors or publishers on the subject; with positive, peer and professional reviews.
- Its accuracy and completeness should be at par with print format, if any.

5. Features that e-resource acquisition policy should have

With a view to safeguard the rights and interests of institutes, libraries and users, it is expected that any e-resource acquisition policy should contain following broad features:

- **Developmental Feature**

Libraries are expected to provide a complete, effective and updated combination of print, non-print and electronic resources for the purpose of teaching, learning, and research in the University/institute. In today's fast era, traditional library is not able to cope with the fast developing technology. Therefore, libraries need to formulate a separate electronic e-resource Collection (acquisition) Development Policy to provide guideline in choosing and acquiring electronic resources and to establish consistency in priorities in managing these resources which are now considered to be a most important part of Library. Development should be evolved and applied consistently to achieve the planned goals of a library. Students, faculty or end users should be able to retrieve, display and manipulate the information and knowledge acquired through e-resources. E-resources should fulfill the need and requirements of users by providing various updated study materials, published papers, e-books, etc. E-resources availability should provide alternative awareness of learning to users on a 24/7 basis from on and off campus so that new users, students are attracted towards use of e-resources. An open access archive for electronic preprints of

scientific papers is created by Cornell University Library, where preprints in the fields of Mathematics, Physics, Computer Science, Quantitative Biology, Quantitative Finance and Statistics are made available, which can be accessed by researchers via World Wide Web [http://arxiv.org].

- **Selection (Collection Development) Team**

A Selection Team is constituted by the concerned authorities of an institute/university in which the Librarian plays an important role in collection and building of database of requirement. The team works in a coordinated manner and its members perform the duties assigned to them.

- **E-Resources Fund Advisory Committee**

This committee generally consists of representatives/faculty of different disciplines, Librarian and the Accounts/Finance authority. The Committee meets twice annually or as needed. It serves as an advisory committee to the Collection Development Team and Library Administration as regards the expenditure for development of libraries and acquisition of e-resources and to fix the priorities and needs of the institute/ university/faculty/users.

This Committee generally takes into account

- Allocation of fund for ongoing, recurring and emerging needs.
- Assessing usage statistics
- Consideration of acquisition of new products/resources.
- Consortial agreement or collaboration, when available.
- Future requirements of funds for different activities.

- **Archival Policy**

Libraries have a legitimate interest in maintaining collection integrity through archives of the e-resources that have been acquired through licensed or otherwise. Easy and permanent access to archival electronic resources must be ensured so that libraries can fulfill their mission. Management of electronic information is essential to ensure permanence similar to that of print collections. External information providers cannot be relief upon as archival source. Thus, libraries must insist in agreement with providers that they allow the purchase of content and not just lease of information on temporary access to information. Purchase of content should assure archival access even if a licensed e-resource is cancelled or removed.

- **Contract Negotiation and Pricing Policies**

Information providers should offer a choice of pricing from which the libraries may select. The models/prices could be based upon various criteria including simultaneous use, user population, number of locations, library budget, etc. In general the following principles should apply:

- Pricing models which are based upon campus, stream, faculty or system FTE often do not recognize that the content offered may have interest to only a limited segment of the total user population.
- Where a resource may not be of broad or general interest, pricing should be based upon more appropriate criteria such as size of the actual user community, projections of use based upon estimates or actual recorded usage, or shared simultaneous user ports.
- Discounts should be offered for volume purchase. If more campus/libraries sign up for a service, the cost per FTE or use should be lower.
- Purchase of print should be optional and contracts for electronic access should not be tied to print subscriptions.
- The vendor should offer either a purchase option or a combined model with a one-off archive fee and a cost-recover annual access fee.
- A library should not be required to purchase both, the print and electronic versions.
- The cost of the electronic resource should not exceed that of the print counterpart.

- **Licensing**

Information providers should employ a standard agreement that describes the rights of libraries and their authorized users in easy-to-understand and explicit language. The terms should reflect realistic expectations concerning the library's ability to monitor user and discover abuse. Agreements should contain consistent business and legal provisions; however, nothing should prohibit the library's rights under the local laws. Information providers must recognize and sign the Standard Agreement required for all contracts. Authorization and authentication of users is a shared responsibility of both the information providers and the library. Authorized users are generally current students, faculty, staff, administrators and all other onsite users of the institute or university.

- **Acquisition Procedure**

The ongoing subscriptions of e-resources are processed for renewal depending on the recommendation of the {renewal} committee appointed to review the usage database, relevancy, utility and other factors of the e-resources.

To collect the usage, utility, relevancy information some forms are made available to users, students, faculty, associates etc. and based on their feed-back, recommendation for renewal of e-resources is formed by the committee. Similarly, requisition for new e-resources required by faculty, students, users, etc. are also sought in a form and recommendation for that also made by the selection committee.

- **Shared E-resources Fund**

If there is insufficient fund to meet a faculty's request for an e-journal/resource, other faculty's librarians together meet the faculties and departmental representatives to find a solution. For example, transfer of money from book or serial funds.

- **Selection of free e-resources**

Free e-resources which are of value to the research and teaching of the institute/university will be identified and cataloged. Following selection criteria is to be applied and links to free websites be provided in the Libraries network/website.

- E-resource should be provided or created by an authority or a reputed or reliable source on subject.
- Website is favorably reviewed by a reputed source.
- Site is accessible freely with browser/software and compatible with existing network environment/ system.
- Site is stable and reliable with infrequent/less down times.

- **Duplication**

E-resources which are in duplication to an existing print resource can be accepted if no fee is charged as its inclusion would provide greater access and convenience than the single point access which a print resource provides.

Generally, due to scarcity of library space, e-format is preferred over the print format. The libraries can duplicate print resources with existing free e-resources when:

- Multiple formats would meet the requirements of different users.
- The print format is needed for archival due to its significant historical value.

- **Copyright for e-resources**

In order to protect the libraries and its users from infringement of copyright while establishing hyperlinks to e-resources, the following policy should be observed:

- The owner/creator of the e-resource should be identified and acknowledged.
- Hyperlinks to the e-resource should not be set up in a way that it would give an impression that the institute/library has created the resource.
- Institute/Library should display a 'disclaimer' on the link of e-resource announcing who may link to our information. Any hyper links made to remote resource be removed if the copyright owner makes a request.

6. Present Scenario

Generally most of the publishers do not allow free access to peer review and research journals, though such type of journals are very useful for researchers. To overcome this problem, e-consortia are the best solution. E-Consortia promote better, faster and more cost effective ways of providing broad access to scholarly e-resources. Due to collective bargaining by the Consortia with publishers and aggregators, it has been possible to reduce

the access charge of e-resources for needy researchers. To facilitate better acquisition of e-resources, INFLIBNET has started the associate membership program through which any library can access their required e-resources on the negotiated price. Example – In India, UGC-INFLIBNET Infonet importantly took part in this venture and played a vital role in successfully providing e-resources to Indian Universities, Colleges, autonomous institutes, IUCs, etc. http://www.inflibnet.ac.in/

The important goal of each library is to provide correct, updated and authentic information to the users, by adopting the 'e-resource acquisition policy' successfully. Thus, by adopting e-resource acquisition policy, all the principles laid down by Dr. S.R. Ranganathan regarding Laws of Library Science are followed.

7. Our Vision in Context of Indian Learners

At present, by the efforts of UGC-Infonet, e-resources have been provided to the users up to Universities library, IUCs and some institutes restricted to some metro and developed cities only. By the efforts of 'NLIST' project INFLIBNET is planning to provide the e-resource access to 6000 colleges' library. E-resources are still out of reach to learners and users of high schools and colleges located in remote areas, rural areas and small townships. To impart awareness among the learners and users located in remote areas, Government should take initiative to develop a network which provides information and other e-resources up to that level so that schools and UG/PG colleges also provide access through consortial effort to their students and make them aware of the latest developments in the universe. Then only our country would be able to effectively compete with other developed and developing countries.

8. Conclusion

The 20th century was the century of industrial revolution. Now, the 21st Century is the century of 'Information & Communication Technology Revolution'. The people who have new suggestions, new ideas, must be equipped with professional and technical abilities for the creation and implementation of his/her ideas, suggestions, thoughts in any field. It would be better if we say that "The 21st century is a century of information world". Now-a-days the information and communication technology is growing in such way that it is not possible for traditional library system to provide information at a speed comparable to e-resources. Thus, today's libraries have not just remained libraries, but have developed into an Information Centre.

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A Study of Special Students of College Libraries

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Abstract: The libraries can play a vital role in the academic sense as well as rehabilitation of the special students by way of planning, designing and directing appropriate services and reference/referral services for career advancement and counseling to help to overcome their limitations. This study was conducted to assess the needs of the special students who are in higher education. 'A' grade accredited college libraries in Nashik city (Maharashtra, India) is the study area of present study. Findings focused on the inadequacy of the infrastructure, collection and facilities for special students in these college libraries and this major population is neglected by the College Libraries and authorities.

Keywords: College Libraries, Special Students, Special Needs, Accredited College Libraries.

1. Introduction

There is a paradigm shift in the modern education system and the teacher-centered education system has changed to a learner–centered system. This transformation makes importance to be supported and facilitated by the books and libraries of the 21st Century. A well-equipped and well-managed library is the foundation of modern educational structure. Educationists, education commission and committees of librarians have often emphasized the importance of the library in higher education. Customer oriented approach; design and evaluation are the founding pillars of any enterprise. Library and information centers as social institutions are ultimately meant to satisfy the information requirements of users. They are regarded as high technology social institutions which have the responsibility of providing right information to right clientele at right time.

2. Special Students: Concept and Meaning

As define by 'Webster's Dictionary the term "Special" is distinguished by some unusual quality, uncommon, noteworthy, extra-ordinary, additional to the regular extra, utilized or employed for a certain purpose in addition to the ordinary'. In the United States, special need is a term used in clinical diagnostic and functional development to describe individuals who require assistance for disabilities that may be medical, mental, or psychological. In a democratic country like India every child or person has the right to education. They have the right to receive help in learning to the limits of his capacity, whether they are average, bright, dull, retarded, blind, deaf, crippled, delinquent, emotionally disturbed or otherwise limited or deviant in their capacities to learn. These students need a little extra help for their learning and have special needs to complete their course. These students with special needs are called exceptional/ special.

3. Role of College Library for Special Users

While collection building, the libraries should make special efforts to generate special collection in a selected area. This special collection not only adds value to the collection but also promotes the library and improves image and usage. As the library services have developed, distinct groups of

readers have emerged as targets for specialized services, special resources and allocations would be inevitable. The librarian should therefore become aware of changing needs and demand on the library services and equip themselves to meet the challenges as and when they present themselves. This requires an awareness and vigilance to understand the society around him and also calls for an integrated approach roping in the several other institutions serving the society.

According to the Census, 2001, total disabled population in India noted 21million people and within this 1.6 million noted in State of Maharashtra. In Census, 2011 total disabled population in India is 26,810,557. (http//:wwwcensusindia.gov.in). (Source: C-Series, Table C-20, Census of India 2001 and 2011)

4. Objectives

- To know about the 'A' grade college libraries situated in Nashik city, Maharashtra.
- To identify the special needs of the users from these college libraries in concern with the library collection, infrastructure and services.
- To assess the satisfaction of these users who are with special needs.

5. Methodology

This study was conducted with survey technique, pre structured questionnaires and interview method where necessary was used as a primary source of data collection and College prospectus, journals college websites and Internet these are secondary sources of data collection.

6. Data Analysis:

Preliminary Information

Over all the results shows that 13(24.5%) special students from junior classes and 26 (49%) special students from senior classes and 14(26.5%) special students are from Post graduate classes. Total 26 (49%) special students are from Arts faculty, 21(40%) special students are from Commerce faculty, four (7.5%) from Science faculty and two (3.5%) from Professional courses. 50(94.33%) special students are studying in Marathi medium and only three (5.66%) are studying in English medium.

- **Library Usage**

Table 1: Uses of College Library

Daily	Twice in Week	Weekly	Never
14 (26.5%)	16 (30%)	6 (11.5%)	17 (32%)

Table 1 describes the responses that 14 (26.5%) special students are use library daily, 16 (30%) special students are use library for twice in a week, 6 (11.5%) students used library after eight days and 17 (32%) special students are not using their college library.

Table 2: Purpose to Visit Library

To study in the reading room	For Issue/ Return book	Completing assignment	For reading Newspapers	Any other	Not Responded
36(68%)	35(66%)	22(41.5%)	9(17%)	4(7.5%)	17(32%)

Table 2 shows that 36 (68%) special students are visited their college library for the study purpose. They use the study room. 35 (66%) special students visit to library for borrowing books from Issue counter. 22 (41.5%) special students visit to complete their home work. There are nine (17%) special students use their library to read news papers and four (7.5%) special students use Internet from library. 17 (32%) special students have not responded to this question. As these students may are the blind.

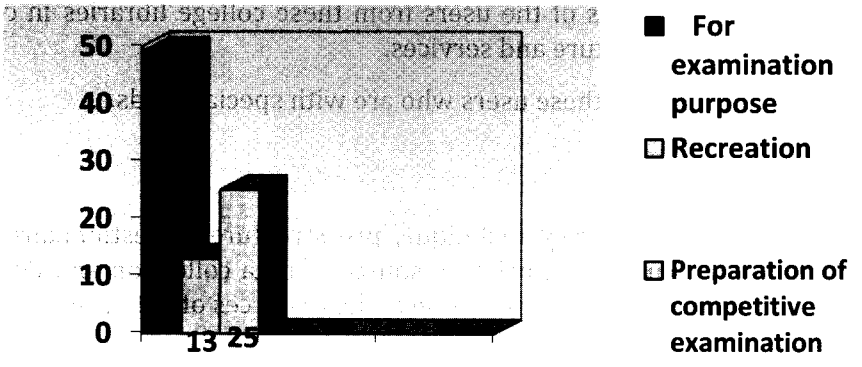


Figure 1: Purpose for Reading

The figure 1 presents that maximum i.e. 49 (92.5%) special students read for examination purpose. Minimum i.e. 13(24.5%) special students read for entertainment and 25 (47%) special students noted their purpose for reading is to prepare competitive examination.

- **Library Services**

In relation to the library access, majority i.e. 50 (95%) special students preferred open access and three (5.5%) special students preferred for closed access.

In concern with the convenience of college library time respondents noted their opinion. These are presented in figure 2.

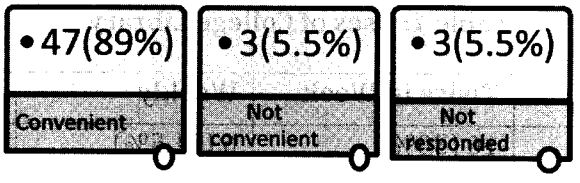


Figure 2: Convenience of College Library Time

The figure 2 shows that there were 47(89%) special students noted existing library time of their college library is convenient for them and three (5.5%) special students noted that this time is not convenient for them. For the inconvenience, these students could not give preferred time or any reason of their inconvenience. Three (5.5%) special students have not responded. About the additional facilities and services special students responded as follows:

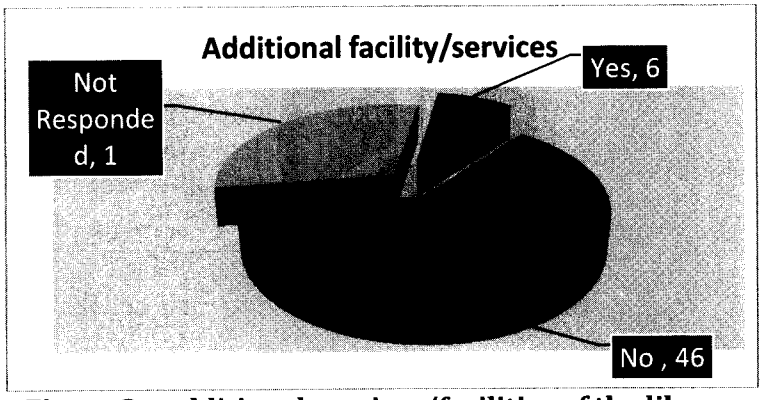


Figure 3 - additional services/facilities of the library

Figure 3 shows that majority of i.e. 46(86.79%) special students expressed that they have no any extra or special facility and service provided by their college library. Only six (11.32%) special students marked that they get book bank facility. One (1.88%) special student has not responded to this question.

- **Library Collection**

Special students expressed their opinion about the adequacy of available collection. 32(61%) special students expressed that they are satisfied with their library collection and 12(22.5%) special students noted that they are not satisfied with their college library's existing collection. Nine (16.5%) special students not responded to this question. These students clarify that they are blind and they could not read normal books. They preferred audio books and Braille books. This type of collection is not available in their college library. Some are explain that they could not access collection as they are disabled. A respondent remarked that there should be more text book copies and biographical collection.

- **Library Accessibility**

30 (56.60%) students given first preference to the 'College library' for getting information sources, one (1.88%) student selected as a second preference and six (11.31%) special students selected as a third preference to 'College library' for getting information sources. 18 (34%) special students given second preference to 'Public library'. Seven (13.20%) special students preferred 'Other libraries'. They specify other libraries as National Association for Blind (NAB), Mumbai and Nashik, Niwant Sanstha, Pune, Brialle Library, Pune. One (1.88%) special student has not responded to this question.

- **Library Infrastructure**

In concern with the infrastructure, Figure 5 displays that 24(45.5%) special students are expressed that seating arrangement and light in college library is suitable for them. 22 (41.5%) special students are expressed that existing seating arrangement is not suitable for them as they are handicapped and could not use furniture comfortably. Seven (13%) special students have not responded. Majority of the students told that the arrangement is suitable for normal students and not for them. They demand for separate seating arrangement with convenient furniture particularly customized furniture which is made for handicap.

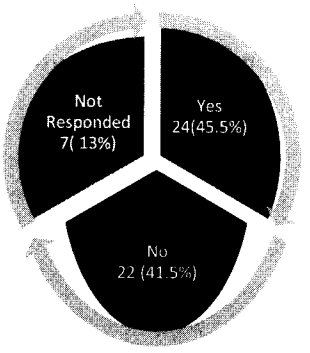


Figure 5: Provision of Seating Arrangement and Light Arrangement

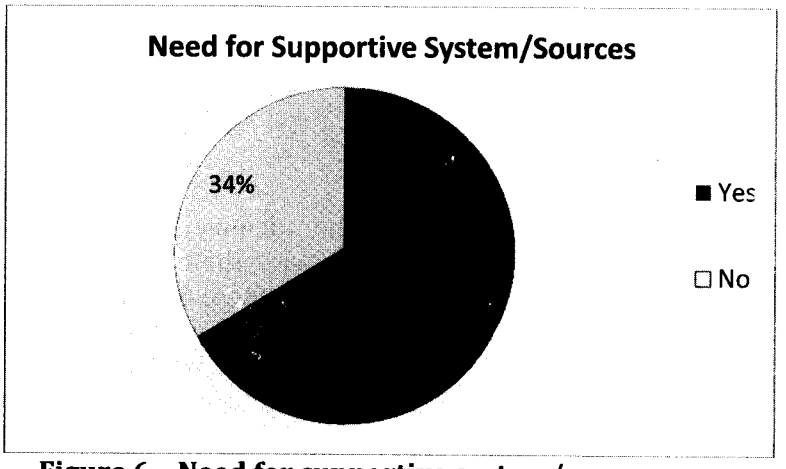


Figure 6 – Need for supportive system/sources

According to Figure 6 35(66%) special students noted that they need supportive system/sources for the use of college library. The supportive system may be in form of personal service or customized sources for these students according to their physical issues. Students specify that library staff should support them or attend them for getting resources. Many special students are physically handicapped they cannot browse freely or standing for long time to search book, or to borrow from queue. Majority of blind students specify that they should get resources in form of Audio CD's, Cassettes and for this sources they should be provided with computer system, Tape and separate seating arrangement where these students can seat comfortably, listen CD's or audio books without disturbance. All students expressed that there should be provision of lift for library. 18(34%) special students expressed that they do not want any supportive system/source.

- **Library Staff**

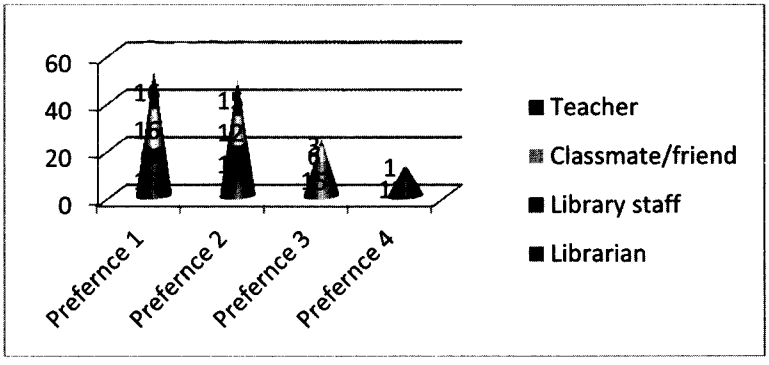


Figure 7: Help provided for Information & Services

According to the Figure 7 option one 'Librarian' 15(28.30%) special students noted first preference, seven (13.20%) special students noted second preference and 15(28.30%) special students noted third preference. For the option 'Library staff' first preference given by six(11.32%) special students,15(28.30%) special students given second preference and 12(23%) special students given fourth preference, For the option 'Classmate/friends' 16(30.18%) special students choose first preference, 12(23%) students choose second preference, six(11.32%) students choose third preference and one(1.88%) special student choose fourth preference. Last option was 'Teacher'.16(30.18%) special students have given first preference, 15(28.30%)special students given second preference, and three(5.66%) special students have given third preference to this option. One (1.88%) special student has not responded to this question.

7. Suggestion

For the suggestions in relation to infrastructure, collection, facilities and services 44(83%) special students gave their suggestions. Nine (17%) special students not responded to this question. Major suggestions are as follows:

- **Infrastructure**

  - Students noted that the requirement of separate room for the special students with all furniture which is suitable for the handicap and blind is essential.
  - They also added that library and reading room should be at basement or there should be arrangement of lift for library and reading room.
  - Book racks should be at low level in height and convenient to browse for handicap.
  - Internet facility with suitable software for blind, audio system with high technology in separate special students room should be made available.
  - Suitable seating arrangement with convenient furniture, Wheel chair, light and drinking water facility should be made available in library.

- **Collection**

  - Sufficient library collection of text books and reference books should be made available.
  - There should be more additions of Marathi medium, competitive examination and other reading books.
  - All blind students demanded for audio books and CD's, Braille books of curriculum.
  - To prepare audio books Librarian should be make initiative efforts with the help of other staff, students and teachers.

- **Facility and Services**

  - Students also demanded for borrowing more books than regular students.
  - Book bank facility, Advance learner facility for issuing more books, made available.
  - CD's of curriculum and other should be issue to the special students.
  - Librarian and library staff should more helpful for the special students and be more attentive to them.
  - Current awareness service should be more effective.
  - Library orientation programme should be twice in year.

8. Major Findings of the Study

- Majority special students preferred Arts faculty and Marathi medium.
- Special students are not using their college library. May be these students are disable to use library.
- Special students who visit college library they are using library for to study in reading room and less than 66% special students use library for issue/return book.
- Special students read for examination purpose and fewer students are read for the preparation of competitive examination.
- Many special students preferred open access for the library and library timing is convenient for them.
- The special students who visit to library are satisfied with their college library collection. Many students have never come in library or may be disabling to use this library due to the arrangement of racks which is not suitable for them.
- Many special students use books to get the information. Over all use of journals, news papers and Internet is too less.
- More than 50% special students have given first preference to college library to get information sources.
- Special students expressed that the existing seating arrangement and light is suitable for them. Above 50% special students noted that the existing arrangement and light is not suitable for them.

- Special students get information about reading material from recommendation given by their teachers. Above 60% special students get information about reading material from library display.
- Majority special students noted that they require supportive system/sources for to use library.

9. Recommendations

- College Librarians or authorities should try to remove the obstacles encountered by those patrons in their pursuit of information.
- The arrangements in stack rooms should be such, shelf height of the racks should be such that they promote browsing and free movements.
- Librarians should assist such patrons with sympathetic attitude; keep good interpersonal relations with effective communication skill.
- Library materials such as with large-print format for those with poor eyesight, Braille and audio-cassettes for visually handicapped people and the Bliss system for persons with motor impairments have to be acquired, organized and developed.
- Social linkages with NGO's or voluntary and government organizations.
- College should run Higher Education for Persons (disabled) with Special Needs (HEPSN) Scheme on to create awareness among functionaries of Higher Education about specific educational needs of persons with disabilities. College library should be a part of this scheme.
- Some of the most popular books and long runs of epics can be recorded in tapes or audio CD's and made available to blind students.
- Though it may not be possible to provide Braille books on large scale, as they are very costly. The department can acquire some books and others can be procured on inter-library loan from the specialized libraries for the blind.
- Some of the most popular books and long runs of epics, textbook or subject books can be recorded in tapes through the other cooperative students or N.S.S. (National Social Services) volunteers of the college and made available to the blind students as well as other special students.
- A comprehensive survey is to be conducted to know the adequacy of library facilities for the special students.
- Recently one reputed college is awarded 'College with Potential for Excellence' (CPE) and received 1.5 million special grants for to develop infrastructure. College should make available some fund for their special students to build up Braille books, audio books and separate well equipped 'Blind Room' for blind students.
- The equipment like Kurzhwell ReadingMachine, Print-to-Braille translator should be acquired by the National Library for the Blind Enabling them to read any print book in a library should be acquired by the National Library for the Blind Enabling them to read any print book in a library .
- These **students** are not familiar with effective methods and strategies for successful learning, which leads to the feelings of frustration and helplessness in case of failure. Libraries should give ample opportunities to develop themselves and foster them in many respects and open their dreams of life.

10. Conclusion

The relevance of Second and third law of Library Science that is 'Every reader his/her document and Every document its reader' implicitly indicates the need of availability of sources to every user irrespective of the fact. In this direction this study traced out the situation in College libraries about the special student users. Researcher focused the "A" grade college libraries status about the disabled students, deliberates over the problems encountered and suggested concrete direction. There is great need to change outlook, give acceptance to this user group. It is a responsibility of higher educational institutions to provide handicapped friendly library and library services to their special students.

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Authors Profile



Sunita Arvind Kulkarni is serving as a College Librarian of SMRK-BK-AK Mahila Mahavidyalaya, Nashik (Maharashtra) from last 29 years. She implemented various innovative activities and best practices for students and special students also. She teaches and promotes research activity and guide to the students. She is Author of a number of papers she has participated many National and International Seminars and Conferences and recipient of the Ph. D. in Library and Information Sc. from Y.C.M.O.U., Nashik.

A Study on Digital Library Services in Bharathidasan University

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Abstract: This study examines the extent use of the digital library services provided for the users by Bharathidasan University Library. The Hypotheses framed on the basis of the objectives of the study. Questionnaire method was used to gather data from the faculty, research scholars and PG students of Bharathidasan University to fulfil the objectives and to validate the hypotheses. Users who have visited the library within the space of one month were selected. 350 questioners were distributed and 265 questionnaires were received from the users. Data were analysed using appropriate statistical tools and the findings have been registered. Suggestions have been given from the findings for the further improvement of the digital library services.

Keywords: Digital library, Library services, Service awareness, Service usefulness, frequently used service, purpose of use etc.

1. Introduction

The information age has penetrated the libraries in many ways and has completely changed the libraries both physically and functionally. The role of the libraries varies according to the purpose and requirement of the individual. For some, it is just a place to read books and pass time and for others it is a place which provides current information through newspapers and magazines. In institutions it is a place which provides authenticated and precise information for enhancing research work and a place where information is shared and accessed for a particular need. In the current info-age libraries and librarians, otherwise called as experts on information literacy, play a major role in understanding the needs of the users and create systems and process to facilitate the user requirements by providing precise and authenticated information at the shortest time. Further the Library professionals have to understand the user requirements and to take proactive steps and strategies in designing, developing, introducing and implementing various new services for fulfilling user requirements. This can be achieved through periodical survey, research and come out with out of the box thinking strategies.

This study examines the extent use of the digital library services provided for the users by Bharathidasan University Library. The Hypotheses framed on the basis of the objectives of the study. Questionnaire method was used to gather data from the faculty, research scholars and PG students of Bharathidasan University to fulfil the objectives and to validate the hypotheses. Users who have visited the library within the space of one month were selected. 350 questioners were distributed and 265 questionnaires were received from the users. Data were analysed using appropriate statistical tools and the findings have been registered. Suggestions have been given from the findings for the further improvement of the digital library services. This study may prove to be useful for the students and the faculty of Bharathidasan University for identifying useful and more relevant library services. This will help the library users to take them to the next level and to pursue their studies and research in a better manner. It will also help the library professionals to

determine the awareness of digital library services among the users , strengthen their collection and also offer effective service.

2. Objectives

- To identify the awareness regarding the various digital library services selected for this study.
- To identify the opinion of the users on the usefulness of the digital library services in the library.
- To find out the users utilisation of the various digital library services in BDU.
- To find out the purpose of using various library services in BDU
- To suggest certain recommendations based on the findings of the study.

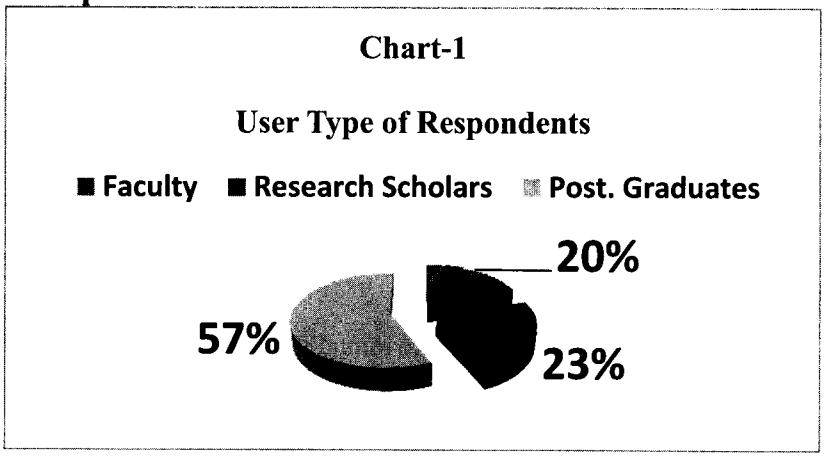
3. Methodology

A short questionnaire consisting of twenty three questions was designed and it was distributed among the 350 users of The Bharathidasan University and 265 filled questionnaires have been received from the users. The collected data was tabulated and presented in tables, which was analyzed to draw inferences and findings. Chi-square was used to test the hypotheses formulated for this study.

4. Hypothesis

- H0: There is no significant difference on the awareness of digital library services among the various respondent types.
- H1: There is a significant difference on the awareness of digital library services among the various respondent types.
- H0: There is no significant difference on the opinion of the usefulness of various digital library services among the various types of respondents.
- H1: There is a significant difference on the opinion of the usefulness of various digital library services among the various types of respondents.
- H0: There is no significant difference on the utilisation of various digital library services among the various types of respondents.
- H1: There is a significant difference on the utilisation of various digital library services among the various types of respondents.
- H0: There is no significant difference on the purpose of utilising of various services among the various types of respondents.
- H1: There is a significant difference on the purpose of utilising of various services among the various respondent types.

5. Analysis and Interpretation Data

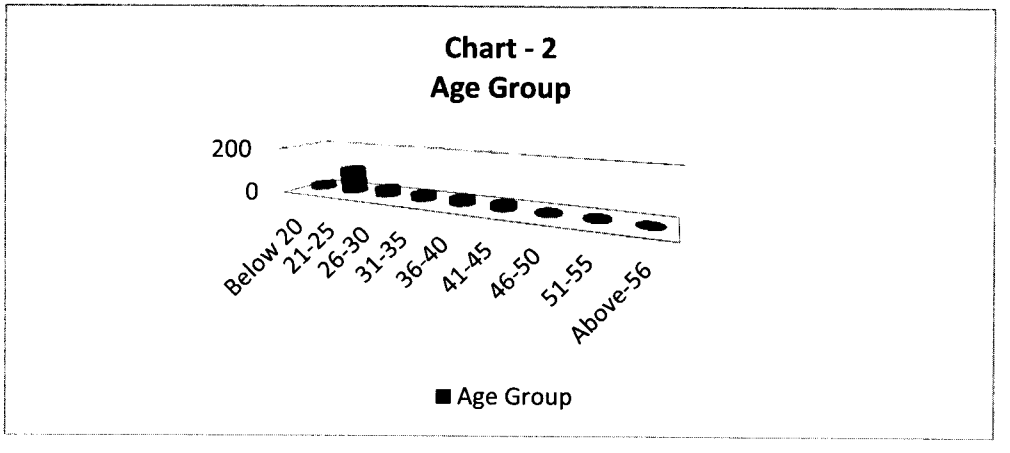


The above chart illustrate that 20% of the respondents are Faculties whereas Research scholars make up 23% of the respondents and a good majority of more than 57% of the respondents are students.

Table 1- Gender Distribution of Respondents

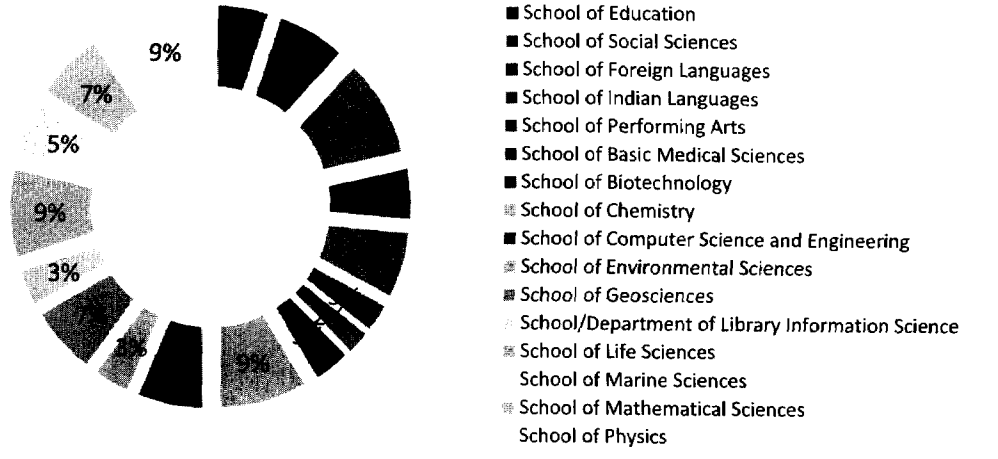
Sl No	Description	Gender	%
1	Male	125	47%
2	Female	140	53%
	Total	**265**	**100%**

From the above table it is found that out of the 265 respondents 140 respondent (i.e. 53%) are female and the remaining 125 (i.e. 47%) are male respondents.



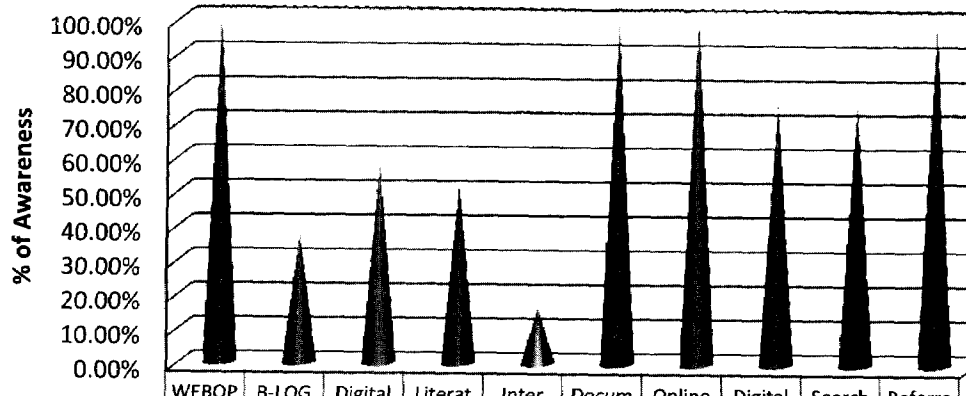
From the above chart it is found that a good majority of more than 42% of the respondents are of the age group of 21 - 25 years. The next highest is the age group of 26 - 30 years followed by 31-35 and 36-40 years with 11% and 10% respondents respectively. 9% of respondents are from both 41-45 years age group and below 20 years of age and respondent age above 46 year comprises of 6% with 3% each for 46-50 years and 51-55 years.

Chart - 3
Department Wise Respondent Distribution



From the above chart it is found that a good majority of respondents are from School of Social sciences, School of chemistry, School of Physics, School of Education, School of Geosciences and school of Mathematical Science with 10%, 9%, 9%, 9%, 7%, 7%, 7% respectively. The remaining departments fall between 6% to 2%.

Chart - 4
% Awareness of Lib Services

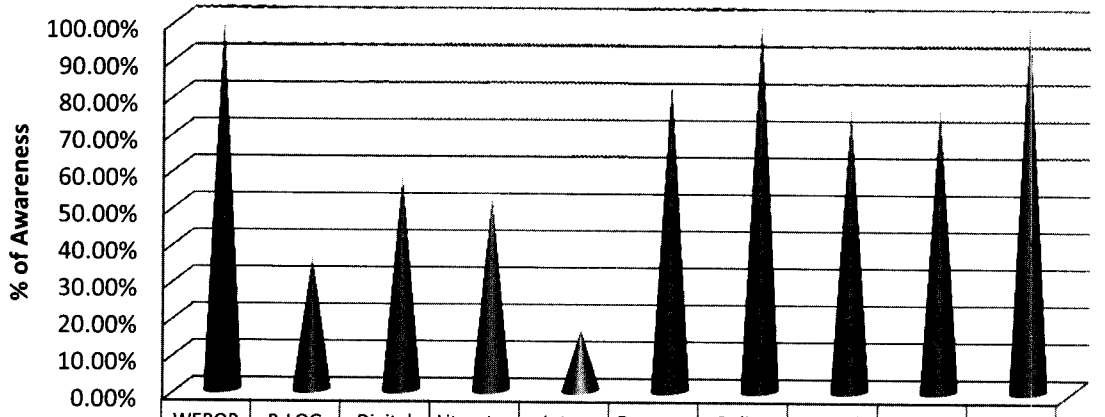


	WEBOPAC	B-LOG	Digital Repository	Literature search	Inter Library Loan	Document Delivery Service	Online Database	Digital Library	Search Engine Service	Referral Service
%	100.00%	37.00%	57.75%	52.00%	16.25%	100.00%	100.00%	76.50%	76.50%	100.00%

From the above table it is found that 100% of the respondents have declared that they are aware of the library services like WEBOPAC, Document Delivery Service, Online Database service and Referral Service. 76.5% of the respondents have stated that they are aware of

the services of digital Library and Search engines that are offered by the library. 57.75% and 52% of the respondents have stated they are aware of Digital Repository service.

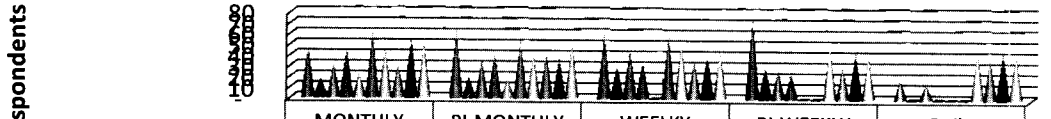
Chart - 5
% Usefulness of Lib Services



	WEBOPAC	B-LOG	Digital Repository	Literature search	Inter Library Loan	Document Delivery Service	Online Database	Digital Library	Search Engine Service	Referral Service
%	100.00%	35.75%	57.75%	52.00%	16.25%	83.75%	100.00%	76.50%	76.50%	100.00%

It is found from the above chart that 100% of the respondents are aware of WEBOPAC, Online database and referral services etc. Next the response is towards Document Delivery service with 83.75% support, followed by Digital Library and Search Engine service with 76.5% of respondents.

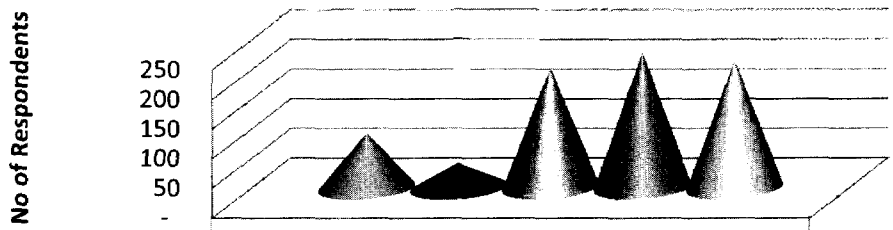
Chart - 6
Frequency of Usage of Service



	MONTHLY	BI-MONTHLY	WEELKY	BI-WEEKLY	Daily
WEBOPAC	47	63	60	76	19
B-LOG	18	19	29	29	-
Digital Repository	31	35	45	27	15
Literature search	46	41	35	24	-
Inter Library Loan	23	17	-	-	-
Document Delivery Service	60	53	58	-	-
Online Database	45	41	51	49	44
Digital Library	30	41	35	31	38
Search Engine Service	55	37	40	43	44
Referral Service	51	51	45	40	42

Chart 6 illustrates the respondents' frequency of usage of service like WEBOPAC, Literature Search. it is found that a good majority of the respondents are utilising the services only once in a month and online data base , digital library service and search engine services are utilised by a considerable majority of the respondents on a daily basis. The least frequently used services are Inter library loan, blog and document delivery service.

Chart - 7
Purpose of Usage the Library Service



	No of Respondents
Research	93
Preparing for Class	42
Seminars	204
Assignments	230
Examination	216

From the above chart it is found that 93 respondents have stated that they use the library services for research purposes and 42 have stated that they use the service for preparing for classes. A good majority of the respondents have responded that they use the library services for preparing assignments followed by examination and then seminars with 230, 216 and 204 responses respectively.

Table 2 - Respondent Type Vs Library Service Awareness

		Chi square Value			
Sl. No.	**Description**	**Low**	**Medium**	**High**	**Chi square Value**
1	Faculty	10.80	3.27	0.01	**14.07**
2	Research Scholars	12.63	0.45	31.21	**44.29**
3	Post. Graduates	17.97	0.42	13.21	**31.59**
	Total	**41.40**	**4.13**	**44.42**	**89.95**

From the above chi-square table it is found that the chi-square value is higher than the table value hence there is significant difference among the different type of users with regard to the awareness of library services. Hence the alternate hypothesis is proved.

Table-3: Respondent Type Vs Library Service Usefulness

Respondent Type Vs Library Service Usefulness					
		Chi square Value			
Sl. No.	Description	Low	Medium	High	Chi square Value
1	Faculty	15.00	7.01	0.02	**22.03**
2	Research Scholars	17.55	0.06	29.19	**46.80**
3	Post. Graduates	24.95	2.99	12.67	**40.61**
	Total	**57.50**	**10.06**	**41.88**	**109.44**

From the above chi-square table it is found that the chi-square value is higher than the table value. Hence there is significant difference among the different type of users with regard to their opinion on the usefulness of library services. Hence the alternate hypothesis is proved.

Table-4: Respondent Type Vs Frequency of use of Library Service

Respondent type vs frequency of use of library service							
		Chi square value					
Sl. No.	Description	Monthly	Bi-monthly	Weelky	Bi-weekly	Daily	Chi square value
1	Faculty	-	0.23	0.25	0.50	0.07	**1.04**
2	Research scholars	-	1.87	1.53	0.20	1.27	**4.88**
3	Post. Graduates	-	1.35	1.20	0.02	0.33	**2.89**
	Total	-	**3.45**	**2.98**	**0.72**	**1.66**	**8.81**

From the above chi-square table it is found that the chi-square value is higher than the table value. Hence there is significant difference among the different type of users with regard to the frequency of use of library services. Therefore the alternate hypothesis is proved.

Table-5: Respondent Type Vs Purpose of use

Respondent Type Vs Purpose of use							
		Chi square Value					
Sl. No.	Description	Research	Preparing for Class	Seminars	Assignments	Examination	Chi square Value
1	Faculty	4.69	24.49	1.77	6.48	5.15	**42.59**
2	Research Scholars	15.54	7.11	0.54	2.84	1.71	**27.74**
3	Post. Graduates	18.21	22.04	0.01	7.11	4.93	**52.29**
	Total	**38.43**	**53.65**	**2.33**	**16.43**	**11.78**	**122.62**

From the above chi-square table it is found that the chi-square value is higher than the table value hence there is significant difference among the different type of users with regard to the Purpose of use of library services. Hence the alternate hypothesis is proved.

6. Major Findings of the Study

- The study indicates that a good majority of the respondents hare aware of the various library services available in the library.
- The awareness is less among a minor strength of PG students and hence the awareness of library services has to be improved among the PG students.
- The study indicates that a good majority of the users have given a positive opinion on the usefulness of the library services.
- A small number of PG students have given a less positive opinion on the usefulness of the various library services.
- The study also highlights that a good majority of 147 users are utilising any one or a combination of library services every day.
- A majority of 90 respondents are utilising the library services on bi-weekly basis.
- A small minority of 20 respondents and 8 respondents are using the library services on Weekly and bi-monthly basis respectively
- It is found that the research scholars rank the top position among the types of users with regard to the percentage of frequency of usage.
- A good majority of 230 and 216 respondents have stated that they are using the library services for the purpose of Assignment and for examination purpose respectively, followed by 208 respondents, who have stated that they are using the library services for preparing seminars papers.
- Majority of the faculties utilise the library services for the purpose of seminar and research purpose.

7. Conclusion and Suggestions

- It is necessitated that we have to include information literacy, Information retrieval, database awareness and usage, internet usage as part of the curriculum with practical secessions. Here, librarians play a major role as faculties, facilitator and mentors for the above curriculum.
- Orientation courses for the faculties have to be conducted by the librarians periodically and it should be offered to highlight the significance of the information literacy among the users.
- In addition to this, periodic training must be given to the users on the current trends on information sources and retrieval and on the facilities and methods currently available for the same.
- The awareness of library services is less among the PG Students when compared to the other respondent types. Hence there is a need for creating awareness among the PG students.

- Further, among the services, Blogs are the least utilized service. The users should be encouraged to utilize the service more frequently.
- We have to motivate the users and popularise the utilization of databases and other library services.
- The awareness of e-resources available in the library is high among the younger generation apart from the PG students. Hence there is a need for creating awareness among the other users.
- By increasing the staff strength, the effectiveness of the services of the library can be enhanced.

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A Survey on Information Need and Information Seeking Behavior of Library Users of NRN Memorial National Law Library of NLSIU, Bangalore

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Abstract: The present paper is based on a survey conducted on the information needs and information seeking behavior of library users of NRN Memorial National Law Library, National Law School of India University, Bangalore. The survey was conducted recently and the paper points out the changing information needs of the users. The usefulness of collection and services of the library and also examined the various types of collections and services are being used by the individual users of the national library. Identified the various infrastructure facilities are being provided by the library. Finally measures to be taken to make library services more effective and efficient.

Keywords: Information need, Information seeking behavior, Law library users, NRN Memorial Library, NLSIU

1. Introduction

Information is rightly regarded as the power. Where information is concerned, there are many haves and hove not's are in practice. We are no strangers to the power of information. Our very lives depend on it. Presently information goes without saying that, last but not least, we talk about it, we seek it, we exchange it and we pay for it. Psacharopoulous (1982) discusses the necessity of information in the present age as "we can reorganize the educational system and redefine scientific research only with the help of information. Libraries devoted exclusively to law subject literature have existed since the formation of institutions, societies and schools oriented to the study of law".

Library user surveys have become widespread in academic libraries during the past two decades. Surveys have often been used as a tool to assess service quality and user satisfaction. The common attribute of such survey was to distribute within the library to users was more effective and meaningful than the mailed survey. Zhang (1998) emphasize that a thorough understanding of user information needs and information-seeking behavior is fundamental to the provision of successful information services. According to Lingman (1997) the understanding of information needs and information seeking behavior of various professional group is essential as it helps in the planning, implementation, and operation of information system, and services. The knowledge of information needs and information-seeking behavior of different users of the library is quite essential as it helps in

the planning, implementation, and operation of library and information system and services.

2. Objectives of the Study

The study aims to assess the information requirements and the extent of utilization of the library facilities by the general users of law library.

- To know the frequency and purpose of use of library by the users of NLSIU library, Bangalore.
- To know the effective use of different library resources by the students and faculty members of NLSIU.
- To examine the infrastructure facilities are being provided by the library.
- To suggest various measures should be taken to satisfy changing information needs of academic and research community of NLSIU.

3. Methodology

Questionnaire and personal interview methods were used for data collection. There are more than 600 regular students are studying. A total of 117 questionnaires were administered and 101 filled in questionnaires were obtained from the various types of library users. Out of 117 questionnaires, 101(95.51%) questionnaires were selected for analysis of data and 6(4.49%) questionnaires were rejected because of incomplete response from the respondents.

4. The Profile of NRN Memorial National Law Library

The library is the 'heart' of any academic institution and plays an important role in all academic activities and more so, in law institutions. Known as Sri Narayana Rao Memorial National Law Library, its establishment was generously assisted through the munificence of Mrs. Sudha Narayanamurthy of INFOSYS. This is a three storied building of 30,000 sq.ft. built-up area with ample space for storage of books and for reading purposes. The library has been planned keeping in view the aims and objectives of the Law School, and is being operated by a team of professionally qualified library staff guided by the Library Council. It has a collection of over 48,000 volumes covering a wide range of general and special subjects, comprising of text books, reference books, back volumes of journals and reports etc., apart from current legal periodicals. The Library functions from 8.30 a.m till 3.00 A.M. on all days of the week, but closing hours will vary on Holidays.

The library has an open access system to facilitate readers to have easy access to the library resources. The NLSIU Library has also established links with other important libraries in and around Bangalore in order to provide inter-library access for the benefit of students and teachers of the Law School. To assist the students and Research Scholars in

locating literature as well as information in their areas of research, general reference, current awareness and computerized catalogues have been introduced. An orientation programme is also organised for new students to help them acquaint themselves with the library system and services and for enabling maximum utilisation of the available resources.

The Law School has introduced computerised facilities for both housekeeping as well as information retrieval. Since it now has a leased line connection to the internet, it is possible to have easy access to information directly from all available computerized data bases all over the world, not only in the field of law but also in other disciplines. Keeping in mind the vision to create an E-Law School, the University subscribes to many international online databases. NLSIU is among the first of the legal educational institutions in India to subscribe to these online databases. The library has introduced computerized facilities for both housekeeping as well as information retrieval. Since we have now a broad band width leased line connection to the internet it is possible to have easy access to information directly from all available computerized data bases all over the world, not only in the field of law but also in other disciplines.

5. Data Analysis

Data collected from the questionnaires were analyzed using frequency counts and simple percentage. NRN Memorial National Law Library of NLSIU has different types of user's. The author has chosen four category of users for the survey i.e. Students, Researchers, General Library User and Distance Education students.

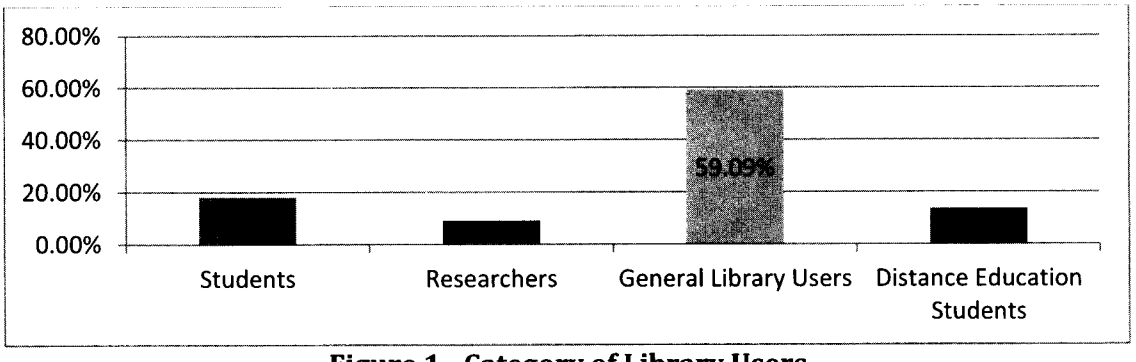


Figure 1 - Category of Library Users

Figure No.1 show that, the highest respondents are from General Library User category i.e. 59.09%, since this survey has been conducted during normal working hours there has been larger participation from general library users, however regular Students are in second position i.e. 18.18% as library is open up to 3.00 am in the morning for regular students. Researcher's 9.09%, Distance Education students 13.64%.

- **Frequency**

The frequency of the visit to the library is one index to judge the utilization of the library resources. If the users frequently visit the library it can be said that they are using the library more in comparison to those users who rarely visit the library. To examine the

degree of utilization of library facilities, the respondents were asked to note the frequency of visits to the library form the list of four intervals. i.e. Daily, Twice a Week, Weekly & more then week. Figure 2 show that 63.64% of the users visit the library 'almost daily', while 36.36% visit it once in a week.

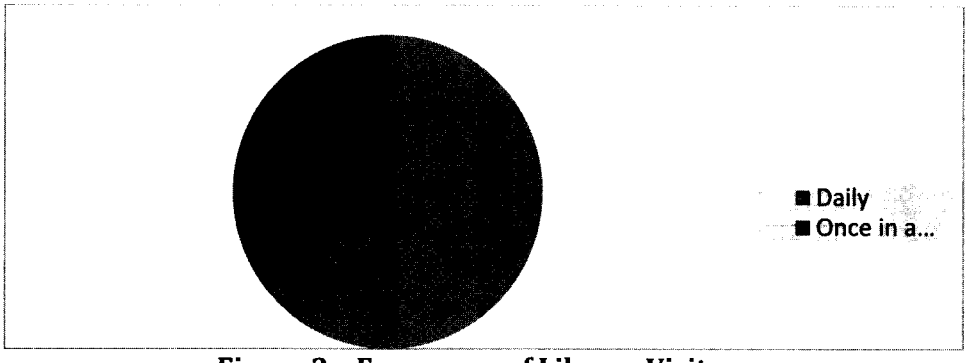


Figure 2 – Frequency of Library Visitors

- **Average Time Spent in Library**

The data in the Figure 3 show that average time spent in the library by students. 90.91% of students opine that they will use the library for more than 3 hours. And marginally 9.09% of students use the library for 2-3 hours. The researchers asked questions like 1-2 Hours, 2-3 Hours and more than 3 hours.

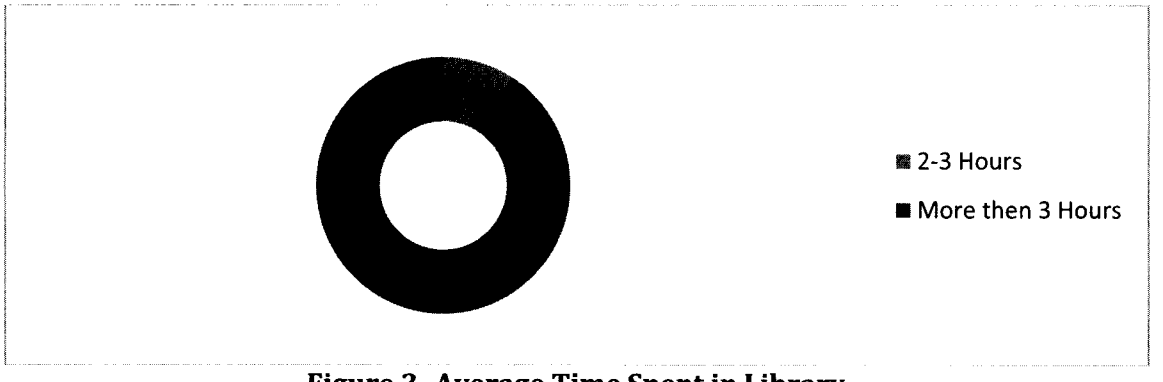


Figure 3- Average Time Spent in Library

- **How do you learn to Use the Library**

Users' awareness about the library services is prerequisite for proper utilization of the library and its resources. Therefore the responses of the users in this regard have been analyzed in Figure 4.

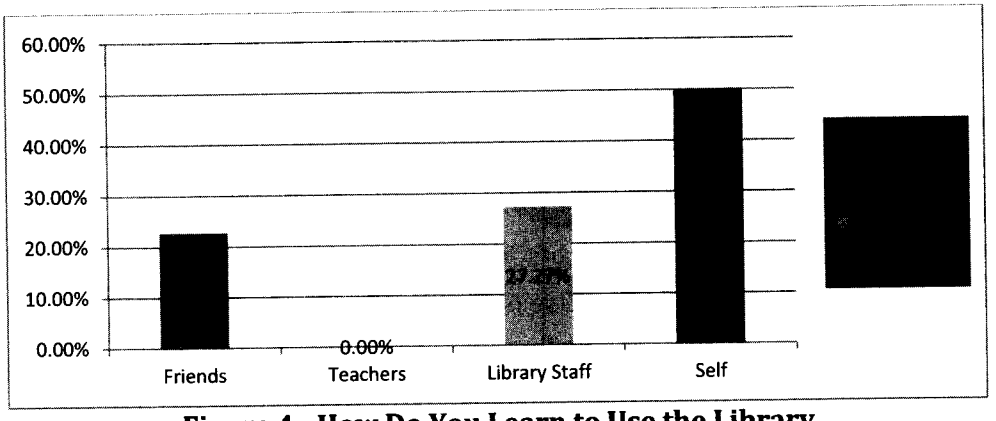


Figure 4 - How Do You Learn to Use the Library

To know the fact that how they learn to use the library in order provide better information literacy, researchers gave options like Friends, Teachers, Library Staff and Self. 22.73% students learn to use the library through friends, 27.27% respondents opine that they learnt the library use by library staff and surprisingly 50% of students have learnt the library use by self. None of them have learned the use of library by teachers.

- **Purpose of visit to library and Use of Different Sources**

Purpose of visit to the library to use the sources was ascertained to find out whether they come to satisfy their information needs for research requirements or for general reading. To assess the different purposes for which library users make use of law library, the respondents were asked to indicate the preference for the uses from the list of five reasons.

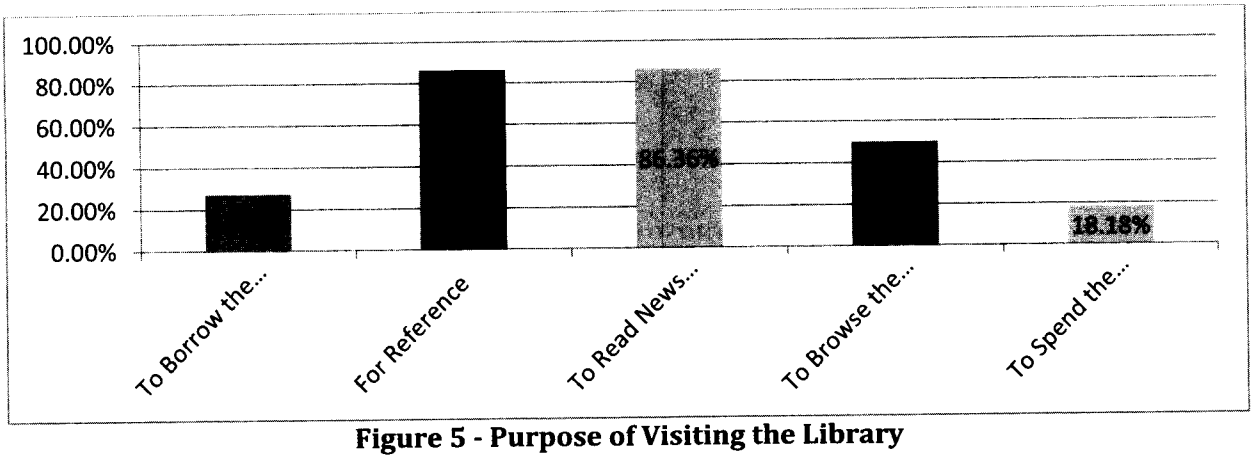


Figure 5 - Purpose of Visiting the Library

The data in figure 5 shows that the most important use made of the library is to read the news papers and competitive magazine i.e. 86.36%.

- **Use of Different Library Resources**

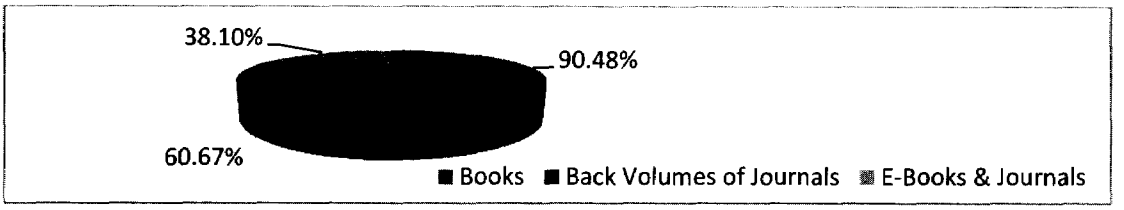


Figure 6 - Use of Library Sources

90.48% of respondents feel that Use of Books remain major purpose to visit the library. And 60.67% of users are using the Back Volumes of Journals. And 38.10% respondents are using the E-Books and E-Journals. To Borrow the Book/Return/Renew the Books 27.27% For Reference 86.36% To Read News Papers and Magazine 86.36% To Browse the Internet 50.00% To Spend the Leisure Time 18.18%.

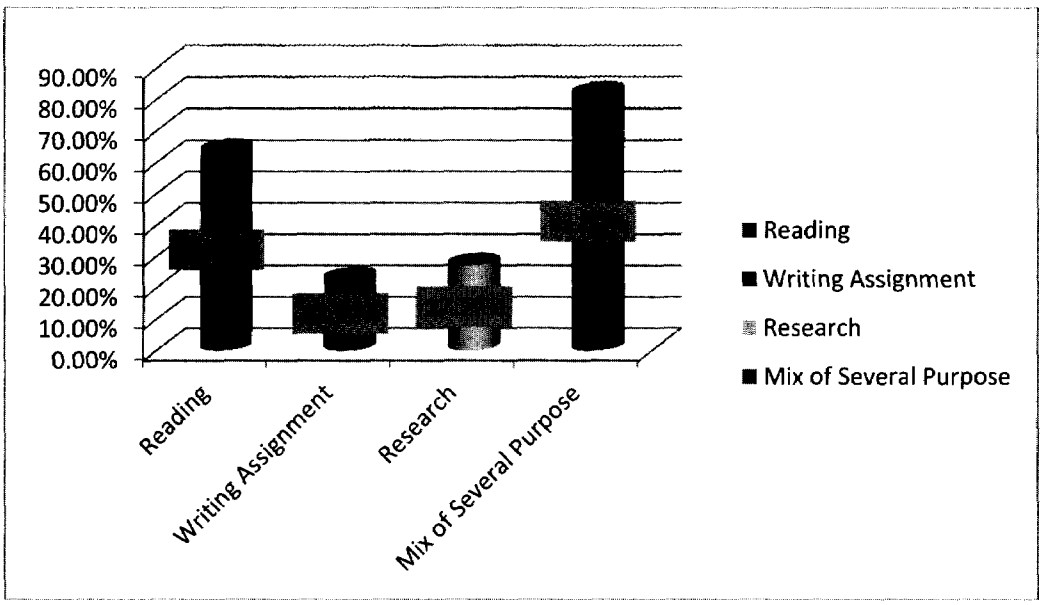


Figure 7 - Purpose of Visiting the Library

To assess the different purposes for which different users make us of the library, the respondents were asked to indicate the preference for the uses from the list of four. The data is give in the above table. The data in figure 7 shown that the most important use made of the library is to "mix of several purposes" i.e. it may be for all the purposes shown in the table. This has been ranked one and 63.64% to for 'reading'. In the third place 27.27% users use the library for "research" and for "writing assignment" 22.73% of users use the library.

- **Infrastructure Facilities**

It is always advisable to have a functional building with provision for pleasant, natural and electrical light, soothing interior, good-looking furniture, comfortable chairs and other such facilities. They increase the use of library.

- **Furniture**

Figure 7 reveal that for furniture 59.09% respondents feel that the present furniture's are very good followed by 72.73% of users responded that they are satisfied with cleanliness by mentioning very good. Lighting and ventilation is also very good for 77.27% of library users.

- **Library Rules & Regulation**

Only 23.81% of library users feel that library rules and regulation are user friendly and 38.10% feel that library rules are good. 19.05% people are uncertain about the rules and regulation and 9.52% feel that poor and very poor.

- **How Would You Rate the Quality of the Following in the Library?**

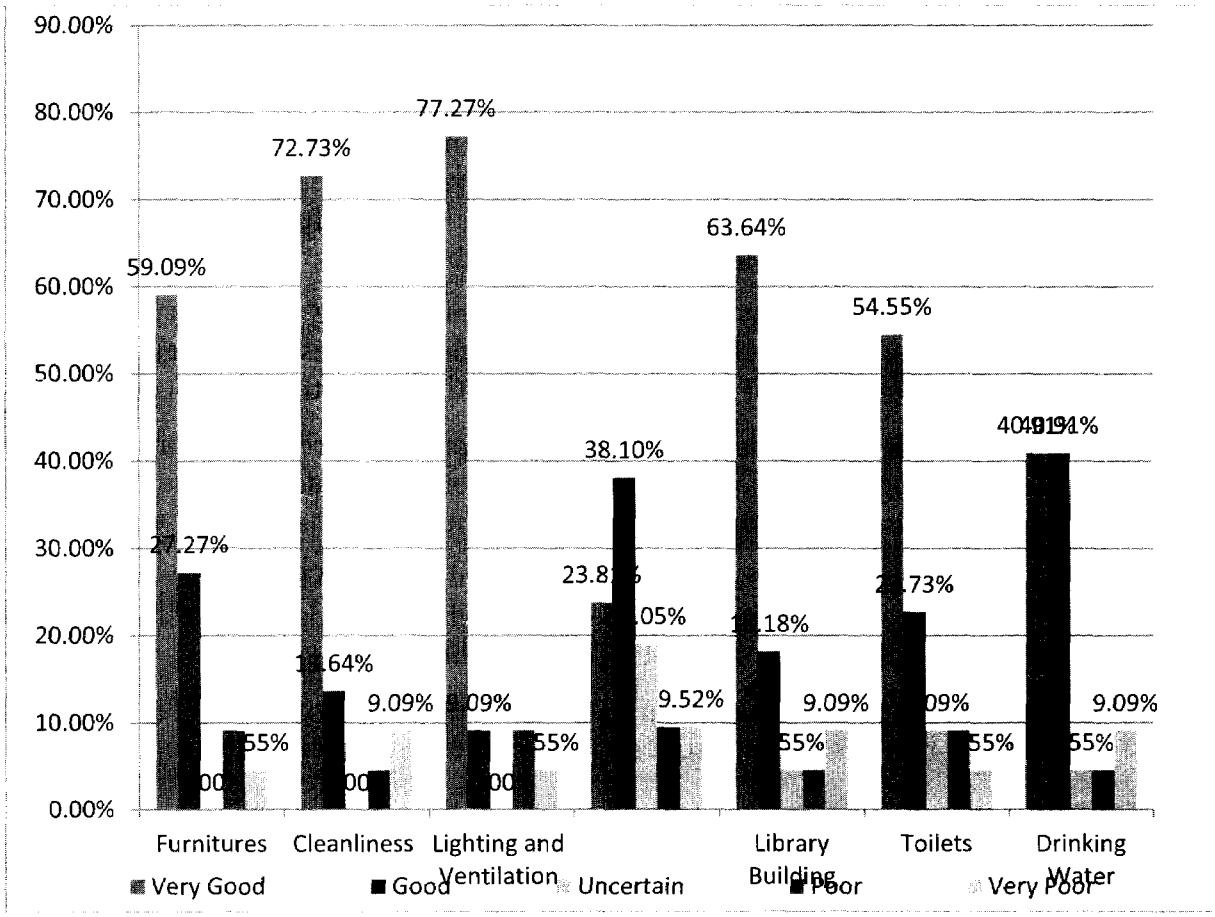


Figure 8 - Infrastructure Facilities

- **Library Building**

Majority of the respondents i.e. 63.64% feel that library building is very good, 18.18% of respondents opine that the building is good 4.55% feel it is poor and 9.09% feel that it is very poor.

- **Toilets**

Toilets are basic necessity for any institution or society, 54.55% of respondents feel that they are very good, 22.73% of them feel they are good and 9.09% feel they don't want to comment, 9.09% opines that they are poor and 4.55% feel they are very poor.

- **Drinking Water**

While 40.91% of the users satisfied with drinking water with commenting very good and only 9.09% feel that it is very poor.

6. Major Findings and Suggestions

- The survey was conducted during day time hence highest respondents are from general library users who are entitle to use library between 9.30 am to 5.00 pm. Since most of the regular students who use the library after 6.00pm as library is open up to 3.00 am there is less participation in the survey.
- Findings clearly reveal that 81% of the respondents use the library for "mix of several purposes". There is a clear indication of invisible college and user dependence is more on informal modes of communication, than the formal.
- Since most of the respondents are general users and preparing for competitive exams, there is highest percentage i.e. 83% of users responded that they will use the library to read News Paper and Competitive Exam related magazines.
- In order to promote the use of books it is advised to have a functional building with provision for pleasant, natural and electrical light, soothing interior, good-looking furniture, comfortable chairs and other such facilities.
- It is therefore, suggested that library staff should be attentive, cheerful, and careful for books and readers. Library staff should also render helping hand to the readers.

7. Conclusion

It is generally assumed that the library users in unpredictably tends to possess favorable towards information and makes an attempt to keep abreast of the most up-to-date information. The present study does not fully authenticate that. This study is an effort to fill a gap in understanding the information needs and information-seeking behavior of library users.

Information needs are diverse and they rely heavily on books and other primary source of information, so the lack of availability of required material in libraries is a major problem

in information seeking. Information professionals can analyze the findings of the study and design, develop, and introduce new library and information services for them. Library and information science professionals in India should conduct further studies on user information needs to provide more suitable resources and services to different user groups.

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	Dr. Ramesha presently working as a Professor in the Dept. of Library and Information Science, Bangalore University, Bengaluru. He is one of the winners of the IFLA WLIC 2015 participation grants to attend IFLA International Conference to be held at South Africa. He was awarded "ILA – A.G. Motiwale Award for Young LIS Professionals-2007" and "ILA – Dr. C.D. Sharma Best Paper Award 2009 and 2011" respectively by the Indian Library Association(ILA), New Delhi. The Burea of Indian Standard (BSI) nominated him as a Member of Panel on Content analysis. As of today he has published more than 90 research papers in national and international journals and conference proceedings and participated more than 70 national and international conferences, seminars and workshops. 8 students are pursuing Ph.D under his guidance. He is member of Board of Studies (BOS), Board of Examiners (BOE), in many Universities in India. He was completed 01 major & 01minor research project funded by UGC, New Delhi and University of Madras, Chennai. He is a life member of many professional associations including ILA, IASLIC, IATLIS, MALA, KALA etc. His areas of interest include Application of ICT in LIS, Design and Development of Digital Repositories and Information Literacy.
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Acquisition and Management of E-books in Bangalore University Library: *A study*

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Abstract: E-books are the texts of printed books in electronic form and can be read on PCs, laptops, tablet PCs and PDAs with multimedia features. The purpose of this paper is to determine the selection criteria of e-books acquisition in Bangalore University. The study observed that the Libraries are facing problems in procuring, organizing, accessing, preserving and sharing the documents. These include shrinking library budgets and no separate allocation for pricing licensing access models by all publishers are not uniform confusing digital rights management is another issue.

Keyword: E-books, Acquisition, print Books, Electronic resources, Bangalore University.

1. Introduction

In the recent trends libraries using ICT system, are dramatically changing every aspect of organization, procurement, information storage and access and dissemination of services. The advent of electronic resources and their increased proliferation in libraries has brought about significant changes in collection development. Electronic books offer creative possibilities for expanding access as well as changing learning behavior and academic research. A number of new publishers or aggregators have come to the fore in the past few years, or existing publishers have extended their products to include web-based e-books, particularly in the scientific disciplines. The present study aims to explore the collection development policy and the availability of e-books from different international publishers in Bangalore University for the use of Postgraduate and Research Scholar and Faculties. This paper gives the requirements of e-books for different courses and it also compares their availability against the selection criteria in print and electronic books for collection development. It also shows that the procurement of e-books from the international publishers and problems facing for selecting the e-books and extending services for Faculty, Research Scholars and Students. This study aimed to highlight the problems faced by acquisition librarians at Bangalore University.

2. Bangalore University Library

Library came into existence in 1966 with about 35,000 books and several bound volumes of periodicals at the Central College Library affiliated to Mysore University, Mysore. At present the Library is housed in a magnificent star moduled functional building which includes separate wings for Reference Section, Stack Rooms and Reading Halls, Periodical Section, Computer Centre and Administrative Divisions. The Library budget of libraries is 2

crores i.e Print Books 45 Lakhs, E-books 1.55 Crore and a separate budget for Journals 45 Lakhs for every year. The collection of books has now crossed 3,50,000 and continues to grow at the rate exceeding 9,000 titles annually. The library also subscribes to more than 269 periodicals covering about 45 subject disciplines. Approximately 50,000 bound volumes of back issues of all important journals are organized subject-wise.

3. Acquisition Procedures

The purchase procedures of e-books are different from the purchase of print books. The Vice-Chancellor constitutes an e-books selection and purchase committee. The committee headed by Senior Dean of the faculty consisting of other deans faculty and is major department heads will be the members of the committee. This committee will invite all major publishers to present their products before the committee. Before that the Librarian will brief the committee about their products and cost of products. The committee will interact with the publishers of then rates, accessibility, content and usability of the products. After going through the product analysis, according to one budget, the committee will negotiate with the publishers those who give more discounts the committee finalise products. This will be placed before the Syndicate Committee for final approval, after getting approval the Librarian will place orders for purchase.

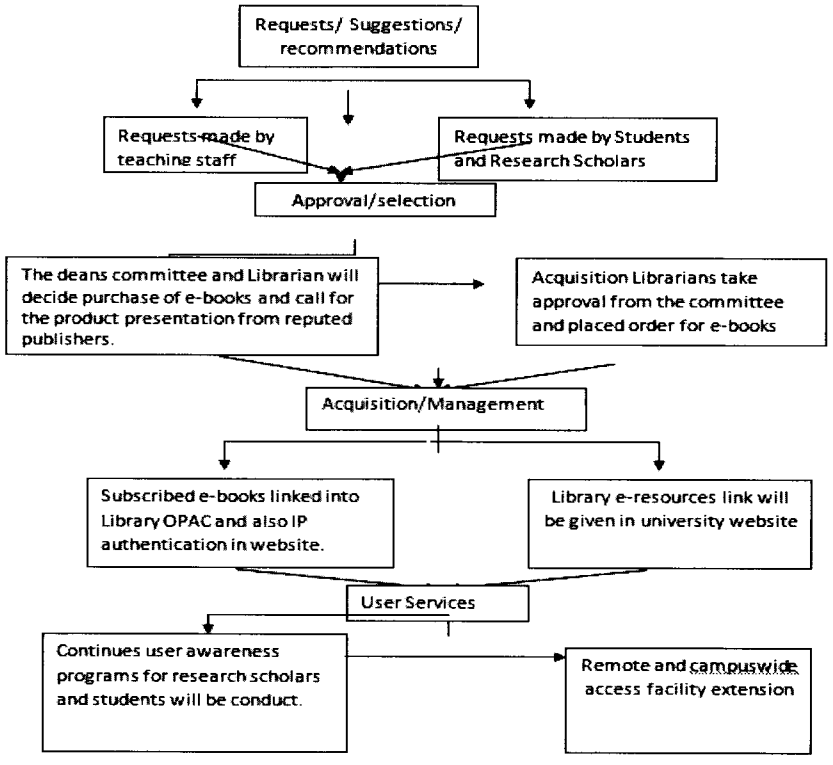


Figure 1 - Acquisition Procedure for E-books

3.1. E-book suppliers

The Bangalore University Library has subscribed the following e-books.

M/s. Springer: Springer Science is one of the leading suppliers of scientific and specialist literature and the second largest publisher of journals in science technology and medicine (STM). Springer publishers were publish over 2,700 journals and more than 5,500 new books every year and adding into the databases. It also includes all textbooks, monographs, proceedings atlases, all book series, reference works like Handbooks, encyclopedia, and contributed volumes. These e-books are downloadable and printable at chapter level and it also helps the library to integrate it with the library OPAC. Access to springer e-books provided through the IP address in multiple users and can also available through remote access. Bangalore University Library had purchased e-books from 2005 to 2010 for five years about 16,299 and 2013-14 about 9086 totally 25,385 e-books can be accessible. Some of the subscribed subjects are Behavioral Science, Biomedical and Life Science, Business and Economics, Chemistry and Materials Science, Computer Science, Earth and Environmental Science, Humanities, Social Science and Law, Mathematics and Statistics, Physics and Astronomy, Professional Computer, applied Computing.

M/s. Taylor and Francis: T & F group is a multinational company originating in the UK, it is one of the leading publishers of scholarly journals, books, ebooks, text books and reference work. This publishing house are three major content platforms viz CRCnetBase, Taylor and Francis online and Taylor and Francis e-books. T & F Publish more than 2,100 journals and over 4,000 new books for each year and it includes 40,000 e-books in the Humanities, Social Sciences, Behavioral Sciences, Built environment, STM and Law imprints from Routledge, Focal Press and Psychology Press. These e-books can be downloaded and printable and also allowed the authorized users to access this content through IP address using username and password. It can also be accessible for Remote access (Ezproxy) facilities.

The Library had subscribed these e-books for the year 2010-14 about 3,720 titles of e-books. The subject collection of Humanities (includes English, Language, Linguistics, history, Literature and Philosophy) and Social Sciences (includes Political Science, Sociology, Social Work and Development Studies).

4. Problems in acquiring the e-books

- The shrinking budget of the library and no separate allocation for e-books are major problems. The library cannot purchase the bunch of packages of e-books for more years from the reputed publishers.
- The non flexible purchase rules and procedures also preventing the discourage of e-books.
- Some publishers provide broad subjects categorized lists, where hundreds of books are listed under each subject. But the librarian cannot choose the particular titles in that bundle subject and unwanted title cannot be delete in that packages.
- Pricing models for e-books are not much flexible. All books under prebundled libraries are not useful pick and choose model in very costly.

5. Conclusion

It can be concluded that e-resources are very important sources for achieving academic excellence in the institutions of higher learning. Libraries will continue to collect and preserve printed and electronic resources and access methods will have to address the nature of hybrid collections. E-books are the potentially useful tools for research and education. Subscribed e-books from different international publishers, the acquisition of librarian shall find out that the duplication of e-books title is occurred or not by using the discovery tools software and also linked all the subscribed e-books to library OPAC for benefit of the users. It is also important that the libraries should not switch off the library website and continuation of remote access facilities. Librarians must take care to provide simple, clear and comprehensive e-book training for all the library users.

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Assessing the Information Literacy among Agricultural Science Undergraduate Students of BHU

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Abstracts: Assessment is essential to know the accountability and learning outcomes of any workshop. It helps in reforming the workshops according to the user's need. Information literacy programs are quite helpful to search, browse, find, evaluate and communicate the information in right manners. The purpose of this article is to analyse the participant's response about the Information Literacy Program (ILP) organized for agricultural science undergraduate students of Banaras Hindu University. The feedback of the workshop taken at the end of the ILP is used as the data for analysis of the participant's response. Findings of this paper are useful to reform and remodel the ILP program according to the user's response. It is also helpful to organize the available e-content to optimize its use.

Keywords: Information Literacy, Undergraduate Students, Agricultural Sciences, Academic Libraries

1. Introduction

During the past three decades, the librarians laid more emphasis in the procurement of the resources, listing of the holdings, finding the information, retrieval mechanisms, compiling bibliographies and references rather than user education, instruction programs and information literacy competence building etc. In recent years due to emergence of the information overpopulation, it is seemed to be to educate the users in the right way to get their desired information properly and promptly.

The information literacy, media literacy, information search techniques, and search skill development are the big issues for libraries in the recent years. In higher education and academic libraries of India, the information and media literacy is the primary concern now days. During the last decade, there has been more emphasis on the information literacy to the higher education students to ensure the optimum use of electronic resources in education and research. The evaluation and assessment of the computer literacy, internet literacy, search strategies and techniques of students and e-resource available is the way to organize and revise the information literacy programs in the proper way to help the users for optimum utilization of the available resources.

Kathleen, 2002 stated while describing the significance of the assessment as a necessary byproduct of the current emphasis in higher education on accountability and learning outcomes. Assessment activities can encourage dialogue among faculty, librarians, and administrators on significant academic issues, such as identifying learning outcomes for student success, finding ways to improve academic programs, and documenting change and improvement over time in student learning [1].

2. Literature Review

Plenty of literature on survey based study of information literacy of undergraduate / college students is available at both global level and national level though there is lack of the tools, standards, and guidelines to measure the competency level. Several studies have done in western countries regarding the assessment of the information literacy, internet skill proficiency test, information behavior, search preferences and problems of the undergraduate students of different subjects [3, 7, 8, 9, and 10]. A good number of the studies have made for analysis of the information literacy of undergraduates in Indian university libraries viz. Delhi University [13], Kuvempu University [14, 15], Andhra University [16, 17], University of Agricultural Sciences [18], Panjab University [19], Kerala University [20], and Sambalpur University[21] etc. Bavakutty and Nasirudheen [20] has analysed the IL competence of research scholar while Mishra and Maharana [21] surveyed digital information literacy of Faculties. Hadimani and Rajgoli well explained review of Indian literature on information literacy and highlighted the lacks of the forums, standards, guideline etc. regarding the information literacy at the level of the primary, secondary adult and higher education. C. R. Karisidappa [11] was notable researcher in the field of information literacy in India. He had worked for the inclusion of the information literacy in LIS curriculum and strongly recommended for the information literacy and capacity building programs for students to become lifelong learner [18]. Dhiman [12] discussed the role librarians in the field of the information literacy and capacity building of students during paradigm shift towards the electronic resources.

3. Scope and Limitations of Study

This study mainly focuses on the analysis of the level of information literacy of undergraduate students of the agricultural sciences in identifying, locating, searching, accessing, retrieving and using information from print as well as electronic resources and usefulness of the information literacy program organized to optimize the use. The study is limited to the analysis of feedback against information literacy program organized mainly for the undergraduates of agricultural and life sciences at BHU and to examine the computer skills, internet search ability, and competence of the ILP in improving the academic performance of the students.

4. Objective of the Study

- To establish a baseline of computer competence skills of the students
- To establish a baseline of internet competence skills of the students
- To establish a baseline of information handling skills of the students
- To gather data and insights to document the need for ILP for all subjects
- To acquire data to develop information instructional experiences
- To provide support for the next phase ILP strategic plan

5. Methodology

This study has been undertaken with the help of the structured questionnaire designed for taking feedback against the information literacy program. The Information Literacy Program is organized by Central Library, Banaras Hindu University held at the first floor of the Cyber Library on 1st September 2014. Five lectures with hands on practice session regarding services provided by the central library, search strategy, internet search skills, OPAC, Web-OPAC, shelf arrangement in stacks, and available print and e-resources on agriculture have delivered to more than 500 undergraduate students of Institute of Agriculture Sciences, Banaras Hindu University. Out of the 145 questionnaire distributed, about 129 responses are collected in which 127 is found useful for the study, thus resulting into a response rate of 87.58%. The study has been made by using suitable statistical techniques for data analysis.

6. Data Analysis and Interpretation

6.1. Respondents Profile

- **Gender Wise Users:** It is observed from the Figure 1 that majority of the respondents 109 (85.83%) were male whereas 18 (14.17%) were female respondents.

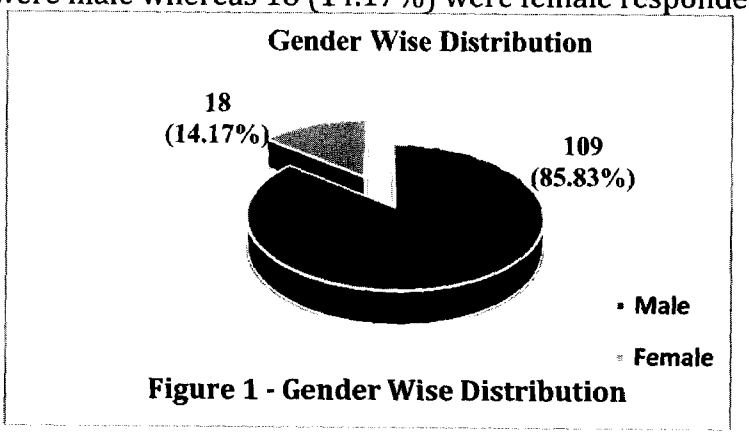


Figure 1 - Gender Wise Distribution

- **Residency Wise Users:** It is observed from data presented in figure 2 that the highest number of the respondents 55 (43.30%) were belongs to village area followed by 36 (28.34%) from the urban area.

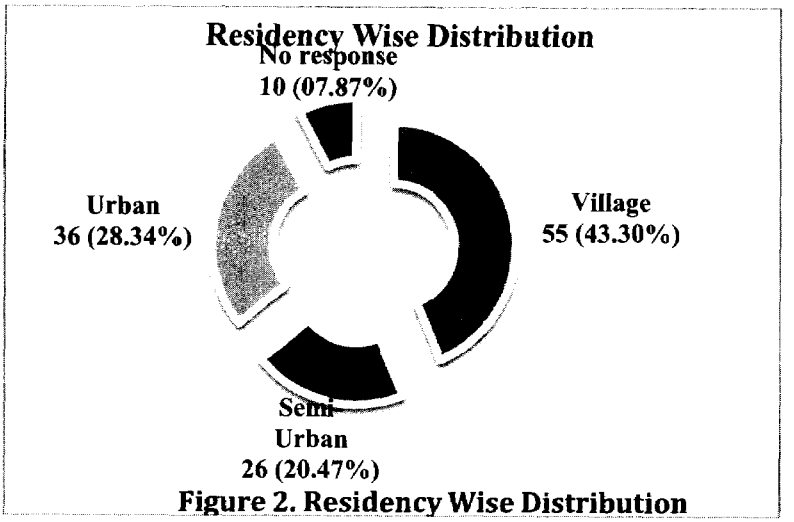


Figure 2. Residency Wise Distribution

6.2. Computer Handling Skill

- **Computer Literacy:** The assessment of computer literacy is important to develop the IL skills of the students because it has primary concern with the utilization of the electronic resources. It is observed from the data presented in table 1 that most of the respondents (about 69%) are computer literate while 31% of the respondents require training in computer handling. More than 55 % respondents have good knowledge of the computer handling while more than 13 % are expert in computer handling.

Table1. Computer knowledge

Aspects	No. of Responses (N=127)	% age
Very good	17	13.38
Good	70	55.11
Poor	13	10.23
Yet Learning	27	21.25

- **Course of Computer:** Figure 3 clearly reveals that the majority of the students have not done any computer course earlier. It is observed that more than 76% respondents have learned computer handling skills along with the intermediate or other courses. 24.06% respondents have done certificate course in computer science, 07.03% have diploma in computer science while 4 respondents have done degree course in computer science.

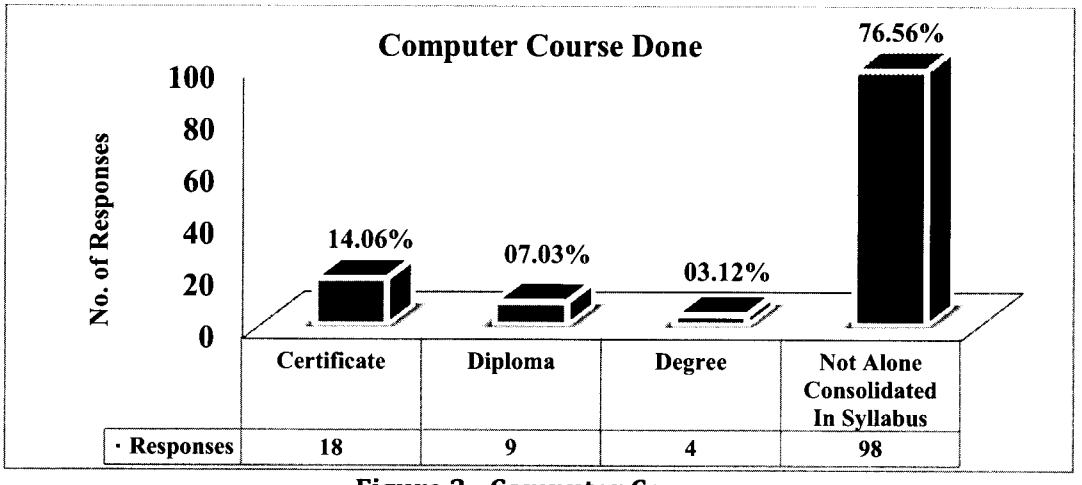


Figure 3 - Computer Course

6.3. Internet Search Skills

- **Internet Search Ability:** Competency in Internet search, knowledge of search tactics and different search strategies are the prime concern of information literacy. The assessment of the level of the internet search ability is quite useful to improve the information literacy program. Table 2 reveals that the majority of the respondents about 86% (consolidation of the good and very good responses) have improved their internet search skill through information literacy program while 14 % undergraduate students needs more advices.

Table2. Internet Search Ability

Aspects	No. of Response (N=127)	%age
Very good	25	19.68
Good	84	66.14
Poor	8	06.29
Yet Learning	10	07.87

- **Internet Use per Day:** It is a pivotal point to know how much time on an average the target audience is spending in surfing the Internet because it plays important role in decision making for procurement of electronic resources. Majority of the undergraduate students of agricultural sciences (44.88%) spends less than one hour a day in internet use followed by 37.79 % respondents who spend 2-3 hours per day in internet use.

Table 3 - Internet Use per Day

Period	No. of Response (N=127)	%age
Less than 1 hr	57	44.88
2-3 hrs	48	37.79
3-5 hrs	12	09.44
More than 5 hrs	10	07.87

- **Purpose of Internet Use (Multi-Option):** It is clearly observed that most of the respondents 108 (85.03%) use internet for academic purpose followed by 70 (55.11%) respondents use internet for forwarding and receiving e-mail while about 20% respondents utilize internet for job search. More than 50% respondents utilize internet for entertainment and other purpose too.

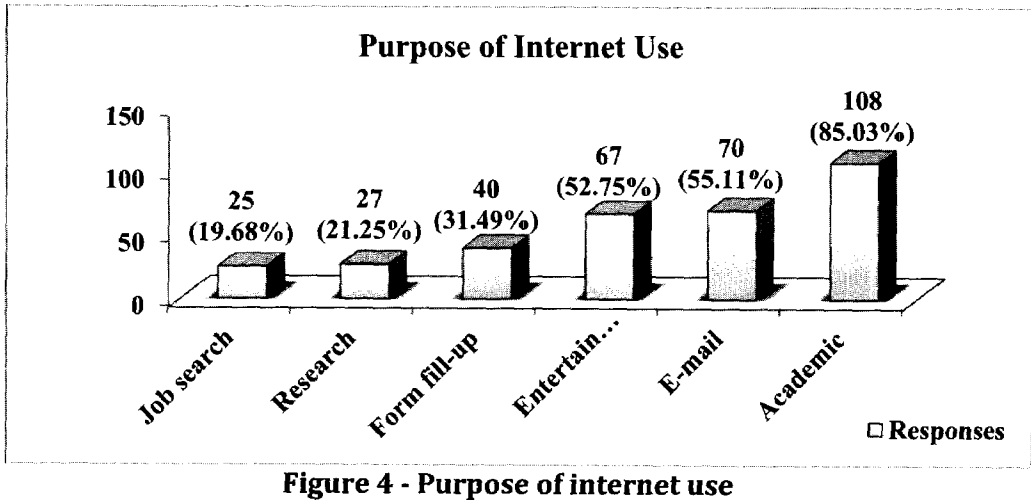


Figure 4 - Purpose of internet use

- **Suitable Search Engine:** Table 4 reveals that Google is the most preferred search engine among the respondents. Most of all respondents (more than 98%) use Google for information searching on the World Wide Web.

Table 4 - Suitable Search Engine

Search Engine	No. of Response (N=127)	%age
Google	125	98.4
Ask	1	00.78
Bing	1	00.78
Others	0	00.00

6.4. Relevance of Information Literacy Program:

The analysing the feedbacks taken from the participants of any program like information literacy program is quite helpful to improve the program by making it more improved, more attractive and more relevant to the users.

Feedbacks regarding relevance of the ILP were taken from the participants in the form of well designed questionnaire on the selected statements with options to select one from strongly agree, agree, disagree, and not sure. Table 5 represents the analysis of the feedback regarding the relevance of this ILP.

Table 5 - Relevance of the ILP

Statements	Strongly Agree	Agree	Disagree	Not sure
Relevance of PowerPoint presentation	13 (10.23)	99 (77.95)	02 (01.57)	13 (10.23)
Relevance of the explanation of available databases and e-resource	08 (06.29)	91(71.65)	08 (06.29)	20 (15.73)
Relevance of instructional material i.e. multimedia and website	15 (11.80)	84 (66.14)	10 (07.87)	18 (14.16)
Relevance of competency of ILP to improve search capabilities	24 (18.89)	85 (66.92)	07 (05.51)	11(08.65)
Relevance of competency of ILP to help in research/ project work	26 (20.47)	82 (64.56)	09 (07.07)	10 (07.87)

About 88.18% of the total respondents (10.23% strongly agree and 77.95% agree) have reported that the PowerPoint presentation technique is relevant to the scope of the information literacy program while 11.82% of the respondents are either disagree or not sure about the relevancy 0f the presentation. As for as the relevancy of the clarity of the explanation of the databases and e-resources is concerned a total of the 77.94 % of the respondents (06.29% strongly agree and 71.65% agree) have agreed that the subscribed databases and e-resources are relevant to the study, search techniques, tactics and strategies and concept of the bibliographical citations are explained clearly. Only 6.29 % of the respondents disagreed to the fact while 15.73 % are not sure about the fact. In terms of the relevance of the instruction material i.e. multimedia and website, 77.94 % of the total respondents (11.80% strongly agree and 66.14% agree) have reported that the instruction material i.e. multimedia and website are useful for academic purpose while 22.06% of the respondents were either not agreed to the statement or not sure. As for as relevance of competency of ILP to improve search capabilities is analysed, 85.81% of the total respondents (18.89% strongly agree and 66.92% agree) have agreed that the information literacy program organized for undergraduate students of the agricultural sciences of BHU is quite relevant to the academic purposes and is capable to improve the search ability, web searching, e-resource searching and downloading, searching the bibliographical details and citations etc. however, 08.65 % of the respondents were not sure about the statement while 05.51 % were disagreed to the statement. While analyzing the feedback for the relevancy of the competency of ILP to help in research/ project work/ laboratory practices, it is found that the 64.56% of the respondents agreed to the statement whereas 20.47% respondents were strongly agreed to the fact. 14.94% of the respondents are either disagreed or not sure about the statement.

7. Level of Satisfaction

To check the level of satisfaction by taking feedback from the participants should be the prime concern for any orientation programs, workshops or literacy programs to provide the improved, attractive and relevant information to the participants. Keeping in view of

the above, participants were requested to fill the well designed questionnaire regarding the level of satisfaction at the end of the program. Effectiveness and importance of the information literacy program is well reflected by this section of the feedback. Table 6 represents the analysis of the feedback against the level of satisfaction of the participants of the ILP.

Table 6 - Level of satisfaction

Statements	Strongly Satisfied	Satisfied	Not Satisfied	Not sure
Level of satisfaction against the information, resources and services provided through Cyber Library	25 (19.68)	87 (68.50)	09 (07.08)	06 (04.72)
Level of satisfaction against the e-content provided by BHU Library System	33 (25.98)	80 (62.99)	07 (05.51)	07 (05.51)
Level of satisfaction against the suitability of physical environment for the instruction	32 (25.19)	88 (69.29)	06 (04.72)	01 (00.78)
Level of satisfaction against the hands-on practices done under ILP	13 (10.23)	102 (80.31)	05 (03.93)	07 (05.51)

About 88.18 % of the total respondents were satisfied with the information, resources and services provided through Cyber Library in which 19.68% were strongly satisfied with the services of the Cyber Library while 11.82% of the respondents were either not satisfied or not sure. Most of the respondents (88.97%; 25.98% strongly satisfied and 62.99% satisfied) were satisfied with the e-content and services provided by the BHU Library system in his subject field for academic purposes while about 11% of the respondents were either not satisfied or not sure about the statement. While checking the level of satisfaction against the suitability of physical environment for the instruction, it is found that the majority of the respondents (94.48%; 25.19% strongly satisfied and 69.29% satisfied) were satisfied with the fact while only 5.52% of the respondents were either not satisfied or not sure. Similarly, 115 respondents out of 127 (about 90.54%; 10.23 strongly satisfied and 80.32% satisfied) were satisfied with the hands on practice session and help provided by supporting staff during the ILP while 03.93% of the respondents were rejected the fact and rest are not sure about the fact.

8. Conclusion

The revolutionary change in the education and research is found in the last decade due to technological innovations in computing, information communication technology, and web tools etc. The information explosion and paradigm shift towards electronic media and resources have changed the needs of the users as well as the responsibility of librarians. It also revolutionized the information systems and services worldwide. Information literacy program to the students is become the necessity for the optimum use of the available resource at higher education level. It needs strong place in academic programs. Librarians

are capable enough to develop the skills of Information Searching, Web Content Evaluation, Information Storage and Retrieval, and Information Handling Skills. The result of the study suggest that there should be provision of the short term course for developing basic computer handling skill especially for the first semester students because more than 30% of the users are not skilled in computer handling. Infrastructural development is needed to increase the online studies e.g. cyber library, e-course material, multimedia centre for audio-visual materials etc. The Analysis of the relevance of ILP and its level of satisfaction reveal that agricultural science students predominantly interested in short term training course like ILP on e-resources. It is needful to train the users concerning about search mechanisms, web 2.0 tools, consortia resources, ICT tools & techniques, etc. Development of subject gateway at institution level is quite helpful to the students as well as libraries to optimize the use of the e-resources. Availability of the online information literacy webpage is the demand of the present situation.

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Chemical Literacy in Farmers: *A Case Study of Bilaspur District*

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Abstract: Farmers are using different types of chemicals to increasing productivity of crops. Sixty eight (68) respondents were selected for study. The data collected were analyzed and presented in tabular format. The study shows that the majority of the farmers are within the age group of 41 to 50 years (39.70%) and most farmers are educated up to 8th standard (30.88%). Agro-chemicals information easily available for most of the farmers, but they have insufficient knowledge about that. They read the pamphlet and understand the printed information in chemicals. The majority of farmers getting regular information through salesman 50%, by television program 29.41%, friends and radio program 25%. They require knowledge about use of balanced quantity of chemicals. Farmers are uses less quantity of organic chemicals in farming on their own experience basis. Farmers are aware about bed effect of chemicals in human life.

Keywords: Chemical Literacy, Soil health, Information sources, Pamphlet, Farmers.

1. Introduction

Our life is based on Land, Water and Forest. Farmers are using different types of chemicals to increasing productivity of crops. Chemicals affected every aspects of life. Its effect on land deteriorating polluted environment and human health. Indian Government has recently launched a scheme to provide every farmer a **Soil Health Card** in a Mission mode. The card will carry crop wise recommendations of nutrients/fertilizers required for farms, making it possible for farmers to improve productivity by using appropriate inputs. Information literacy is a set of skill. ALA (1989) was defining their report to Information Literacy "to be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information." The study conducted to establish the extent of use of agro-chemicals and to assess the attitudes, knowledge and general awareness of the people of the health conscious posed by improper handling of agro-chemicals.

2. Agriculture Profile of Bilaspur District

Topographically Bilaspur District falls under the "Plains of Chhattisgarh". Bilaspur district consists of 8 tehsils. These tehsils are Bilaspur, Pendra, Pendra road, Kota, Takhatpur, Bilha, Marwahi and Masturi. There is 7 blocks and the total number of villages in the district is 898.The district has third rank in population of Chhattisgarh. Total population is 26, 62,077, wherein male 13, 49,928 and female 13, 12,149 live. Total Literacy rate is 71.59%, wherein male 82.77% and female 60.12%.

S.No.	Particular	Area and Crops
1.	Total Geographical Area	581.9 (000 ha.)
2.	Sole Cropped area	231.8 (000 ha.)
3.	Double Cropped area	57.4 (000 ha.)
4.	Total irrigated area	100.2 (000 ha.)
5.	Total Cropped area	289.2 (000 ha.)
6.	Annual rainfall	1164.6 mm
7.	Major crops	Rice, Maize, Pulses, Oilseeds, Soybean, Pigeon pea, Sesame, Groundnut etc.
8.	Major Horticulture crops	Tomato, Brinjal, Bhindi, Cauliflower, Cabbage etc.
9.	Major Fruits crops	Mango, Guava, Citrus, Papaya, Banana etc.

3. Objective

- To find out Socio-personal characteristics of farmers
- To find out Farmers are getting information which sources on chemicals
- To examine Farmers are understand the information printed in pamphlet
- To know the Farmers are aware about bad effect use of chemicals
- To find out which basis farmers are used chemicals
- To know the farmers are any problems use of resources

4. Methodology

The study was conducted in Bilaspur district of Chhattisgarh state. Villages are selected through Lottery method. The respondents (farmers) were selected using simple random sampling techniques. Village are select randomly, they are Kachar, Navagaon, dhaiorabhata, devkirari, guma, bartori,bilha and semriya. A structured questionnaire was designed and distributed among the 100 farmers and some farmers are interviewed. Out of 100 farmers, 68 were returned the questionnaire.

5. Agro-Chemical Profile

Agrochemicals refers to the broad range of pesticides including insecticides, fertilizers, hormones, herbicides, fungicides, and other growth chemicals and concentrated stores of raw animal manure (cow dung and poultry droppings). Globally, agro-chemicals are used for improving soil fertility and productivity. The use of agro-chemicals has increased production of crops, but pollution caused by chemicals has enormous potential for environmental damage, Land degradation and human health.

6. Data Analysis and discussion

6.1. Age group of respondent

S.No.	Age Group	Respondent
1	Less than 20 Year	-
2	21-30	6
3	31-40	21
4	41-50	27
5	Above 51	14

Table -6.1 result shows the distribution of respondents according to their age group, 8.82% are within the age of 21 to 30 years, 30.88% 31 to 40 years, 39.70% 41 to 50 years, 20.58% of them are 51 year and above, whereas less than 20 year are not found in the study time. It shows that the majority of the farmers are within the age group of 41 to 50 years. This study indicates that farmers within this age group of 41 to 50 are more active and engaged in farming of agriculture.

6.2. Education

S.No.	Education	Respondent
1	Illiterate	6
2	Primary School	15
3	Middle School	21
4	High School	11
5	Higher Secondary	8
6	Graduate	5
7	Post Graduate	2

Table -6.2 Results shows the distribution of respondents according to their education, 8.82% are Illiterate, 22.05% are Primary school, 30.88% are Middle school, 16.17% are High school, 11.76% are Higher secondary school, 7.35% are Graduate and only 2.94% are Post Graduate respectively. This study indicates that farmers are not interested to gathering of higher level of education.

6.3. Availability of Information sources of Chemicals

S.No.	Response	Respondent
1.	Yes	39
2.	No	29

Table-6.3 Shows that majority of respondents 57.35 % are easily available their information sources on agro-chemicals, whereas 42.64% farmers are not getting information sources on agro-chemicals.

6.4. Knowledge of Agro-Chemicals

Table -6.4 Shows that majority of respondents 67.64% are not knowledge about agro-chemicals, whereas only 32.35% are sufficient knowledge about agro-chemicals. Major agro-chemicals are as insecticides, fertilizers, hormones, herbicides, fungicides etc.

S.No.	Response	Respondent
1.	Yes	22
2.	No	46

6.5. Reading of Slip/Pamphlet along with Chemicals

S.No.	Response	Respondent
1.	Yes	56
2.	No	12

Table-6.5 Shows that almost respondents are read the pamphlet along with chemicals 82.35%, whereas 17.64% are not reading the pamphlet. Pamphlets are very useful, how to use of chemicals in crops.

6.6. 6.6. Understand the information printed in Slip/Pamphlet

S.No.	Response	Respondent
1.	Yes	47
2.	No	21

Table-6.6 Shows that the respondents 69.11% are understand the information printed in chemicals and 30.88% are not understand the information printed in chemicals. Those farmers are not understood the information printed on chemicals they are contact with other persons to understands the information. Their data is shown below table.

S.No.	Sources	No. of Contact
1	Family member	3
2	Friends	4
3.	Relatives	6

4.	Salesman	3
5.	Rural Agriculture Development Officers	2
6.	Progressive Farmers	4

Sources of getting information about Chemicals

S.No.	Sources	Regularly	Sometimes	Never
1	Extension workers	6	48	14
2.	Salesman/Traders	34	34	-
3.	Related Company	3	19	46
4.	Friends	17	47	4
5.	Relatives	9	48	11
6.	Progressive Farmers	15	50	3
7.	Through Radio programme	17	21	30
8.	Through Television programme	20	38	10
9.	Through Literature	4	27	37
10.	Advertisement	5	61	2
11.	Kissan Call Centre	2	15	51

Table -6.7 indicated that the majority of farmers are regular information getting to salesman 50%, followed by through television programme 29.41%, Friends and radio programme 25% respectively. It may be noted that farmers are sometimes get the information advertisement 89.70%, followed by progressive farmers 73.52%, Extension workers and relatives 70.58% and friends 69.11%. It was also observed that Kissan call centre 75%, related company 67.64% , through literature 54.41% and Radio Programme 44.11% were reported found Never getting information on chemicals by the respondents.

6.7. Information about use of balance quantity of chemicals

S.No.	Response	Respondent
1.	Yes	51
2.	No	17

Table -6.8 Shows that majority of respondents 75% are aware about use of balanced quantity of chemicals in farming and 25% are not known to use of chemicals. If the use of balanced quantity of chemicals in farming, whereas possibility to increase of crop productivity.

6.8. Using of Organic Chemicals

S.No.	Response	Respondent
1.	Fully	2
2.	Less quantity	47
3.	No	19

Table – 6.9 Reveals that the respondents 69.11% are less quantity of organic chemicals use in farming, 27.94% are no use of organic chemicals in farming and only 2.94% are fully adopted in organic chemicals in farming. Some organic chemicals are as Cow dung, Compost fertilizer, green manure and Vermicompost etc.

6.9. Which basis use of Agro-chemicals (Multiple responses)

S.No.	Response	Respondent
1.	Recommendation basis	30
2.	Experience Basis	46
3.	Guessing	8
4.	Need based	6

Table -6.10 Shows that the respondents 67.64% are use of chemicals their experience basis, 44.11% are use of chemicals to recommended into progressive farmers and Rural agriculture development officers, whereas 11.76% are guessing to use of chemicals in farming and only 8.82% are need based use of chemicals in farming.

6.10. Problem of use of resources (Multiple responses)

S.No.	Response	Number of Respondents
1.	Language Problem	16
2.	Lack of Information	42
3.	Illiteracy	5
4.	No	13

Table-6.11 Reveals that the respondents 61.76% are problems with lack of information to use of resources, 23.52% are problem of language to use of resources, 7.35% are problem of illiteracy and 19.11% are no problem to use of chemicals resources.

6.11. Information about Bad effect of chemicals

S.No.	Response	Number of Respondents
1.	Yes	56
2.	**No**	**12**

Table -6.12 Shows that the respondents 82.35% are knowledge about bed effect of chemicals in health, decrease land quality and environment and 17.64% are no knowledge to bed effect of chemicals.

7. Summary of Finding

- Most of the farmers are easily getting information sources into chemicals.
- The Majority of farmers are not knowledge about agro-chemicals.

- Most of the farmers read the pamphlet.
- The majority of farmers understand the information printed in pamphlet.
- Most of the farmers sometimes information getting into chemicals.
- Farmers are aware about use of balanced quantity of chemicals.
- Farmers are use of less quantity of organic chemicals.
- Most of the farmers are not use of information resources due to language problem and lack of information.
- The majority of farmers are aware about bed effect of chemicals in health, land degradation and environment.

8. Suggestion

- Farmers are gain more knowledge about agro-chemicals through progressive farmers and Rural Agriculture development officers and Literature.
- Present time is information age. Information is available of various sources. Farmers are getting various chemicals Information regularly to get good result of farming.
- Farmers are mostly use of agro-chemicals in farming, but organic chemicals are no use in agriculture. Therefore farmers will be motivated to use of organic chemicals in farming.

9. Conclusion

Although Agricultural development rate gradually increases in Bilaspur District Chhattisgarh state, but for accountable growth our Information Resources like 'KISAN SUCHANA CENTRE' ,Proper Weather forecasts, Soil management, Market Information, Insects forecasts, post harvest technology can play important role in betterment. 55% of land having less retention power, so soil must be treated or crops should be changed accordingly. Irrigation & proper water management possible by 'RAINWATER COSERVATION' awareness about water label significance. The study concluded that farmers are aware about chemicals use in farming but they are not gathering chemical information in various sources regularly, so they are getting information about time to time.

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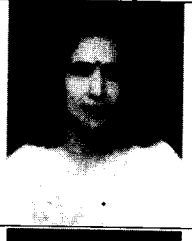
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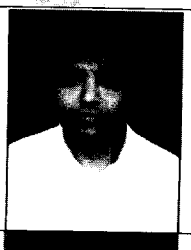
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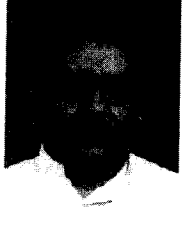
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E-books in Central University Libraries of Uttar Pradesh

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Abstract: In the globalized world, universities play a pivotal role in the development of human resources. In this context, the University Libraries (which have become synonymous to the universities) have emerged as the hub of learning for higher education and provide facilities and infrastructure for research and specialization. E-resources are the necessity in the ICT era. In the present study, an attempt has been made to describe the status, merits/demerits of e-books in the central university libraries of Uttar Pradesh state.

Keywords: Central University libraries, E-books, Uttar Pradesh.

1. Introduction

University libraries are an essentially twentieth-century phenomenon. Through their origins in the western world to indeed go back many centuries, in their present form they have evolved only in the last five or six decades. A University Library caters to the needs of the different groups of the academic community-students, teachers and research workers-for furthering their educational progress. It is an adjunct to the academic institution to which it is attached, and it contributes to the attainment of the objectives for which the institution has been established. E-books may be defined as a text in digital form, a book converted into digital form, digital reading material, a book in a computer file format, an electronic file of words and imagestobe displayed on computerscreen, or read on a computer over a network, or viewed on a desktop/notebook/dedicated portable device, or read on all type of computers, or formatted for display on e-book readers. E-book is an electronic text regardless of size or composition, made available electronically or optically, for any device, hand-held or desk-bound that includes a screen. E-books are printed in light instead of link.[1] As per UGC, four central universities (namely Aligarh Muslim University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University and University of Allahabad) exist in the state of Uttar Pradesh.[2]

2. **Aligarh Muslim University, Aligarh:** In 1920, Aligarh Muslim University was originated as a result of efforts made by Sir Syed Ahmed Khan. The jurisdiction of the university extends over a radius of twenty five Kms. from the university mosque. The university has three campuses (at Aligarh, Malappuram and Murshidabad), twelve faculties, ninety five departments, five institutes and thirteen centres under its jurisdiction.[3]

2.1. **Maulana Azad Library:** The library of the Aligarh Muslim University, called Maulana Azad Library is one of the largest university libraries of the world which possesses about 19,00,000 volumes of books and journals in hard and soft copies. Maulana Azad Library is Central Library of the university with about 100 sister libraries

(College/Seminar libraries). It is a world-famous repository of rare manuscripts and books in Urdu, Persian and Arabic languages. The library possesses about 16000 rare and invaluable manuscripts including several royal decrees of Mughal emperors namely Babur, Akbar, Shahjahan, Aurangzeb, Shah Alam, etc. and also the translation of Sanskrit works in Persian such as Bhagwad Gita, Mahabharat and Leelawati. The Mughal emperor Aurangzeb's sword and the coins of Mughal period are also preserved in the library. The main sections of the library are oriental and manuscript section, conservation and binding section, acquisition section, technical section, periodicals section, computer section, circulation section, research and reference section, gifts and exchange section, and Braille section.[4]

2.2. **E-books collection:** The library has the collection of nearly1, 20, 000 e-books. The broad subject areas covered in e-books are engineering and technology, pure and applied sciences, social sciences, humanities, and arts. The collection is comprises of leading publishers i.e. Cambridge University press,Oxford University Press, Taylor and Francis, Pearson, Springer, Blackwell, etc. Recently 122 titles of Cambridge University Press, 42 titles of Taylor and Francis and 757 titles of miscellaneous publishers have been added in the collection.[5]

3. **Babasaheb Bhimrao Ambedkar University, Lucknow:** Babasaheb Bhimrao Ambedkar University was established in Lucknow in 1996 as Central University (By an Act of Parliament 1994) with the objects of promoting advance knowledge by instructional and research facilities in science, key and frontier areas of technology and other allied disciplines. This University is to promote professional studies, Inter-disciplinary studies, and research and development activities.[6]

3.1. **Central Library:** The central library of the university was established in January 1998. The library inherited approximately a thousand reference books acquired by earlier arrangements and a thousand books in Hindi donated by the UP Bhasha Sansthan programs. In keeping with the vision and mission of the university, the library has been established "to promote knowledge generation and application through its effective dissemination". The library, therefore, acts as the main learning resource centre of the university to supplement educational and information needs of the faculty and students of our university and provides information services and facilities to meet the requirements of the university's teaching, training and research programmes. The library services are also extended to non-teaching staff and visitors.[7]

3.2. **E-books collection:** The central library is planning to procure e-books from well known publishers like Oxford University Press, Taylor and Francis, Springer, Pearson, etc. Recently the library will be shifted in new building with ICT infrastructure.

4. **Banaras Hindu University, Varanasi:** Banaras Hindu University is an internationally reputed temple of learning, situated in the holy city of Varanasi. It was founded by Bharat Ratna Pandit Madan Mohan Malviya in 1916. The area of the campus is nearly 1300 acres. The South Campus of the university is located at Barkachha, Mirzapur district.[8]

4.1. Sayaji Rao Gaekwad Library: The main library of the university was established in 1917 and shifted to its present majestic buildingin 1941 built with the munificent donation from Maharaja Sayajirao Gaekwad of Baroda. Presently the BHU library system consists of Central Library at apex and 3 institute libraries, 8 faculty libraries, 25 departmental libraries, with a total collection of over 13 lakh volumes to serve the users.[9]

4.2. E-books collection: The library has the collection of nearly 42,000e-books. The collection is comprises of well known publishers like Sage, Springer, Taylor and Francis, Cambridge University Press, Pearson and McGraw-Hill.[10]

5. University of Allahabad, Allahabad: Established in 1887, the University of Allahabad is the fourth oldest University in India.Organized in several Faculties, Institutes, Centres, Constituent Colleges and several other units, the University conducts teaching and research in many areas of human concern, also including courses relevant to today's fast changing scenario in the realm of knowledge. As a premier institution of higher learning the University of Allahabad is committed to academic excellence.[11]

5.1. Central Library: The Central Library of the university wasestablished in 1916. In 1946-47, Dr. S. R. Ranganathan, father of library science in India, was invited to suggest ways and means of improving the library. The present library building was constructed in 1973. The present library building is more spacious and has potential for further expansion. The old library building is now occupied by the office of the Registrar, as well as Accounts and General section of the University. The total collection of the library is nearly seven lakh.[12]

5.2. E-books collection: The library has a collection of 2155 e-books comprising of leading publishers like Pearson, Oxford university Press, Taylor and Francis, etc. The library is planning to procure more e-books in near future.[13]

6. Merits of E-books

- Space: E-books take up less space as compared to traditional libraries. When the library had no space for extension digitization is the only solution.
- Update Cost: In the case of a printed book, a publisher will probably have to make the minimum production of 500 copies at a time while e-books may be easily updated at lower cost.
- Shipping Cost: When we deal with electronic format of a book, we may simply download them from the web. There is no need to ship any physical product around the globe and no need to wait as long as we normally would when ordering printed books.
- Environment friendly: E-books are more environments friendly because they help us to save trees and help reduce pollution from pulp mills.

- Hot-linked References: Easy links to websites and other references can be placed in an electronic format of a book.
- Availability: E-books can be accessed by unlimited number of users at any time, 24 hours a day and 365 days of the year.
- Preservation and Conservation: An exact copy of the original can be made any number of times without any degradation in quality.

7. Demerits of E-books

- Not convenient: No one can to sit in-front of a computer screen for long hours just reading an e-book, right? Aside from gaining weight, sitting for prolonged periods of time can cause muscle strain, backache, and even an elevated cholesterol level.
- Speed of access: As more and more computer are connected to the Internet its speed of access reasonably decreasing.
- Initial cost: The infrastructure cost i.e. the cost of a hardware, software, leased lines, etc. for reading the e-books is very high.

8. Summing up

From the above discussion, we found that Aligarh Muslim University has highest collection of e-books and University of Allahabad has the lowest collection, while Babasaheb Bhimrao Ambedkar University has none collection of e-books. The choice of the users to use e-books is based on the availability, easiness of access and the sound collection. The publication of e-books on commercial basis is gaining momentum in our country. E-book has many benefits such as hyper linkage, cutting, pasting, preparing notes and multiple simultaneous user access but more much is needed for adoption by users, librarians and publishers.

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Effectiveness of Consortium for e-resources to find information of students: *A case study of University of Rajasthan, Jaipur*

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Abstract: The roles of e-resources are increasing day to day in the 21th century. Today various e-resources are available in different fields like forum for research sharing in astronomy and astrophysics, UGC info net, consortium for e-resource in agriculture (CeRA), INDEST-AICTE consortium etc. The UGC info net is developed by university grant commission for facilitating access to scholarly information to the stake holders in the university library system. Present paper provides an account of the utilization of UGC-info net by students of master's degree at various departments of University of Rajasthan, Jaipur. Data has been collected through questionnaire and result shown in tabular format. Users awareness about UGC Info-net, purpose of use, search strategies used to access articles and effectiveness of consortium for e-resources to find information of users have been investigated. Some suggestions have also given with the need for promoting use of UGC-Info-net among academic community to support academic and research articles.

Key Words:- Consortium, e-resources, academic, University of Rajasthan, Jaipur.

1. Introduction

The present era is the era of digital information systems and digital information is available for access at any time and any where. Today libraries are shifting their role from the custodian of traditional information resources to the provider of services-oriented digital information re-sources. Today e-resources are the more beneficial to users and available on free and consortium basis. The journals and magazine are the key sources of information constituting core of any discipline like engineering, agriculture, medical etc. These are the carriers of the primary information related to recent research and development in concerned descriptive. With explosion of knowledge and growth of literature, concept of e-journal came during last decade. Due to involved of the ICT in libraries, the numbers of e-journals have also grown considerably.

These have more succeeded to gain popularity among academic users due to their merits and print journals due to limited institution library budget, the core journals of various branches/discipline to be found of very high cost so libraries face the problem of financial dearth similarly the information needs and exceptions of users are also increasing day to day. To understand the importance of e-journals, various apex bodies like UGC, AICTE, IACR etc. take initiative to concept of consortium for easy and low price e-journals for

educational & research and development institutions. UGC also established consortium for e-resources in Indian University, R&D and various other institutions.

2. About University of Rajasthan

University of Rajasthan is state university and one of the oldest universities in the state of Rajasthan located in the city of Jaipur. The university was set up on 8th January 1947 as the University of Rajasthan and was given its current name in the year 1956. It was the last (21st) University that was set up in pre-independent India. Dr. G.S. Mahagani was the first Vice Chancellor of the University.

2.1. Rajasthan University Library

Rajasthan University library was established in 1949 with 1500 books in small portion. New building was completed in 1958. The library is near the entrance gate of the university on its left side. The total library area is about 10,000 sq. mtr. The library holds a collection of more than lakh documents, which includes books, bound journals, theses reports, microforms etc. The library acquires current journals besides this the library provides access to e-journals available through UGC-Info-Net e-journals consortia. Various departments of the university also have their departmental libraries. The Rajasthan University library provides a variety of library services like user consultation and lending facilities reference services, reprographic service, Inter library loan service, data base search services on line search option, Information's display and notification, internet and e-mail facility, CD-Rom, database search services, e-journal accessibility etc. Presently Prof. N. D. Mathur is the director of library & Dr. M.K. Srivastava is the Deputy librarian of the university library. Most of the working day university library opens from 9 am to 9 pm daily except university holidays & Sundays.

3. Objective of the Study

Following objectives of the present study:

- To know students awareness about UGC-Info-net and the use of consortium for e-resources to find information.
- Source of information about UGC-Info-net and place of accessing consortium.
- Different-different search strategies used by students to access articles.
- Effectiveness of consortium to find information needs of users.
- To know the problems being faced by students in using UGC-Info-net.
- To give some suggestions for promoting effective utilization of consortium.

4. Research Methodology and Limitation of the Study

A Good research methodology can find good result in the study. In this study a survey method was used for result. A well structured questionnaire design in context of objective

of the study. In the University of Rajasthan have faculty of arts, education, fine arts, law, management, social science, technology, business administration etc. Each faculty has many departments and PG courses. So students of M.A. and M.Sc. were selected for the study. Copies of questionnaire were personally administered to students. 250 questionnaires were distributed to students on their visit to library. 223 questionnaires were received back as complete and relevant for analysis. 3 questionnaires were rejected due to insufficient information. 220 questionnaires were selected for analysis of the study. The data has been presented in tabular form. The study to focus on the PG students of University of Rajasthan Jaipur only. The study has limited to University of Rajasthan only.

5. Analyses and data interpretations

Table 1 - Distributed Questionnaire

S. No.	Total Distributed Questionnaires	Back Received	Rejected	Selected for Study
1	250	223	03	220

Table 2 - Awareness about ICT Based Services in Libraries

S. No.	Aware ICT Based Services in Libraries	Respondents	Percentage
1	Yes	195	89%
2	No	25	11%
	Total	220	100%

Table 2 shows the awareness among students about ICT based services in libraries. Majority 195 (89%) of students known about resources and 25% students unknown with these resources.

Table 3 - Place to Access the e-resources

S. No.	Place to access the resources	Respondents	Percentage
1	University Central Library	176	80%
2	Departmental Library	23	10.45%
3	Computer Centre	6	2.73%
4	Other Place	15	6.82%
	Total	220	100%

Table 3 States about place to access the e-resource. Majority of respondents (80%) were access the resources at the central library. Departmental library 23 (10.45%). Result shows that central library is the best choice of the students.

Table 4 - Time spent on UGC-Info-net (weekly)

S. No.	Time	Respondents	Percentage
1	One Hour	38	17.28%
2	1-2 Hours	116	52.73%
3	2-5 Hours	48	21.81%
4	More then Hours	18	8.18%
	Total	220	100%

Reveals of table 4 shows that majority of respondents (52.73%) were spent 1-2 hours weekly on the access of UGC info-net. It has been observed that 18 (8.18%) respondents spent more then 5 hours, 21.81% spent 2-5 hours and 17.28% were spent only one hour weekly.

Table 5 - Purpose of using UGC-Info-net

S. No.	Purpose of using UGC Info-net	Respondents	Percentage	Preference
1	Improving subject knowledge	132	60%	II
2	For Research Work	98	44.54%	IV
3	To Prepare for Exam Work	86	39.09%	V
4	For dissertation Work	178	80.90%	I
5	Finding quick Information	112	50.90%	III
6	Publishing Articles etc.	46	20.90%	
	Any Other	30	13.63%	

(Given to choose more then one options)

Table 5 stated about the purpose of using UGC-Info-net consortium. Majority of students (80.90%) use consortium to access information for preparing their dissertation work. It is important to mention here that PG students of all departments are required to do research work and accomplish dissertation as a part of PG level of the university. 60% students use for improving their subject knowledge, 50% used for finding quick and abject information 44.54% students for research work. It is clear those 20.90% respondents use for publishing articles in journal magazines and 13.62% students.

Table 6 - Sources of Information about UGC-Info-Net sources of Information

S. No.	Sources of Information	Respondents	Percentage
1	University Website	09	4.09%
2	Through Teachers	28	12.72%
3	College Use	19	8.65%
4	Library Staff	158	71.81%
5	Notice Board	6	2.73%
	Total	220	100%

Result of table 6 describes that library staff is providing awareness about UGC-Info-net digital library consortium. About 71.81% students came to know about UGC-Info-net consortium from library staff. About 12.72% students were informed by teachers and 8.65% by colleagues. It can observe that the role of library staff is very important to increase awareness about library resources.

Table 7 - Effectiveness of UGC-Info-Net Digital Library Consortium

S. No.	Effectiveness of UGC-Info-Net	Respondents	Percentage
1	Highly Effective	52	23.64%
2	Effective	160	72.72%
3	Not Effective	8	03.64%
	Total	220	100%

It is reveal from table 6 that majority (72.72%) of students said that UGC-Info-Net is effective and useful for their information needs. Further more 52 (23.64%) respondents rated the consortium as highly effective for their academic and research purpose. Only 8 (03.64%) users expressed dissatisfaction with the consortium and considered it not effective.

Table 8 - Opinion about features of UGC-Info-Net

S. No.	Features of UGC-Info-Net	Respondents	Percentage
1	Days of Access	176	80%
2	Up to Date Information	140	63.63%
3	Relevant Information is Sufficient	110	50%
4	Access Through University	80	36.36%
	Total	220	100%

It is evident from table 8 that majority of student liked UGC-Info-net as easy to access. About 63.63% respondents use consortium because it provides sufficient relevant information. Consortium can be accessed every time.

Table 9 - Problems Faced in Using UGC-Info-Net

S. No.	*Problems Faced by Users*	*Respondents*	*Percentage*
1	Lack of Training	106	48.18%
2	Lack of IT Skill	83	37.73%
3	Lack of Infrastructure	62	21.18%
4	No Faced Problems	126	57.27%
5	Slow Speed of Internet	92	41.81%
6	Lack of relevant Journal	22	10%
	Other	13	5.90%

(Given to choose more then one options)

6. Major Findings

- Majority (89%) of respondents aware of ICT based services in libraries.
- Most of the students are access UGC-Info-Net digital library consortium at university central library.
- Majority (52.73%) of the respondents are 1-2 hours in week spend on the UGC-Info-Net.
- About 80% respondents using consortium for dissertation work and 60% for improving subject knowledge.
- 71.81% students approached to UGC-Info-Net consortium with the help of library staff.
- 72.72% students of University of Rajasthan satisfy and effective with UGC-Info-Net consortium.
- 23.64% respondents are also highly effective with consortium.

- Most of the students likes to consortium to it easy to access features.
- Majority of respondents want to take training of the UGC-Info-Net.
- About 57.27% students did not have faced any problems to access of the consortium.

7. Suggestion & Recommendations

The UGC-Info-Net digital library consortium is gold for Indian Universities. In this study many students were given suggestions for improvement of the consortium services like more number of journals should be added to consortium particularly in the subjects of humanities and internet speed should be increased. In Rajasthan University more need for trained Staff. No. of computer for access e-recourse should be increased; a good environment of digital library also should be developed in these place. University library authority should be arranged for new comers of PG level and research scholars for better use of consortium. If can be possible an orientation program about library and UGC-Info-Net digital library consortium. Many respondents faced problems to access the e-recourse, so the training can only one solution of this problem.

- Short term training program on use of e-resources should be organized by university library.
- Awareness of resources of UGC-Info-Net should be generated by authority.
- More computers should be increased in the digital library for easy to access.
- The Information of available resources of the UGC-Info-Net should be provided on the website of the university.
- University library should be continuing user education programme.

8. Conclusion

UGC-Info-Net digital library consortium is a boon for Indian academic library. It provides a single window access scholarly journals in academic & research, community in higher academic institution in India without any financial burden. Study Brought for Word that All Respondents were aware about this immense effort of UGC and all of them were utilizing its services to access information. In view of this strong of respondents and heavy use consortium the number of computers with the internet connectivity needs to be increased in library. Practical training to students for using consortium should be start as soon as possible for promoting use of UGC-Info-Net.

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E-governance and Information Literacy: *Governments Initiatives in India*

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Abstract: Now the information is available through various forms, channels and formatter such as internet, libraries, information centres, clearing houses, national and international information systems and services, community resources, special interest organizations, and media, and increasingly, information comes to individuals in unfiltered formats, raising questions about its authenticity, validity, and reliability. The e-governance and information literacy programs are most effective and innovative initiative to empowering the rural folk. This paper presents an overview of information literacy and e-governance programs initiated by various State and Central Government to empower the rural folk in India.

Keywords: Information Literacy, e-governance, Government initiatives

1. Introduction

Now information is available through multiple media, including graphical, aural, and textual due to exponential growth and development of ICT, and these pose new challenges for individuals in evaluating and understanding it. An increasing number of government initiatives focused on the implementation of online services are being established in several countries. In every country the government has some sort of e-Governance presence. Developed Countries e-Government as applied to service delivery might be criticized for disempowering citizens by reducing their opportunity to influence services and service delivery the same measures in Less Developed Countries might be seen as a very positive development in that it may represent a significant extension of service provision to the population and the use of this implementations for service delivery to modernize and rationalize the public sector administrative and technological infrastructure.

2. E-governance: What and Why?

Many developing countries are under the considerable international and national pressure to review and update their processes. Citizens are also asking State and Central government to provide better, faster and to extend their information and service offering to rural areas. As a result of these pressures, government of India introduced the Right Information Act (RTI) in 2005.

The term government usually refers to formal institutions for the nation-state. It is a set of institutional forms that hold administrative monopoly over a territory with demarcated boundaries and borders, its rules sanctioned by law. It refers to the formal and institutional processes that are used to maintain common order and to facilitate collective action within a geographical boundary (Stoker, G)

Governance is a broader and more inclusive term than government in that it encompasses the activities of a range of groups – political, social and governmental – as well as their interrelationships (Stren & Polese, 2000). The term *governance* includes the relationship between government and state agencies on the one hand and communities and social groups on the other and is not tied specifically to a place. It refers to the role of citizens in the policy process and how groups within a society organize to make and implement decisions. It tells a story of the processes of differentiation, networks, trust, diplomacy and coalition building (Rhodes, 1997).

E-government is defined by the United Nationals as "A government that applies ICT to transform its internal and external relationships. ICT allows a government's internal and external communication to gain speed, precision, simplicity, outreach and networking capacity, which can then be converted into cost reductions and increased effectiveness. ICT also enables anywhere and anytime access (24/7), transparency and accountability, as well as networked structures of public administration, information management, knowledge creation and dissemination. In addition, it can equip people to participate in an inclusive political process that can produce well-informed public consent, which is increasingly, the basis for the legitimacy of governments.

Heeks (2001) identifies three main domains of e-governance, based on taxonomies proposed by Ntrio, they are as follows:

- E-administration: improving government processes
- E-Services: connecting individual citizens with their government
- E-society: building interactions with and within the civil society

The main purpose of the e-administration is to improve the internal workings of the government by cutting processes costs, managing process performance, creating strategic connections within government bodies, and creating empowerment. E-services initiatives focus mainly in improving the relationship between the government and its citizens by increasing the information flow between them. Which is notably, involves two way communication and improving the service levels of government towards its citizens. E-society initiatives extend the previous e-services domain by focusing on institutional stakeholders, such as private sector service providers, other public agencies, and not-for-profit and community organizations.

3. Digital Divide: Role E-Governance and Information Literacy

Today's digital divide can be attributed in part to geography, employment, age, and gender, with primary dependence on income and education. "Easy access to ICT enables people to become richer, and therefore more able to afford still newer technology; it is, moreover, the already well educated take up lifelong learning opportunities and who, in general, get better services. In short, the educated information rich become richer and the less educated information poor become poorer (OECD, 2001)."

This gap is further delineated among developed, developing, and undeveloped countries based on their ability to provide Internet connectivity and promote digital literacy. The gap is magnified in undeveloped countries where learning and cultural limitations are extremely challenging. However, lack of a developed infrastructure does not represent the sole reason for an unconnected population. Many times the lack of connectivity can be based on information literacy, which keeps some groups underserved. Therefore the e-governance and information literacy programs certainly bridge the digital divide some extent. The government and NGO initiatives already proved bridging the digital devide through various e-Goverance and information literacy programs in India for example in Kerala both government and NOGs are actively involving in establishment of many communication information centres to bridge the digital devide and best successful example is M.S. Swaminathan Research Foundations in Pondicherry.

4. Major Information Literacy and E-Governance Programs India:

E-government has been broadly defined as the use of Information and Communication Technologies (ICTs) to improve the internal processes of government and the delivery of information and services to citizens of India. The Government of India initiated several citizen friendly programs to empower the peoples. The following are the popular programs are initiated by Govt. of Indian under various ministries and departments.

- **Sarva Shiksha Abhiyan**: (http://ssa.nic.in/) 2001-2010 India's Flagship Programme to achievement of Universal Elementary Education in India, Department of Elementary Education and Literacy, MHRD, Government of India, New Delhi.
- **District Primary Initiated** in Universalisation of Upper Primary Education Assam, Education Programme 1994 Haryana, Karnataka, Kerala, M.P., Maharashtra, (DPEP) Tamilnadu, Gujrat, Andra Pradesh, Himachal Pradesh, Orrisa, West Bengal, Uttar Pradesh, Rajasthan.
- **National Literacy Mission: (**http://www.nlm.nic.in/**)** 1988 National Literacy Mission Programme is launched by Govt. of India, the aims is to make 80 million adults in the age group of 15-35.
- **TARA Akshar: (**http://taraakshar.com/**)** 2005-06 developed our own Hindi literacy program that would take a very short time with minimal dropout.

- **CBFL 'computer-based making:** (http://www.tataliteracy.com/) this possible is a remarkable initiative from functional literacy' the Tata Group that has changed the lives of thousands of adults in different parts of India.
- **Portal of Government:** (http://india.gov.in/) this section introduces you to the Government of India, its origin, and the governance process being followed in the Country.
- **Rajeev Gandhi Computer Saksharta Mission:** (http://www.rgcsm.co.in/index1.html) the main function of the society is to provide higher technical education in nominal charges for every group of society of Urban & Rural areas all over India and get success in computer revolution which is the main dream of Indian Govt. This mission is run by the "Shri Rajeev Gandhi Computer Saksharta Society" all over India.

5. Other Initiatives

E-Governance in India has reached at the "Transactional" stage and providing various services to citizens, business and government organization, offered by Central Government agencies and different State Government departments. National e-Governance Plan (NeGP), initiated in 2006, attempts to make all Government services accessible to the common man in his locality, through Common Service Centers (CSC) being set up across India. As on April 2011, about 94,786 CSCs was operational with different brand names and started delivering services to people. As the rural landscape in India is set to take the advantage of the flourishing ICT initiatives, by various institutions, more specifically the CSCs. e-Governance movement in India by providing one stop information access to available online citizen services, state specific e-Governance initiatives and awareness about online legal services, mobile governance, RTI etc.

- **Common Services Centre (CSC):** (http://www.csc-india.org/) establishing 100,000 Common Services Centers in 600,000 villages of India by Department of Information Technology; Infrastructure Leasing & Financial Services Limited.
- **Community Information Centers (CIC):** (http://www.communityinformationcenter.org/) 10 States (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Jammu & Kashmir) by Ministry of Development of North Eastern Region (DONER); National Informatics Centers.
- **e-Choupal:** (http://www.echoupal.com/) 6 States (Madhya Pradesh, Karnataka, Andhra Pradesh, Uttar Pradesh, Maharashtra and Rajasthan); 31,000 villages. By International Business Division of ITC Limited.
- **Bhoomi:** (http://bhoomi.karnataka.gov.in/) This project is sponsored jointly by Revenue Department; National Informatics Centers of Karnataka and Ministry of Rural Development, Government of India. Under this project "Bhoo Dhakilegala Malige". 6.7 million Farmers and 20 million land records spread over 30,000 villages and is spending about 180 million rupees on the land-records, in 176 talukas of

Karnataka have been computerized. This system works with the software called BHOOMI, designed by National Informatics Center, Bangalore (e-Governance).

- **Gyandoot:** (http://gyandoot.nic.in/) 1 District (Dhar district of Madhya Pradesh state) by Gyandoot Samiti & National Informatics Centers. It helps to learnt that due to lack of information regarding the current and prevailing the variety-wise current and prevailing rates of prominent cereal crops of the district like wheat, gram, soybean, e.g. the volume of incoming agricultural produce, previous rates etc. are also provided on demand and it give facilitate, Detailed Information regarding over a hundred government programmes is now available on the Gyandoot Intranet.
- **TARAhaat:** (http://www.tarahaat.com/) after the all-purpose haat (meaning a village bazaar), the impact of TARAhaat will be felt on several different levels: family, agriculture, and youth. For the family this venture provides a window to the world, enabling them to connect locally to international information, health, matrimonial, and mailing services. The farmer benefits are through weather forecasting, procurement services, and sales negotiations. The scope of TARhaat, are 4 States (Punjab, Haryana, Madhya Pradesh, Uttar Pradesh) Development Alternatives.
- **Village Knowledge Centers (VKC):** 600,000 villages across India by the year 2007 National Alliance for Mission 2007, NGOs, by Department of Information Technology, Ministry of Panchayati Raj, Ministry of Agriculture, National Bank for Agriculture and Rural Development, etc. It serves as information dissemination centre providing instant access to farmers to latest information/ knowledge available in the field of agriculture, starting from crop production to marketing. The knowledge centre will be connected to a central studio using technologies viz. WiMax/VSAT/leased line (Govt. India 2011)
- **The National e-Governance Plan (NeGP):** (http://www.mit.gov.in/content/national-e-governance-plan) It is a holistic view of e-Governance initiatives across the country, integrating them into a collective vision, a shared cause. Around this idea, a massive countrywide infrastructure reaching down to the remotest of villages is evolving, and large-scale digitization of records is taking place to enable easy, reliable access over the internet. The ultimate objective is to bring public services closer home to citizens, as articulated in the Vision Statement of NeGP (MIT-G, 2011). Make all Government services accessible to the common man in his locality, through common service delivery outlets, and ensure efficiency, transparency, and reliability of such services at affordable costs to realize the basic needs of the common man".
- **Rural e-Seva:** (http://www.esevaonline.com/) **1** District (West Godavari district of Andhra Pradesh state) by West Godavari District Administration.
- **The Akshaya Project:** (http://www.akshaya.kerala.gov.in/) was started as an e-literacy project in 2002 in Malappuram district of Kerala. It is an effort on the part of the IT department to 'bridge the digital divide'. By the end of the 3-year project, organizers hope to have set up a network of 6000 information centers that have the potential to impart basic IT literacy to at least one member in each of the 6.5 million

families in Kerala. The project has helped in taking IT to the remotest part of Kerala. Training provided by Akshaya e-Centers not only familiarizes people with the basics and scope of IT but also ensures hands on skill in operating a computer. The project aims at providing e-literacy to one person in every family (Dataquest, 2010).

- **Fast, Reliable, Instant, Efficient Network for Disbursement of Services (FRIENDS): (**http://kerala.me/inf friends.php**)** is a "Single Window Mechanism" where citizens have the opportunity to pay all taxes and other financial dues to Government. The project was launched in Thiruvananthapuram in June 2000 and was replicated in other district headquarters during 2001/2002. This centers offer a one-stop, front-end, IT-enabled payment counters facility to citizens to make all kinds of government payments in the Trivandrum, Kerala in South India.
- **VoGRAM: (**http://ece.iisc.ernet.in/vogram/**)** an application that allows a person to send a voice telegram could change the communication scene by connecting India's largely rural and illiterate masses. Scientists at the Indian Institute of Science (IISc) have sold the license for the application to a private company that would enable the emotion of voice to be conveyed in a telegram. "VoGram" would improve connectivity in rural India, where some 85,000 post offices without a telephone connection cater to the needs of the people.
- **UNICEF Initiatives**
    - Sisu Samarakshak: (http://unicef.org.**)** Integrated Information for Early Childhood Development(I2ECD)
    - Collaboration with Bridges to the Future (BFI)/Intentional Literacy Institute
    - Data Collection and Research
    - Survey and database of ICT Projects in South India Relevant to UNICEF Objectives
- **Kuppam: An 'I-Community' In the Making:** Kuppam, Andhra Pradesh government, constituency, browser-based Web services to access government benefits, agricultural information, educational resources and healthcare records, are being test-run. The Andhra government's thrust to harness IT as a socio-economic driver was bearing fruit. Auxiliary medical personnel like midwives, who make door-to-door calls to the 64,000 houses in the five villages that make up this southern mandal in Chittoor district, routinely enter data about births, deaths, immunizations done, family planning measures adopted, etc, into a personal computer at the nearest Primary Health Centre (PHC).
- **GRAMSAMPARK: (**http://chandigarh.gov.in/egov_gsmpk.htm**)** Gramsampark' has been developed in the state of Madhya Pradesh. A complete database of available resources, basic amenities, beneficiaries of government programmes and public grievances in all the 51,000 villages of Madhya Pradesh. Information is now just a mouse click away for anybody interested in the development of Madhya Pradesh's villages. Gramsampark has three sections Gram Paridrashya (village scenario), Samasya Nivaran (grievance redressal) and Gram Prahari (village sentinel). An 11-

point monitoring system has been put in place where programmes are monitored village-wise every month.

- **One Village One Computer (1V1C):** (http://www.indiatogether.org/2004/jun/wom-onevill.htm) the project 'One Village One Computer' is for introducing IT solutions in backward areas of Maharashtra, a state in India. This center will act as an information + communication + education center for that region. The center will be run by the local youth, will collect information relevant to the local population and have local participation at every step.
- **S &T Applied to Rural Transformation (START):** The program provides one technology-based institution each in Madhya Pradesh, Chattisgarh and Jharkhand, a CSIR laboratory (RRL Bhopal) and an NGO (SRI Ranchi) act as pivots and mother centers and support a network of twenty block level technology resource and dissemination centers. These centers in turn, provide interface for communities, SHGs and NGOs to acquire and utilize technologies relevant to their needs.
- **Rural Relations: Spreading Computer Literacy in Schools:** Pradeep Lokhande as popular a walking talking *'encyclopedia of rural India'* or just a *'lover of Indian villages'*. He has personally visited over 4,000 villages in India, recorded their populations, markets, education systems, consumer habits, and can rattle off these figures just like that. That's creditable. He has used his travels to learn about the great digital divide between rural and urban India and is working towards taking computers to 28,000 village schools. Since February 2000, he has already installed 102 used computers, the first one being at the Mandardev village school in Maharashtra. Its activities span 28,000 villages in Maharashtra, Gujarat, Madhya Pradesh, Rajasthan and Uttar Pradesh and giants like P&G and HLL have hired his services.
- **Fully Computerised Gram Panchayat:** The Belandur gram panchayat is the first in Karnataka to computerise its administration, handling the recording of property details, tax collection, data management and so on. The project unique is that it is an independent initiative funded by the village development committee (VDC). However, this prime water source is being polluted by the large-scale dumping of sewage from Bangalore city, an issue of major concern here.
- **AKASHGANGA:** (http://www.nddb.org/aboutnddb.html) it means 'The Milky Way', is being used at the Dairy Cooperative Society (DCS), It is summarized as, Speedier collection of milk and Measuring weight of milk with Electronic Weighing Scale, Fat testing using Milko Tester, Capture of unique member ID by the PC software, Printing of pay slip, with all this data and the amount to be paid, Lower prevalence of corrupt practices, Maintenance of DCS accounts is regularized and on time.
- **Smart Cards by SKS:** (http://www.sksindia.com/) Swayam Krishi Sangam (SKS) is a Grameen Bank replication MFI that serves very poor women in highly drought-prone Deccan region in India. SKS operates four branches in 102 villages. Since its inception in 1998, SKS implemented common efficiency-building methods such as

streamlining products and introducing a computerized MIS, to make their operations most cost-effective. But, as with many other MFIs, eventually these methods hit the "efficiency wall". Since SKS delivers very small loans to poorest of the poor, and since loan officers face high travel costs to reach remote villagers.

- **Warna Wired Villages: (**http://www.apdip.net/resources/case/in18/view**)** the key objective of the project is to demonstrate the effective contribution of an IT infrastructure to the socioeconomic development of a cluster of 70 contiguous villages around Warna Nagar in the Kolhapur and Sangli Districts of Maharashtra. **Information Village Research Project (MSSRF): (**http://www.mssrf.org/**)** Veerapattinam near Pondicherry were earlier at the mercy of nature each time they set out in their boats, now they know for sure what to expect of the weather, the waves and what it will throw up by way of a catch, courtesy the PC. In 1988 Chennai-based M.S. Swaminathan Research Foundation (MSSRF), and its Information Village Research Project (IVRP), Partheeban and his friends venture out to sea armed with more than just their nets and the odd first-aid kit. With also helpful, "Now we can get to the right place at the right time, and get a good catch," says Partheeban, there are an increasing number of women who come with health-related queries, and students who want to check an exam result, browse through educational CDs or learn to design slides on Power Point.

- **Jawahar Navodaya Vidyalayas:** (http://navodaya.nic.in/**)** a network of rural residential schools supported by the Government of India for the rural children covering 6th to 12th classes, are a unique experiment wherein each of the students is to prepare project report using the information resources of the respective libraries. **Public Information Kiosks (PIKs)**: (http://www.pikinc.net/**)** Public Information Kiosk is an action research project of National Institute of Rural Development (NIRD) which works as an information cum communication centre (NIRD, 2011). Objectives of this programmes, Awareness building about rural development programmes, Database development on the resources of the local area, Information and Communication services, Empowering citizens with information.

- **Amol Goje: (**http://india.ashoka.org/fellow/amol-goje**)** is enabling rural communities in India to participate effectively in the new economy, driven by computers and rapid information exchange. By educating and equipping rural producers with user-friendly tools to access market and crop information to enhance their business and by simultaneously providing rural schools with IT education and training.

- **Global Literacy Project:** (http://glpinc.org/Web pages/GLP-South India Programs.htm) GLP will be working with the Human Rights Education Movement of India and its program at the Delta Community College of Nursing to facilitate the creation of a modern nursing library in support of their three-year certificate program and the one-year basic training program.

- **Jal-Chitra:** basically creates an interactive water-map of the village enables the community to keep records of the amount of community need met through

rainwater harvesting systems. Vikram Vyas says, "I think Jal-Chitra can be used in any village which is in the arid or semi arid region of developing world".

- **LOKMITRA:** Electronic service by the state government. This provides access to govt transactions via the internet (www.lokmitra.gov.in) and e-kiosks. It Services available offers Payment of electricity / water bills, Applications for new electricity / water connections, Payment of house tax, Issue of birth/death certificate, Application for trade licenses and payment of relevant fees, Reservation of bus tickets, ATMs of ICICI Bank.
- **e-Shringhla:** was created to bridge the proverbial digital divide and use ICT to make government and government processes/services more accessible and transparent. Apart from the digital divide, the project was also intended to bridge social divides like gender divide, caste and community divide, economic divide etc. It provides government services, schemes, programmes information and also enabled low-level e-commerce activity for products from rural areas, and specific interaction activities.

E-governance in India has miserable field. The reason why e-governance is a big failure is because neither our political parties nor our elected governments take e-governance seriously. To be serious means formulating effective policies and strategies on the one hand and their dedicated enforcement and management on the other.

6. Conclusion

Information and Communication Technologies (ICT) are being used worldwide as a tool for social welfare, better governance, illiteracy eradication and poverty removal. ICT is also being used as a tool for empowering certain social groups, like farmers, women, artisans and common citizens. In India, ICT is also at the grass root level through various initiatives and pilot projects on experimental basis. The private public partnerships have been established across India. Government of India and state governments are also taking appropriate steps in sustaining economic growth, employment generation and strengthening information infrastructure.

Information Literacy, in conjunction with access to essential information and effective use of information and communication technologies, plays a leading role in reducing the inequities within and among countries, and peoples, and in promoting tolerance and mutual understanding through information use in multicultural and multilingual contexts. Information Literacy is a concern to all sectors of society and should be tailored by each to its specific needs and context.

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Electronic Resources for Engineering College Libraries: *Selected E-Resources*

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Abstract: This paper discusses the electronics recourses, it growth and its resources in particular reference to engineering sciences and technology. Access of engineering resources through getaway, databases and consortia are presented. Useful site on various engineering disciplines, engineering association and societies, publishers, consortia, e-journals, e-books and databases are highlighted in this paper.

Keywords: Electronics recourses, e-journals and e-books

1. Introduction

E-resources are the replica of print reading materials in digital era. With rapid technological development the library are moving towards e-resources which are less expensive and provide convenient and easy access to multimedia information with hyperlinks. E-resources serve as supplement to the print collection in order to satisfy the user's variety of information needs with greater speed, accuracy and efficiency. Electronics media is a computer based media for storage, and dissemination of information. E-resources are one of the sources of information, which communicates the information via electronic media. Because of electronic resources the process of information dissemination and retrieval has totally changed.

According to AACR2, 2002 edition; glossary an "electronic resource" is defined as any work encoded and made available for access through the use of a computer. It includes electronic data available by (1) remote access and (2) direct access (fixed media). In other words: Remote access (electronic resources) refers to the use of electronic resources via computer networks. Web sites, online databases, e-journals, e-books, electronic integrating resources, and physical carriers in all formats, whether free or free-based are the examples of electronic resources.

2. Full-text e-resources (e-books and e-journals)

ABI/Inform Complete (http://www.proquest.co.uk/en-UK/): ABI/Inform is a world renowned database of full text journals on business, economy and management, providing a comprehensive coverage on various economic aspects of various economies of the world. It includes Publications from world famous publishers like Sage, Kluwer, Macmillan, Oxford University Press, Wiley, Emerald, MIT Sloan, Springer, Blackwell, Taylor & Francis, etc.

ACM Digital Library (http://dl.acm.org/): The ACM Digital Library (DL) is a complete collection of all of ACM's publications, including ACM journals, conference proceedings, magazines, newsletters, and multimedia titles.

American Society of Civil Engineers (ASCE)
:(http://www.pubs.asce.org/journals/jrns.html): (ASCE is America's oldest national

engineering society. It publishes published 33 journals and transactions since 1970 that cover a comprehensive range of the civil engineering profession. ASCE contains more than 1,70,000 bibliographic records of everything.

ASME Journals Online (http://www.asme.org/pubs/journals/): The American Society of Mechanical Engineers is established in 1880. ASME conducts one of the world's largest technical publishing operations in the world, offering thousands of titles including transaction journals from 1980, conference proceedings from 2002, and ASME Press books from 1999.

ASTM Standards + Digital Library (www.astm.org/digitallibrary).

The American Society for Testing and Materials, (ASTM), is one of the trusted source for technical standards for materials, products, systems, and services. It has a collection of more than 12,000 test methods and standards. Through its Digital Library, one can have instant access to: 1,000+ Special Technical Publications, 50+Manuals and Monographs and 10,000+Journal Articles.

Elsevier's Science Direct (http://www.sciencedirect.com/): Science Direct is the web based interface to the full-text database of Elsevier Science journals, one of the world's largest providers of scientific, technical literature. It provides a rich electronic research journals, bibliographic databases and reference works. The database provides more than 2,500 scientific, technical and medical peer-reviewed journals, it has also provides bibliographic databases and linking to another full-text articles via Cross-Ref to other publishers' platforms.

IET Electronic Library (IEL) (http://ieeexplore.ieee.org/): The IET Electronic Library (IEL) is the useful engineering reference resource. It provides full-text access to publications from Institute of Electrical and Electronics Engineers (IEEE) and the Institution of Engineering and Technology (IET). It includes 126 journals from IEEE, 21 journals from IET, magazines, transactions and 900+ conference proceedings. More than 25,000 new titles are added per month. It provides access more than three million full page PDF images from back files from 1988 onwards and selected titles from 1950 onwards including all original charts, graphs, diagrams, photographs and illustrative material.

IEEE All-Society Periodicals Package (ASPP): (www.ieee.org/publications_standards/publications/subscriptions/prod/aspp_overview.html).
IEEE All-Society Periodicals Package (ASPP), is a IEEE Xplore digital library, is provides access to the IEEE collection of engineering, electronics, and computer science periodicals. It provides over 165 IEEE online journals, transactions and magazines with backfile to-2005.

McGraw-Hill's Access Engineering (http://www.accessengineeringlibrary.com/): It is a useful online engineering resource, It including 255 outstanding books, classic reference works such as Marks' Standard Handbook for Mechanical Engineers, Perry's Chemical Engineers Handbook, Standard Handbook for Electrical Engineers, Roark's Formulas for

Stress and Strain with new titles added weekly. Digital Engineering Library is uniquely structured in around 14 major areas of engineering.

ProQuest Science (formerly ASTP) (http://www.il.proquest.com/pqdauto): Proquest Science Journals is a full-text database of applied and general science subject area, which provides detailed of the leading scholarly journals and trade publications in the field. Proquest Science Journals is a growing collection which currently offers 1,600 titles including 1,270 titles in full-text with coverage dating back to 1986. In full-text format, researchers have access to all the charts, diagrams, graphs, tables, photos, etc.

SpringerLink (http://www.springerlink.com/): Springer-Link is one of the leading databases for high quality journals, book series, online reference works, e-books, and the online archives collection. The SpringerLink Online Journal collection includes more than 2,107 peer reviewed journals with back issues from 1996 onwards. Springer published fully searchable subject collections covering 11 subjects: including behavioral science, biomedical and life sciences, business and economics, chemistry and materials science, computer science, earth and environmental science, engineering, humanities, social sciences and law, mathematics, medicine and physics and astronomy.

Other than above e-journal packages some other packages are

- Wiley Inter-Science (Cross Sharing) (www.interscience.wiley.com)
- IET Digital Library (http://www.ietdl.org/)
- Nature (http://www.nature.com/)
- OSA: Optics Info-base (http://www.opticsinfobase.org/)
- Capita-line (http://www.capitaline.com)
- CRIS INFAC Industrial Information (http://www.crisil.com/)
- Euro-monitor (GMID) (http://www.gmid.euromonitor.com)
- ICE+ThomasTelford(http://www.atypon-link.com/action/showPublisherJournals)
- IEC Standards (Intranet Version)
- INSIGHT (http://www.insight.religaretechnova.com/)

3. On-Line Databases

- INSPEC on EI Village (http://www.ei.org/ev2/home)
- J-Gate Custom Content for Consortia (JCCC)
- (http://jccc-indest.informindia.co.in/)
- MathSciNet (http://www.ams.org/mathscinet/)
- SciFinder Scholar (http://www.cas.org/SCIFINDER/SCHOLAR/index.html
- SCOPUS (http://www.scopus.com/home.url)

- Web of Science (http://isiknowledge.com)

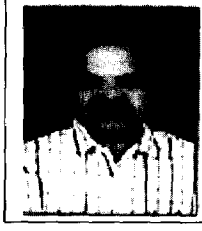
4. Conclusion

Electronic resources play an important role in engineering college libraries in India providing information to engineering students. Engineering libraries are also taking advantage of these sources to fulfill the demands of users of required information. It helps to faculties, students and researchers' for increasing the production and to achieve self sufficiency.

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Emergence of Information Literacy as an Impact of Electronic Media

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Abstract: Prevalence of information in electronic media shortly took the world into its stride. E-resources became indispensable to the users due to their basic characteristic features like speed, coverage, multi-user access, compact, portable, remote access, ease of communication, etc. With the availability of abundant information through electronic media the problem of finding relevant, authentic, valid, reliable information and its effective use surfaced. Thus, the need to possess new form of competency skills emerged. This forms the basis of the need for information literacy which has become a crucial component of learning and teaching in e-environments. The importance of Information Literacy was recognised in developed countries like USA, Australia, New Zealand and some European countries. In India, it can be considered at nascent stage. It is of dire need to promote Information Literacy actively in India as a hub of information sciences.

Keywords: Information Literacy, Electronic media, e-resources, Digital resources of information, Library instruction

1. Introduction

The world is flooded with information these days and the magnitude of increase is exponential. The information is being produced in print as well as in electronic form for example, e-books, e-journals, CDROM databases, bibliographic databases, reference works published online and other web-based resources. More information has been produced within the last three decades, than in the last five millennia. More than 1,000 books are published daily around the world. The amount of available information doubles every five years and soon it will be four times. The Internet is spreading much more quickly than did printed works. In fact, the Internet is one of the fastest growing communication media in world history. It has taken the World Wide Web just 4 years to achieve an audience of 50 million users, compared to 38 years for radio, 16 years for personal computers, and 13 years for television (McCarthy). In 2007, the amount of digital information created, captured and replicated was 2.25×10^{21} bits. In computer parlance, that is 281 exabytes or 281 billion gigabytes. This is about 5 million times the information in all the books ever written (Gantz). The problem of lack of information for centuries transformed into lack of access to information some decades ago but the information revolution has turned the tables and problem now being faced is how to find relevant and correct information (Sharma, *Information Literacy in Indian* 345-57*)*.

This forms the basis of the need for information literacy which has been defined by Association of College and Research Libraries as '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'.

2. Electronic Media

The urge to have speedy access to the required information has brought out a revolution in preferences of information seekers. The information available in electronic media is easily and abundantly available within few seconds. In other words, a simple touch of button expeditiously provides access to bounty of information. Digital resources of information have exploded in popularity and use because they enable innovation in teaching, increase timeliness in research and creation of new ideas. These resources provide up-to-date information; sometimes this information is not available elsewhere. In this digital age, users need to more be information literate than ever before as many users fail to properly locate, evaluate and use information available in digital resources due to lack of understanding of issues surrounding the nature of electronic media and structure of internet (Sharma *Digital Information Literacy* 279-85) .

3. Electronic Media and Information Literacy

Almost all kinds of libraries- be it an academic or public or special library, educated its users regarding the materials, facilities and services available in library and to how to use them. This exercise was popularly known as library instruction and is also considered as foundation of Information Literacy. With the emergence of information in electronic media critical thinking and problem-solving skills were included as a component of library instruction. This, along with the increasing use of technology in libraries, created a new landscape for library instruction. Gradually, with the prevalence of information in electronic media the lack of evaluation in library instruction was acknowledged, and a need for better and more comprehensive evaluation of programmes was identified. Information Literacy, thus, ensured a shift away from library-centric instruction towards a more global focus emphasising lifelong Information Literacy skills. Information Literacy is progressively more important in the existing environment of rapid technological change and proliferating information resources. Because of the growing complexity of this environment, individuals have diverse and abundant information at their disposal. Information is available through libraries, community resources, special interest organisations, media and the Internet. Information comes to individuals in unfiltered formats, raising doubts about its authenticity, validity and reliability. In addition, information is available through multiple media, including graphical, aural and textual and these creates new challenge for individuals in evaluating and understanding it (American Library Association). As the world moved from the information age to digital age, Information Literacy has become a crucial component of learning and teaching in e-environments (Andretta, *From Prescribed Reading*; Bridgland and Whitehead 54-9; Doherty, Hansen, and Kaya 1-12; Hadengue 36-46; Joint, *Information Literacy Evaluation: Moving towards Virtual Learning Environments*; Spitzer, Eisenberg, and Lowe).

4. Information Literacy in India

The importance of Information Literacy was recognised in developed countries in 1990s and since then they have been working hard in its implementation and development. Most of the work regarding Information Literacy has been done in USA, Australia, New Zealand

and some European countries. It is still an ambiguity for the people of developing countries specially Middle East and North Africa. In India, very little has been done in this direction and that too in form of seminars, conferences and workshops to use specific databases or e-resources. India needs to take concrete steps to conceptualise it. Consequently, it will optimise the efficient use of digital information and improve the quality of our education. The result would be an informative and learned India. Prasher and Sharma have suggested that:

- India should develop a National Forum on Information Literacy.
- Concrete policies should be made for implementation of Information Literacy.
- Information Literacy should be implemented in phased but fast-track manner at all levels.
- India should not adopt International Information Literacy Standards and should also develop its own standards to meet the local variations/demands.
- Information Literacy should be incorporated in curricula at all levels of education.
- India has realised the potential of distance education; it has to now develop an Information Literacy programme to specially meet the requirements of distance learners.
- The training of library professionals and academicians as Information Literacy instructors should be taken up on war footing (23-47).

In light of the above, it is suggested that since today's world is flooded with information available in electronic form so all the above suggested efforts may be focused on implementation and development of Information Literacy skills. Gedam and Agashe have discussed about Information Literacy programmes conducted by the government in India and observed that no significant steps have been taken by the government in this direction. It was reported that such programmes are simply literacy programmes and not Information Literacy programmes. However, Indian Institutes of Technology, Indian Institutes of Management and Universities conduct Information Literacy programmes but these are mostly conducted by the publishers/ aggregators and thus, are restricted to using their databases and e-resources. It was suggested that Information Literacy with specific focus on using e-resources should be integrated with curricula at national level for all grades and also for lifelong learning (520-28). Information and Library Network, Ahmedabad, has nevertheless made various efforts like in-house training programmes, user awareness programmes, special training programmes and seminars to promote Information Literacy in higher education and research community and also for proper utilisation of e-resources (Chauhan, Prem Chand, and Murthy 45-52). In nut shell, Information Literacy programmes in India can be considered at budding stage. Much of the Indian literature is based largely on subjective information and there is a dearth of research on Information Literacy in India.

5. Conclusion

Information Literacy is associated with issues as varied as information overload, lifelong learning, knowledge management and the growth of the information society. In order to deal with the complexities of the current information environment, it is of dire need to actively promote Information Literacy as a central core of principles and practice of the information sciences.

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E-Resource: *Importance, Management, Issues and Challenges in Modern Era Library*

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Abstract: In spite of innumerable advantages of e-resources, there are certain problems related to their acquisition, maintenance, management etc. it is essential that libraries must incorporate criteria for the selection of materials in new formats while also maintaining traditional collections. The present paper is an aim to understand the e-resource in an effective way by defining it in a simpler way along with its concept. The paper also defines the need of e-resources and their management in libraries and also addressed the issues and challenges faced by the modern era libraries.

Keywords: e-resource, library, issues, challenges, management

1. Introduction

In the present era of information technology, everyone is moving to keep pace with the technology and developments taking place globally. Due to information explosion, rapid search engine, advancement of education system and technological changes the choice, requirements and demands of the users are changing readily with time. The traditional, conventional and old pattern of accessing information and knowledge is becoming outdated with the new technologies as it is more time consuming, troublesome and dependent on the place, person and availability concerned person and resources. While, the electronic resource is easily accessible from anywhere across all geographical boundaries. e-resources add value with the growth of internet and the availability of enormous volume of information in electronic/digital format have necessitated the growth of e-libraries. By adopting emerging technologies libraries are reshaping its collections and services by organizing, managing, and disseminating information in an electronic format. Due to an explosion of electronic resources in the form of journals, books, newspapers, magazines, data, images, music, and other audio, videos etc., it has become essential for libraries to store information electronically. As the electronic resources are changing with the advent of technologies it is a major challenge with the library to adopt them accordingly. Libraries have evolved from paper based storehouse of books and journals, into extensive network of electronic information and knowledge, now known as electronic libraries (e-libraries). In electronic libraries, information is stored electronically and made accessible to the users through networks. Because of the user preferences for the electronic format, these resources are becoming essential in library collection. The collections in e-libraries are developed and maintained to meet the information needs of a given user community.

"Electronic resources" refer to those materials that require computer access and may either be accessed locally or remotely via the Internet. e-resource save time of users, service provider, librarians and is the fastest mode of transmitting acquired information. E-resources are becoming increasingly important to libraries of all types and sizes. An

electronic resource management system is basically a tool for librarians, but its impact also relates to end users.

2. Features of E-Resources

An e-resource is an electronic information resource that you can access through the website or through the local area network. Information can be retrieved as and when needed. E-resources include electronic journals, online databases and electronic books. There are many thousands of articles and books available and their numbers keep growing as new resources are added to our collections. The main features of the e resources are as

- Easy access to information any where any time to any one without physical existence.
- The potential to display materials that are in inaccessible formats, for instance, large volumes or maps.
- Comparatively economical and potential for integration into teaching materials.
- Access to related material though linkage.
- Enhanced search ability, including full text.
- Integration of different media (images, sounds, video, etc.)
- The ability to satisfy requests for surrogates (photocopies, photographic prints, slides, etc.

3. Back-End Management Tools for Library Staff

Traditional Online Catalog Approach: One obvious place to manage e-journals and other electronic content is the library's ILS. The acquisitions and serials modules exist just for that purpose. Librarians can create serial records for each of the electronic journals they own, indicating the span of dates and issues available. The acquisitions module manages the invoices, payments, and other business-process issues. The library will sign a license for each electronic resource—either for a single title, or, more often, for a large aggregation of material. Being essentially a contract, a number of details apply to each license—the cost, the duration of the license and when it needs to be renewed, the number of simultaneous users allowed, whether the library retains access to the content if it ends its subscription, the telephone number to call for technical support, whether you're allowed to use the resource to fulfill an interlibrary loan request, and other issues that do not arise with print subscriptions.

E-Journal Holdings Data Services: Keeping track of the specific holdings available through all of a library's subscriptions to electronic journals can be daunting. This is especially true for the products that combine a large number of electronic journals, such as Pro Quest, EBSCO host, and Web of Science. The titles and holdings may vary over time, and it may be difficult to determine the specifics of the beginning and ending dates of each title.

The number of historical issues may change during the license period as the publisher digitizes additional material. Some titles may vanish from one aggregated service and turn up in another as the aggregators compete for access to content.

Electronic Resource Management Applications: Interest in an automation module for managing electronic resources has arisen because of the limitations of the serials and acquisition modules to deal with all the parameters related to the licenses.

Front-End Management: Delivering Access to Users: One of the key jobs of the library is delivering access to electronic resources. As the library increases its investments in electronic information—usually at the expense of print materials—it's vital to provide convenient ways for users to find the information they need within those resources.

Links from the Online Catalog: The online catalog provides one means for accessing electronic resources. Through title searching and subject headings, users can find any electronic journal the library subscribes to and go to that journal through the link provided. The main limitation of this approach is that it works only to find the journal itself, not the individual articles.

E-Journal Locator Resources: Many libraries maintain an electronic finding aid that consists of lists of electronic databases and e-journals on their Web site apart from the main online catalog. These e-journal locaters work as good navigational tools for researchers that want a quick way to get to an e-journal without the complexities of the online catalog. These lists of e-journals may in fact be database-driven applications that also offer significant information about each e-journal, including the dates of coverage and a description of the types of material available, in addition to the title and URL. Like the online catalog, this approach takes the researcher to the e-journal itself, and not to individual articles

Linking to Full Text: Library users, however, might not care about finding an e-journal, but might want to read the full text of articles on their research topics. This process typically involves searching an A&I resource that yields lists of citations of the articles that contain the information. Open URL-Based Link Resolvers: Yet the linking that's possible through the publisher-provided links of A&I resources or in article citations isn't always effective. These links may point to resources that the local library doesn't subscribe to. Given that many resources are available through multiple sources, knowing which version to link to is a problem

These are some of the major linking products available today:

- SFX from Ex Libris
- Link Source from EBSCO
- Link Finder Plus from Endeavor Information Systems
- Web Bridge from Innovative Interfaces, Inc.

- Sirsi Resolver from Sirsi Corp.
- Article Linker from Serials Solutions
- Cate from Openly Informatics

Federated Search: Another major area of interest is in applications that allow users to search multiple sources simultaneously so they don't have to decide which resource might have the information they need. This approach goes by various names: federated searching, cross searching, or meta search. A number of products with differing technological underpinnings are available in this category. The products are based on a mechanism that knows how to send a query to each individual resource behind the scenes, and then receive the results. When the user enters a search request, the system translates it into the form needed by each of the selected targets, gathers and collates results as they are returned, and then presents the orderly results. These meta search applications typically involve presenting a set of broad subjects or disciplines, removing from the user the burden of knowing what kind of information is contained within each of the brand-name resources. As part of the configuration of the meta search application, the library would maintain a profile of the electronic resources to which it subscribes.

These are some of the major products in this category now:

- EN Compass from Endeavor Information Systems
- Meta Lib from Ex Libris
- Sirsi Single Search from Sirsi
- Web Feat Prism from Web Feat
- Muse Search from Muse Global
- ZPORTAL from Fretwell-Downing

4. Chaos or Convergence

This whirlwind tour of the various aspects of managing electronic resources shows that librarians face a complex set of challenges. While a number of products have evolved for each aspect of the problem. To date, no single product exists that provides comprehensive management of electronic resources, including both the front-end and back-end functions discussed above.

The various approaches and products for managing electronic resources, it becomes apparent that the data describing the library's holdings stands at the center of all of them. At a minimum, all the applications that a library employs to manage its electronic resources should draw from the same knowledgebase of its electronic holdings. A library should not have to maintain the same information in multiple ways. If the library catalog, linking environment, electronic resource management system, and meta search engine cannot all share the same physical knowledgebase, then it should at least be possible to have a master copy of the data that is automatically distributed through these applications. The many

facets of electronic resource management should be delivered through a set of interconnected modules that work together, sharing common data files or at least communicating with each other through open protocols.

5. Issues and Challenges In Developing E-Resources

The challenges of integrating electronic resources and technologies are many and need to be considered including content, functionality, pricing, infrastructure, access, technological obsolescence, licensing, ownership, and copyright.
Therefore, before purchasing e-resources it is essential to evaluate and form policies to integrate this new technology, as mentioned below:

- **Content and pricing:** It is essential to determine the media/ format in which the content should be acquired, frequency of updates, the availability of back issues, archiving policies, etc. As the pricing models of electronic resources vary significantly, libraries while subscribing should consider the cost and other additional benefits like savings in physical storage, increased availability, improved access or functionality. In terms of access and archival, the best model which meets the needs of the library should be considered.
- **Infrastructure requirements:** The library should have proper infrastructure i.e. hardware and software and has the capability to provide and effectively maintain access to resources on an ongoing and cost effective basis. The various methods of access, either IP-authentication or login/password need to be considered. Access via IP filtering is often preferable because it provides simultaneous access to multiple users. Also, IP-address recognition allows authorized library users to access content from outside the physical boundary of the library via a proxy server. The resources should be compatible across a wide range of platforms and web browsers. Library should also provide training to its users about the resources and browser requirements.
- **Functionality and reliability:** The interface should be user friendly, easy to navigate, and users should be able to save search history, etc. It should offer a powerful and flexible search engine with features like keyword and Boolean searching, full-text searching, truncation, relevancy ranking, etc. The system on which the e-resources are hosted should be available 24/7 and reliable with minimum downtime.
- **Technological obsolescence:** The biggest challenge in e-collection development is the obsolescence of hardware/software required to access electronic information. In order to ensure longer life of the electronic information, a continuous development and up gradation of information storage, and access to techniques and technology is a must. It is also essential to consider the provision for migrating files to new formats/platforms, to keep up with technological advances.
- **Archiving/Preserving e-resources:** A major concern is, archiving and preserving e-resources for the future use, because libraries do not have ownership of the e-resources, but can only access them. Libraries may want a guarantee that if they

cancel or terminate their subscriptions, they have the right of perpetual access to previously subscribed contents. Consideration should be given to whether the content provider is compliant to LOCKSS, Portico or other similar types of archival products.

- **Copyright:** Copyright is a form of intellectual property that gives the author, of an original work exclusive right for a certain time period in relation to that work, including its publication, distribution, and adaptation, after which time the work is said to enter the public domain. Since the entire electronic library is available online, it comes under the Copyright Laws and its contents should not be reproduced or electronically transmitted.
- **Licensing issues for e-resources:** Unlike print publications, e-resources are not purchased outright and usually require a license agreement to be signed. Prior to the purchase, the license agreement must be reviewed and negotiated as it describes the authorized uses and users of licensed information. The library should ensure that as a part of the license agreement, the vendor provides sufficient advance notification in relation to renewals to allow for sufficient lead time to undertake an effective review of the resource.
- **Renewal and Review of uses:** Before renewal of any resource, the library should review usage statistics to determine effective use of the resource. The library should demand from the vendor statistical reporting i.e. COUNTER (Counting Online Usage of Networked E-resources) and/ or SUSHI (Standard Usage Statistics Harvesting Initiative) compliant usage of e-resources. The library should be able to ensure that library budgets continue to be spent on resources that support the overall mission and objectives of the organization and remain relevant and cost effective.

6. Conclusion

The library has changed dramatically in the last decade and continues to change rapidly. Electronic/digital resources are revolutionizing libraries across the world and there is a sharp transformation in the nature of library collections. e-resources represent many challenges at every level of their selection, acquisition, preservation, maintenance and management as discussed. Since technology continues to evolve, the evaluation and implementation of new technologies become significant. In order to be more effective libraries need to manage e-Resources effectively to the optimum utilization by overcoming the above issues and challenges

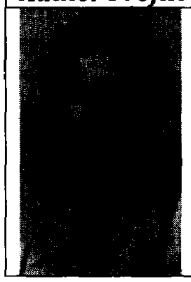
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E-resources: *Acquisition and Management*

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Abstract: The advent of e-resources has made a clear and pervasive impact in almost every area of library services. The library and information professionals are now more concerned to e-resources, their methods for accessing, evaluation, selection, organization etc. The paper discusses the features, types, advantage & disadvantage of e-resources. It also describes different ways to manage e-resources in the digital libraries and challenges being faced in e-resourced environment.

Keywords: e resources, acquisition, management of e resources

1. Introduction

The worldwide hunger for access to knowledge gives birth to information explosion. In the beginning of 20th century an informal library has been converted into well managed library system. The researchers vastly depend on libraries to fulfill their information needs. Libraries have to depend on publishers and print journals. But few years back, even the best libraries are facing the problem to subscribe the required number of printed material for their uses. The situation is critical for the research scholars. The doctoral studies, which deal new ideas, have suffered. Adequate library support is needed to obtain good results in research work.

Our libraries are changing, and in the same way our printed publications are shifting to e-publications. The information demand of users changed with reference format and to e-resources. Research publications in digital formats are the key factor for the development of e-resources. In the changing information environment, e-resources are claiming its importance in research activities. Digital libraries specialized staff select, structure, access, interpret, distribute and preserve the integrity of ensure at the time of the collection of digital work. So, that they are readily and economically available for use by a defined community.

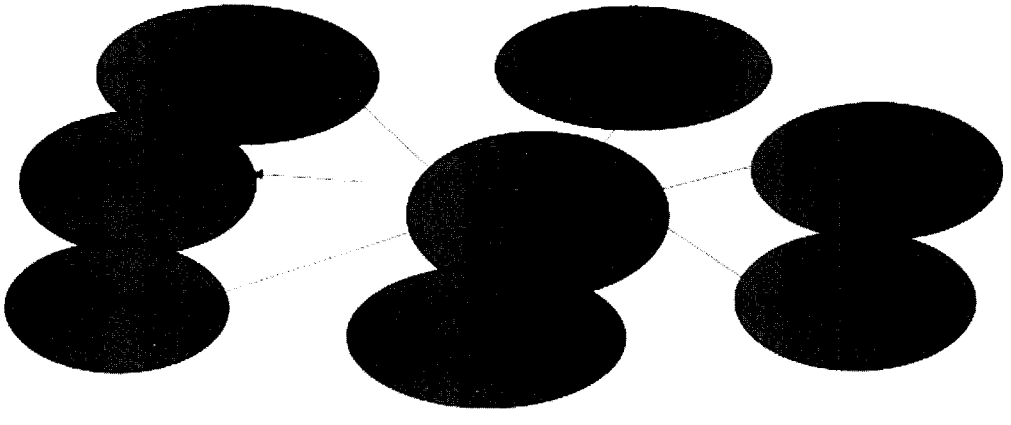


Figure 1 - Different forms of e-resources

2. Acquisition of e- resources

Acquisition librarians are facing many changes in their traditional work or duties with the advent of electronic resources. The selector or acquisition librarian makes the decision to acquire an item with only limited consultation, established policies and guidelines. E-resources present a number of hurdles in traditional libraries. The e-Resources life cycle is entirely different from that of the print resources. The management of the e-Resources will become easier when the life cycle of the e-Resources is completely understood.

The E-Resources life cycle consists of 5 different phases and each phase of it is associated with several activities as indicated in this figure 2. The different phases are as follows:

- **Acquire:** E-resource is acquired by the Library. For acquiring E-resources libraries are dependent on Requisition forms which were available in library. These forms were filled by the students and the Library faculty members.
- **Access:** E-resource is accessed by the user. Users can access E-resources for their research work. For this purpose Librarian can provide quality of material to the reader, according to his requirement.
- **Administer:** E-resource is administered during the subscription process.
- **Support:** User needs support in content delivery.
- **Evaluate:** At the end of the cycle, the E-resource needs to be evaluated for considering its renewal or otherwise; several activities as associated with each phase above makes the management of E-resources as more complex and challenging.

3. Management of E-resources

Management of e-Resources effectively is a big challenge for professionals .As these resources require special skills and expertise to build up and organize such collection. As such the management of large virtual collection would become more and more complex. Every organisation would require good E-Resource management system so that E-Resources and other resources could be integrated for effective use. Moreover, every organization is going for building up institutional repository that would also need proper management as an open source for wider use. Cole in 2005 described the complexities of those, who faces electronic resources problem on daily basis. E--Resources need special management criteria so that their selection, procurement and use could be made more effective. There are no ideal solutions for such problems. Some of the challenges facing with e-resource are

- **Preservation:** Preservation is one of the great challenges in front of digitalized libraries because the life of the digitized material like tapes, hard drives and floppy discs have very short life span. We can store data on digital material for two to five years, after that they are replaced by better technology.The data on them can be refreshed, keeping bits valid and effective as long as media are still current.

- **Lack of professional skills:** Due to lack of technical skills and management, the library professionals are not able to handle the e-resources. The professional staffs are required to update their own knowledge and skill constantly, 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 equipment 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.

4. Issues and Challenges

The management of e-Resources is difficult and facing many problems. Some of the issues to be address are as follows:

- **Justification**: The library has to assess the need for obtaining the budget related sanctions. Professionals need to be more responsible for managing their budget effectively. They should ensure that they were spending money on needed resources i.e, those e-Resources that were being used and required by the users. In this regard, 'cost per user' formula will help the librarians for making decisions whether or not to go for a certain e-Resources. It is nothing but result of the e-resources by the number of times the same resource was used, it appears to be simple task, it is one of the challenges in the management of e-Resources.

- **Open Source:** These resources are free and downloadable. Even though they are easily acquired, the continuity of availability of such resource would be an important issue.
- **Trail Access:** Vendors and aggregators are coming out with newer marketing techniques such as providing trail access of the resource with nominal fee or free many a times. But such an access is limited for a certain period.
- **Multiple Access Models:** The prices e-Resources are offered in a variety of access models. Different subscription models are made available depending on the requirement of the libraries. These include for single site, different geographical sites. The content is made available for the current year as well as for back years as archival.

- **License Agreement:** Libraries need to go into deep when they enter into license agreement, as it contains several legal issues. This agreement differs from vendor to vendor and is not uniform. Hence each time before any e-Resource is considered for acquisition, one has to be careful in irreverent the terms and conditions of such agreements.
- **Authorized Users:** In general e-Resources are subscribed and made available on the campus network and or wide area network which are IP-enabled; there is need to define the authorized user in order to prevent the e-Resources from misuse. The library should only authorized patrons should get access to the content; the range of IP-address, registration of Proxy Server, are the issues to be sorted out for better management of e-Resources.
- **Hardware & Software:** Considering a suitable hardware and software for the proposed e-Resources is an issue. The content of e-Resource usually is not stored in the library. Hence managing links to the content through the link resolvers is another challenge, which should be taken care in the selection of Hardware and Software.
- **Tracking and Linking:** The website of the e-Resources provider or the host will have different administrative modules. Exact location of these modules, the procedure for logging on their site, setting parameters are some of the issues to be considered.
- **Usage Statistics:** Generating usage statistics is another challenging task. Different procedures are being adopted for generating usage statistics. While some publishers do allow libraries to generate usage statistics on their own, some do not. The library needs to obtain these statistics from the publishers at regular intervals for consolidation, which would play an important role in evaluating its value/usage before considering them for renewal.
- Trouble Shooting: A directory of trouble shooting should be compiled and made available to the users. This will be useful both for the library professionals as well as the end-users.
- **User Feedback:** Since the E-Resources subscribed is meant for use, feedback from users is a vital input in the decision making process. User satisfaction, usefulness of the e-Resources, down-time analysis, rights of the user is some of the issues to be considered.
- **Monitoring and Evaluation:** In order to evaluate e- Resources, the library should obtain usage statistics, feedback from faculty, end users. Also if any serious issues like problem logs etc., are to be evaluated carefully.
- Vendors' Role: While the libraries play important role for managing their print resources, when it comes to e- Resources, the management of e-Resources is shared both by the libraries and by the vendors. The role played by vendors is of great concern and filled with many challenges. There is a need for vendors to maintain detailed knowledgebase for e-Resources in addition to many other tasks.

7. Advantages of E-Resources: Usually more than a person can use the same e-resource at the same time.

- Save the users' time.
- Available 24x7- anytime information available.
- Provide quick information.
- Solve the problems of missing issues of journals / books.
- They can be accessed from any computer and at any time. So, there is no need to make a trip to the library.
- They are less bulky.
- They are cheaper in cost.
- Easy Updates and Revisions are available.
- No need to purchase multiplies copies.
- Avoid building, shelving and easy to preservation.

8. Disadvantages of E-resources

- Difficulty reading computer screens:
- Limitations of computer monitor
- Often not included in indexing and abstracting services
- Search engines ignore PDF files.
- Highly Expensive resources.
- Skilled manpower required.
- Need special equipment to access.
- Difficulty in finding relevant information.
- Too much information retrieved.
- Long time to view.
- Slow accessibility.

9. Conclusion

The main purpose of any library is to provide relevant and up to date material with a view to satisfied the needs of the information seekers. It is clear that users are satisfied only if they got right information at the right time and in a right personal way. But all these services are possible only when the library has adequate e-resource collection in the library, and they can manage it in a proper way. So these e-resources are must for library to satisfy the needs of different kinds of user segments.

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ICT Based Activities and Services in Libraries: *A Review*

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Abstract: In the era of information explosion, huge amount of information is being generated and transmitted from every corner of the world in the form of print materials, research articles, lectures, presentations, technical reports, standards and patents etc. In the early stages of 20th century, libraries were facing the problems, of how to cater and fulfill the users' demand. The solution was to adopt the ICT services. The article discusses the concept of ICT as well as conventional LIS such as OPAC, User Services, Reference Service, Bibliographic Service, Current Awareness Service, Document Delivery, Inter-library loan, Audio-Visual Services and Collection development which can be provided more efficiently and effectively by using ICT as well as the new services like Digital Library, Blogs, Wikis, RSS, Social Networking and Podcast which are being provided now a days with the use of ICT.

Keywords: Library services, Library activities, ICT, User Services

1. Introduction

In today's scenario, information and communication technology (ICT) has become prime force for a new cultural revolution. ICT is a composite term which contains three important concepts viz. Information, Communication and Technology. "Information" means many things to many people depending on the context. Scientifically, information is processed data. Information can also be loosely defined as something which aids in decision making. "Communication" refers to the transfer or exchange of information from person to person or from place to place. When an action produce a reaction, whether positive or negative, communication takes place. According to James et al. (2004), communication can be "a process: a transfer of information, ideas, thoughts and messages. "Technology" refers to the use of scientific knowledge to invent tools that assist human beings in their efforts to overcome environmental hazards and impediments to their comfort". In this regard, technology refers to the things like computer, telephone, cell phone, GSM handset, television, radio, etc.

2. ICT Based library activities

- **Online Public Access Catalogue:** In library, computers were first used for the compilation of catalogue. Initially, it was used for printing, later they started designing online catalogues. The value of traditional manual catalogues is now restricted and is replaced by Online Public Access Catalogue (OPAC). OPAC allows searching the catalogue online, conveniently and quickly, using different search criteria. One can search through author, title, keywords, class number or one or more of these combined together. OPAC even shows the current status of a book, whether it is on loan, available on shelf or lying somewhere else. Another

advantage of OPAC is its ability to display catalogue records in number of formats such as AACR2, MARC etc, and the records can be displayed in a desired manner. Now a day's OPAC also provides facilities to the users such as reservation of books, membership enquiry and registration, interlibrary loans etc. With modern library systems offering interface to OPAC, it is now possible to provide access from anywhere in the world through Internet. An internet enabled OPAC is called Web OPAC.

- **Indexing, Abstracting and Bibliographic Service:** Compilation of bibliographies, reading lists and state-of-art reports are the important portion of the LIS work, particularly in research and academic libraries. Browsing through the manual indexes and abstracts is a very complicated work, and will not produce the desired result immediately. Dialog, STN, SilverPlatter are some of the popular database companies that offer online bibliographic services and reference database. These databases provide unique searching and browsing features in a variety of display formats. Advance features like natural language query ranking the search results in also available in many databases. Web based services facilitate full text searches and link to full text of the documents.

- **Current Awareness Service:** Current Awareness Services means providing the latest information to the user in the shortest possible time. In traditional method librarians had to compile current awareness lists containing bibliographical records of selected document manually. ICT has enabled a lot of innovations in content management, production and distribution of Current Awareness products in the shortest possible time. The advent of Internet has enabled a lot of innovations in contents, methods of production and distribution of current awareness products. Tools such as Listserv, Weblog, Webzines and e-newsletters are common which provides the latest information on hot topics, ideas and opinions.

- **Document Delivery Service:** In order to fulfill the need of the clients libraries use document delivery services from other libraries and commercial organizations for copies of research papers, articles etc. not held by them. Locating a source and procuring the document requires considerable time and efforts. ICT has made the document delivery services very easy and reliable. Number of libraries now hosts their up-to-date holdings on their website which can be searched via internet. Many library networks such as INFLIBNET and DELNET maintain union catalogue of their member's journal holdings through which the document may be searched and can be made available to the users.

- **Collection Development:** Several books, journals are published online and some are also made available for sale through publisher's website. Libraries can place their orders online by going through the publisher's websites and catalogues.

- **Inter Library Loan:** Any library cannot acquire all the documents in its collection as required by the users. Resource sharing through Inter-library loan has become

the necessity for libraries. Access to the catalogue of partner libraries is crucial to inter-library lending. Union catalogues are aimed at promoting resource sharing. With the development in internet technology, it is possible to access the catalogue of member libraries. WebOPAC. Listserv, Weblog, Webzines and e-newsletters are common web based union catalogues. Even the catalogues of many libraries are available to everyone online for access. For example, Sun SITE, Harvard University Library, Library of Congress Catalogs.

- **Audiovisual Services:** Audiovisual materials are very important sources of information, education as well as for entertainment. Some of the Academic and public libraries holds audio visual material such as music, films, pictures and photographs etc. The audio CD, Video CD (VCD), and Digital Video Disks (DVD), External Hard Disks have advantage of higher storage capacity (which is now a days in Terabytes also), random access and longer life than audio and video tapes and cassettes which were used earlier. Many libraries allow their members to borrow these. Multimedia documents can be played on computers. Developments in storage media, compression and encryption technology have made it possible to store large amount of multimedia documents on hard disk and disseminate them through internet.

3. ICT Based New Services

- **Access to Web Based Resources:** As discussed earlier, library materials such as journals, books, patents, newspapers, standards, photographs, pictures, motion pictures or music are now available in e-form through open access. These electronic resources have many advantages such as time and place convenience, ability to search directly on text (as against the catalogue records), ability to link to further reading material, and ability to disseminate and share information. From the point of view of library, these digital format offers convenience of storage and maintenance, cost advantage, etc. Books are now available in e-book form. E-book can be read just like paper book. They are available through various publishers like, Springer, Sage, Taylor and Francis etc. E-Journals are the electronic form of journals available online through reputed publishers. Electronic Theses and Dissertations (ETD) are used by researchers for easy access for information. Many universities have started ETD programs through which they convert the thesis into digital form and make it available online (e.g. Vidyanidhi and Shodhganga). However, digital resources also pose human, social and technological problems, such as discomfort in reading on the screen, problems in internet access and speed, poor infrastructure, lack of sufficient skills to use the digital resources, and perceptional change resulting from right to use rather than physical possession, etc.
- **Digital Library:** Many Libraries traditionally have been repositories of local information and heritage documents such as manuscripts, rare books, maps, photographs and paintings etc. Archives or record management is also part of LIS function. Libraries are developing digital repositories of such resources, and providing Internet or intranet access to these. Digital libraries are a natural

progression from electronic document sharing. The main benefit of digital library is the ability to provide 24-hour, remote access to high-demand or restricted materials for multiple concurrent users. Setting up a digital library can either be done digital library management software's like DSpace. Greenstone etc.

- **Blogs:** Blogs are used to share and communicate ideas, experiences and also to get feedback for the same. A blog contains brief entries about different descriptions of contents. The entries are arranged in reverse chronological order with the newest entry at the top and there is the archive for the old one. Blog entries may include visual, audio and video content, links to other blogs, information about authors and comments from readers. In libraries blogs are used for providing answers to the queries, suggestions regarding the services and activities, as marketing tools as well as discussion forum.
- **Wikis:** It is a collaborative tool of web 2.0 technology where anyone can publish his work. Wiki is open for all and anyone can edit the work of others also. The success of Wikipedia has proved it as an efficient tool. Libraries can develop their own wiki or contribute in Wikipedia for social interaction among users. Wikis can be used for creating subject guide and gateways, reference sources etc. It is very helpful for users to make genuine contribution related to their subject fields.
- **Really Simple Syndication (RSS):** RSS is a set of web feeds which help to syndicate and republish content on the web. Many users use RSS to republish the content on the web. It informs about updates and is very promising for libraries as it is used for announcement of new arrivals, recent arrival alert, promotion of events etc.
- **Social Networking:** Creation of library webpage on social networking sites enables a library to increase the number of remote users at global level. Users can easily know about recent happenings in library, collections, service from anywhere and anytime in the world. User book reviews, comments feedback could be easily received through social networking sites.
- **Podcast:** It is a sequence of audio or video files which are spread over internet by syndicated download, through web feeds, to portable media players and personal computers. Libraries put their programs recordings on podcast for their remote users. It is also used to publicize the new arrivals. (Chandwani, 2013).

4. Conclusion

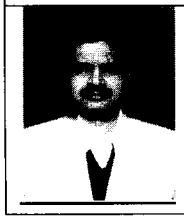
Benefits of use of ICT in activities and services can be broadly explained in terms of 4 Es, namely economy, ease, extension (or expansion) and efficiency. ICT has completely changed the way of retrieval, storage, preservation, organization, and dissemination of information to the users. With the adoption of ICT Library services has improved like time, easier searching and browsing, fast access, round the clock availability of information. The advent of Digital/ Virtual libraries have changed the concept of physical library into hybrid library. Now, librarians have challenge not only to gain expertise in these new technologies to satisfy its tech-savvy users but also make them literate about use of new services. LIS

professionals should adopt new technology in the library with the change in attitudes and behavior of the users so that they may be able to provide maximum benefit to their users and optimize the use of the library.

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Information Literacy among Postgraduate Students in a Rural University

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Abstract: Only information literate can continue lifelong learning even after his formal education. This study is an attempt to analyze the information literacy among postgraduate students in a rural academic environment in Mangattuparamba Campus of Kannur University. The main objectives of this study are to understand the preference of the students towards print and non-print resources, and to assess the usage of non- print resources among academic community in a rural area, to identify the satisfaction level with existing print and non-print resources, to find out the purpose of using the library and to explore the usage time of library. This study sought users' opinions regarding various aspects of information literacy among users.

Keywords: Information Literacy, Kannur University Mangattuparamba Campus, Print and non print resources, User satisfaction

1. Introduction

Literacy is the ability to read and write. There exist various types of literacy such as print literacy, computer literacy, audiovisual literacy, media literacy, web literacy, technical literacy, library literacy, functional literacy, information literacy etc. Among this information literacy is different from others; it is the combination of all the mentioned concepts. According to the American Library Association, information literacy is "the ability to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (ACRL, 2000). Information literacy is defined as being able to recognize when information is needed and having the ability to locate, evaluate and use effectively the needed information. (www.wikipedia.com). Information literacy allows us to cope with the data smog which is the result of information explosion, by equipping us with the necessary skills to recognize when we need information, where to locate it, and how to use it effectively and efficiently. Consequently it will help decision making and productivity which is beneficial to the society. (Prasanna Ranaweeera, 2008)[2]. Information literacy is essential for students to excel academically and to get jobs. For teachers it is necessary to carry out their work efficiently. Information literacy helps to improve the quality of life. Information literacy is the foundation of the democratic society. A society that is capable to access, evaluate, use and communicate information in an effective and efficient manner is called an information literate society. When we educate our children with the necessary information literacy skills, consequently, the society becomes information literate. (Prasanna Ranaweeera, 2008)[3]

2. Objectives

- To identify the information literacy among the postgraduate students group.
- To understand the preferences of the postgraduate students towards print and non-print resources.
- To find out the satisfaction level of existing information resources.
- To identify the purpose of using library by the postgraduate students.
- To understand the usage time of library

3. Methodology

The present study is aimed to determine the information literacy among the postgraduate students of Kannur University, Mangattuparamba Campus which is a rural University. For the analysis of data the following are taken as variables for the study;

- Library users
- Frequency of the use of information sources
- Purpose of using Information Technology in academic activities
- Satisfaction of users while the use of information resources
- Barriers faced in accessing information resources

The data was collected from postgraduate students of four teaching department in the Kannur University, Mangattuparamba campus. Department of Information Technology (DIT), Department of Mathematics (DM), Department of Management Studies (DMS) and Department of Physical Education (DPE) were included. A simple random of 124 (1/3 of the population) was drawn from four teaching department, this includes 45 students from Department of Information Technology and 40 students from Department of Mathematics and 19 from Department of Management Studies, 20 from Department of Physical Education. A structured questionnaire was used to collect data. For tabulating and analyzing data, percentage method is used, on the basis of formulated objectives, interpretation is made through analysis.

4. Need and significance of the study

In this information era self learning becomes a necessity. Information resources are inevitable for the students to update their knowledge and pursuing their carrier. In this situation it is important to identify the information literacy among students group and is essential to identify the satisfaction level of existing information sources for the future improvements. The study gains importance on that ground it aims at understanding the impact of library resources on the quality of curriculum and purpose of using library. The present study attempts to identify the information literacy of postgraduate students of Kannur University, Mangattuparamba campus which is a rural University. Thus, the study

is limited to Kannur University, Managattuparamba Campus and this study not compares the socio-economic status and literacy of student.

5. Data Analysis and the Result

The analysis of the data done is given below under following headings:

5.1 Awareness and Knowledge of Information Resources

Information resources are of many kinds. So it is an integral part of the study to know what extend the users is aware of these information resources available in library. They were asked to express their opinion about awareness of information resources. The data provided by the students are presented in the table 5.1

Table 5.1 Awareness of Information Resources

Department	Aware of Information Resources		Not Aware of Information Resource	
	No.	%	No.	%
DIT	35	77.77	10	22.22
DM	30	75	10	25
DMS	15	78.94	4	21.05
DPE	20	100	-	-
Total	100	-	24	-

Table 5.1 shows that majority of students in all the four departments are aware of the availability of Information resources in the library, ie; 77.77 per cent students in Department of Information Technology and 75 per cent students in Department of Mathematics, 78.94 per cent students in Department of Management Studies and all the student in Physical Education department are aware of information resources available the library. It is found that majority of the respondents are well aware of the availability of information resources in the department library.

5.2 Knowledge about the Information Sources

Knowledge can be acquired through different means. Table 5.2 shows the ways, from where the respondents are getting knowledge about the information resources.

Table 5.2 Knowledge about the Information Sources

Department	Knowledge through friends		Teachers		Department Library		Internet		Other Sources	
	No.	%	No.	%	No.	%	No.	%	No.	%
DIT	-	-	20	44.44	20	44.44	5	11.11	-	-
DM	17	42.5	18	45	18	45	17	42.5	2	5
DMS	6	31.57	10	25	6	31.57	10	25	-	-
DPE	5	25	3	15	4	20	14	70	-	-
Total	28	22.58	51	41.12	48	38.70	46	37.09	2	-

From Table 5.2 it can be seen that in the departments of Information Technology and Mathematics a good of the students (44.44 per cent) equally depend on Department Library as well as Teachers to get knowledge about the information sources. A few students (5 per cent) in Department of Mathematics opinioned that some other sources like newspaper periodicals are also help to find the information sources. In the case of Management Studies considerably a good number of students (31.57 per cent) equally depend on friends as well as Department Library to know about information sources. In Physical Education department the majority of students (70 per cent) get knowledge about information sources from internet.

It was found that majority of the respondent depends on teachers to get knowledge about information sources, only a few depends on other sources.

5.3 Frequently used Information Resources

It is an integral part of the study to know the frequently used Information Resources in the library

The data provided by the students are graphically represented in Figure 5.1

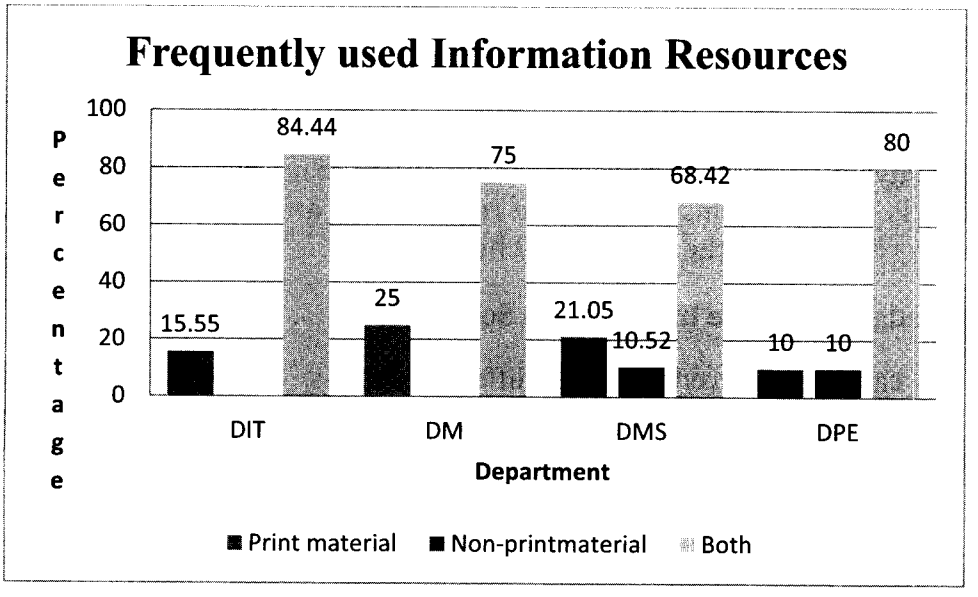


Figure 5.1 Frequently Used Information Resources

From the figure 5.1 it can be seen that students give equal importance to print and non print materials. Most of the students (84.44 per cent) in Information Technology department, Mathematics department (75 per cent) and Physical Education department (80per cent) and a considerably good number of students (68.42 per cent) in the Department of Management Studies frequently use both print and non print materials. Student's dependency only on non print material is very few in Information Technology and Mathematics department.

As such the majority of the students prefer of both print and non print materials for their studies.

5.4 Library visit

Users may visit library depending upon their available time and need of information. Table 5.3 describes the frequency of library visit by the respondents.

Table 5.3 Frequency of Library Visit

Department	Daily		Once a week		More than once a week		Once a month		When there is a need	
	No.	%	No.	%	No.	%	No.	%	No.	%
DIT	4	8	4	8	9	20	20	44.44	8	17.77
DM	-	-	18	45	9	22.5	-	-	13	32.5
DMS	4	21.05	3	15.78	3	15.78	2	10.52	7	36.84
DPE	9	45	3	15	3	15	-	-	5	25
Total	17	13.70	28	22.58	24	19.35	22	17.74	33	26.1

Table 5.3 discusses the frequency of library visit. The analysis shows that considerably a good number of students (26.1 per cent) visit library when there exist a need. It can be also seen that daily visitors of library is very less (13.70 per cent). The category wise analysis gives a clear picture about the frequency level.

A considerably good number of students in Department of Mathematics (45 per cent) used to visit library once a week and a good number of students (44.44 per cent) in Information Technology department are using library once a month. A good number of Management students (36.84 per cent) reported that they visit library when a need arise. Daily users (45 per cent) are high in the case of Physical Education department. It is found that majority of the students visit the library when a need arises.

5.5 Time spend in the library visit

An analysis of the time spent by users in the library is drawn. The good number of students (44.44 per cent) in Information Technology department and most of the students in Mathematics department (65 per cent) spent less than half an hour in the library. In Department of Management Studies (57.89 per cent) and in Physical Education department most of students (80 per cent) spent 1-2 hour in the library. It is clear that very few students spent more than 2 hour in the library. As such it is found that majority of the students spent less than½ hrs in the library.

5.6 Type of assistance received from librarian

Librarian has a significant role in developing information literacy among students. Table 5.4 shows that a good number of students (42.74 per cent) need assistance from the librarian to locate books. More than half of the students from Information Technology department and Physical Education department (66.66 per cent and 55 per cent respectively) need help from librarian to locate books.

Half of the students (50 per cent) in Department of Mathematics reported that they need assistance from librarian to search books. While considering the total population a very small percentage of students (7.25 per cent and 16.93per cent) take assistance from librarian to locate current periodicals and to understand and use various periodicals.

Table 5.4 shows the type of assistance received from the librarian and other library staffs.

Table 5.4 Type of assistance received from librarian

Department	To locate books		To search books		To locate current periodicals		To understand and use of various periodicals	
	No.	%	No.	%	No.	%	No.	%
DIT	30	66.66	5	11.11	5	11.11	5	11.11
DM	10	25	20	50	3	7.5	7	7.5
DMS	7	36.84	7	36.84	1	5.26	6	31.57
DPE	6	30	11	55	-	-	3	15
Total	53	42.74	43	34.67	9	7.25	21	16.93

Study established that majority of students need assistance from the librarian to locate books, and seldom take assistance to locate current periodicals.

5.7 Purpose of using the library

The library services is found used for different purposes by the users studied; the details of these are presented in Figure. On the analysis of data it is found that half of the

respondents (50 per cent) visit the library for their academic purposes. Comparatively good percentage (35.48 per cent) of students makes use of library for reference. A small number of students (15.32 per cent) depends library to update their knowledge, only a few students (4.83 per cent and 2.41 respectively) visits library with the intention of recreation and for general awareness. The analysis shows majority of students visit library to meet their academic purposes and a few for recreation and general awareness.

5.8 Knowledge about new publications in the library

The Table 5.5 shows how students get knowledge about a new publication acquired by the library.

Table 5.5 Knowledge about new publication in the library

Departments	Display in library		List of additions		Library catalogue		Information through students		Information through teachers	
	No.	%	No.	%	No.	%	No.	%	No.	%
DIT	35	77.77	-	-	-	-	8	17.77	2	4.44
DM	10	25	-	-	-	-	5	12.5	25	62.5
DMS	2	10.52	-	-	-	-	2	10.52	15	78.94
DPE	6	30	-	-	-	-	4	20	10	50
Total	53	42.74	-	-	-	-	19	15.32	52	41.93

Table 5.5 shows that majority of students in Department of Information Technology (77.77 per cent) get knowledge about new publication from the display of publications in the library. In the case of Department of Mathematics, Management Studies and Physical Education most of students (62.5 per cent, 78.94 per cent and 50 per cent respectively) were in the opinion that, they get knowledge about the new publications from their teachers. Displays of new publication in the library and information about new publication through teachers have the same importance in providing knowledge about the new publication. Analysis also shows that no one gets any information from list of additions and library catalogue. Majority of the users are getting information about new publications from the display of new Publication in the library and from information through teachers.

5.9 Use of Non -Print Materials

Non print materials are much more convenient than print materials. Internet, Intranet, Online databases, CD and DVD, Multimedia, www is the examples of non print materials frequently used in libraries. The Table 5.6 show that specified use of non print information sources.

Table 5.6 shows that internet and World Wide Web (www) are the frequently used (95.96 per cent) non-print resources. Considerably a good number of students (43.35 per cent, 62.98 per cent and 62.98 per cent respectively) sometimes use Intranet, Online databases and Multimedia. A good number of students (75.80 per cent) reported that CD and DVD are not at all used by them.

Table 5.6 Use of Non-Print Materials

Type of non-print resources	Use	Population	
		No.	%
Internet	Frequently	119	95.96
	Sometimes	5	4.03
	Not used	-	-
Intranet	Frequently	15	12.09
	Sometimes	55	44.35
	Not used	54	43.54
Online databases	Frequently	20	16.12
	Sometimes	78	62.98
	Not used	26	20.96
CD and DVD	Frequently	-	-
	Sometimes	30	24.19
	Not used	94	75.80
Multimedia	Frequently	15	12.09
	Sometimes	78	62.98
	Not used	31	25
www	Frequently	119	95.96
	Sometimes	5	4.03
	Not used	-	-

It is revealed that majority of students use Internet and World Wide Web (www) in their academic activities.

5.10 Purpose of using Information Technology (IT) in academic activities

Information Technology (IT) can be used for different purposes. IT has great influence in student's academic activities. Figure 5.2 gives the purpose of using IT in academic activities. From the figure it is clear that the majority of students (72.58 per cent) use IT for preparing seminars. A few students (17.74 per cent) use IT to do their research work. Only a small number of students use (9.67 per cent) IT to write articles and books.

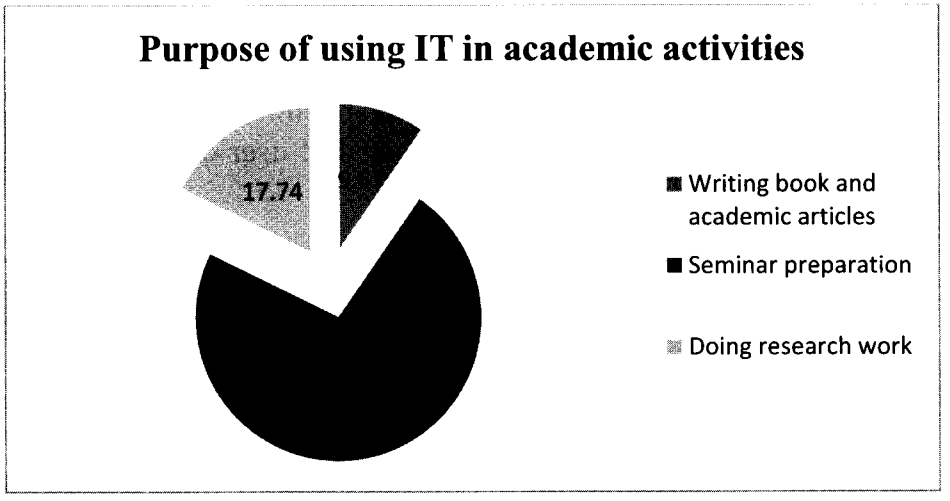


Figure 5.2 Purpose of using Information Technology (IT) in academic activities

Findings show that major purpose of using Information Technology is to prepare seminars, then to do research work.

5.11 Difficulties in obtaining information

There may exist barriers which prevent or obstruct the flow of use of information. Here also library users responded about the difficulties in obtaining the information. Table 6.8 shows the difficulties faced in obtaining information and keeping up with advances.

Table 5.7 Difficulties in obtaining information

Department	Lack of space		Information scattered in too many sources		Information is vast		Lack of adequate resources within the campus	
	No.	%	No.	%	No.	%	No.	%
DIT	5	11.11	5	11.11	30	66.66	5	11.11
DM	5	12.5	5	12.5	-	-	35	87.5
DMS	-	-	-	-	-	-	19	100
DPE	-	-	-	-	-	-	20	100
Total	10	8.06	10	8.06	30	24.19	79	63.70

Table 5.7 shows that main difficulties in obtaining information are due to lack of resources within the library. Only the department of Information Technology (66.66 per cent students) is responded that difficulty of obtaining information is due to vast nature of resources. In the opinion of students from all four department lack of space and scattering of information in many sources is not at all a problem in obtaining information. Majority of the respondents reported that difficulty in obtaining information is mainly due to lack of adequate resources within the library.

5.12 Satisfaction level with print resources

As the user's satisfaction is an inevitable parameter for the study. The user's response to their satisfaction is sought. The satisfaction level of user community with existing print resources is shown in the Table 5.8

Table 5.8 Satisfaction level with print resources

Department	Print resources					
	Moderately satisfied		Not satisfied		Satisfied	
	No.	%	No.	%	No.	%
DIT	10	22.22	10	22.22	25	55.55
DM	5	12.5	5	12.5	30	75
DMS	10	52.63	-	-	9	47.36
DPE	15	75	-	-	5	25
Total	40	32.25	15	12.09	69	55.64

Table 5.8 shows satisfaction level of print resources. More than half of students in Information Technology (55.55 per cent) and majority students in Mathematics department (75 per cent) are satisfied with the print resources. More than half of Management students (52.63 per cent) and majority students (75 per cent) in Physical Education department are moderately satisfied with the print resources. Findings show that majority of the students are satisfied with the existing print resources.

5.11 Satisfaction level with Non- print resources

The satisfaction level of user community with existing Non-print resources is shown in the Table 5.10

Table 5.10 Satisfaction level with Non- print resources

Department	Non-print resources					
	Moderately satisfied		Not satisfied		Satisfied	
	No.	%	No.	%	No.	%
DIT	10	22.22	5	11.11	30	66.66
DM	30	75	-	-	10	25
DMS	9	47.36	-	-	10	52.63
DPE	10	50	2	10	8	40
Total	59	47.58	7	5.64	58	46.77

Table 5.10 shows the satisfaction level of non-print resources. More than half of the students in Information Technology (66.66 per cent) and Management Studies (52.63 per cent) are satisfied with non-print resources. Majority students in Department of Mathematics (75 per cent) and Department of Physical Education (50 per cent) reported that they are moderately satisfied with the availability of non print resources in the library. The study reveals that majority of the students are moderately satisfied with the existing non- print resources.

5.12 Suggestions for improving literary skills

Following are the suggestions put forward by the respondents for improving the literary skills among the students of Kannur University, Mangattuparamba Campus.

- Provide more information resources in the department library.
- Provide internet facility in each and every teaching department
- Continuous user training and literacy programs should be provided in the use of information resources.
- Make available Wi-Fi connections to each department to ensure the access of online resources.

6. Conclusion

The present study mainly focuses on Information Literacy of Postgraduate Students in Kannur University, Mangattuparamba Campus situated in a rural environment. The collected data were analyzed and attained certain findings.

The present study indicates that majority of the respondents are information literate and they prefer both print and non- print materials for their study. Majority of students visit library to meet their academic purposes, majority spent less than half an hour in the

library, they reported that lack of adequate resources within the library make difficulty in obtaining information. It can be seen that majority of students are satisfied with print resources but regarding non-print resources majority are moderately satisfied. Promoting information literacy among students greatly depends on librarian and library staffs.

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Information Literacy: *An Essential Skill to Provide Right Information to Right People at the Right Time*

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Abstract: In the present information age people should learn the new skills to use information stored on computers. The information accessible from libraries, community resources, special organizations, media and internet comes to individuals in unfiltered formats, and raises question about its authenticity, validity and reliability. In addition, information available through multiple media poses new challenges for individuals in understanding the landscape of information and to acquire knowledge of how to gather, evaluate and use information in today world. Information literacy therefore is increasingly important in the contemporary environment of changing technological and proliferating information resources. So the working LIS professionals have to face the challenges for providing the right information to the right user at the right time.

Keywords: Information Literacy, Information Society, Information and Communication Technology, Information Services, Right Information

1. Introduction

Information Literacy is the process of knowing when why where how regarding the information. 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 which covers computer literacy, digital literacy, information technology literacy, internet literacy, library literacy, media and network literacy etc. The information literacy skills need to be developed and practice in a lifelong not only by information users, but also by librarians and other information workers. Information Literary variously defined as follows (Dhiman, A. K 2006). **Paul Zurkowski** is supposed to be first, who defined information literacy during 1970s as "People trained in the application of Information resources to their work can be called information literates". They have learned techniques and skills for using the wide range of information tools as well as primary sources in molding information solution to their problems".

2. Need for Information Literacy

Information society is witnessing a rapid growth in computer networking and the use of computerized databases to access information. In fact, most academic libraries today are

"hybrid libraries", adding the new e-library features to their traditional library services. Information literacy is therefore essential for users to cope with new online services and provide a competitive advantage to themselves and the wider society. Without the training it is difficult to use electronic information sources effectively. It is necessary for users to have the requisite skills to obtain relevant information quickly and effectively from electronic sources and become what is often referred to as 'Information literate' Information is one of the basic requirements with food air and water. Information in itself has no value without its communication and use. The need of information literacy may be essential because of:

- Rapid increase in the information due to information revolution;
- Advent of information and communication technologies and
- Vast variety of information sources
- Changing role and shape of libraries
- Increase in number, thrust and dynamic of users and
- Research on complex and interdisciplinary topics.

3. The objectives of the Information Literacy

To promote free flow of Information which enhance in decision making and ultimate satisfaction of the users. Recognizing needs for Information, identify, locate, access, evaluate and apply Information whenever and wherever required in pinpointed and meaningful way. Thus relevant and synthesized information further endeavor to create Information Literate Society. Some of the Objectives of Information Literacy are:

- Determine Nature and Extent of the Information needed.
- Access needed information effectively and efficiently.
- Evaluate information, its sources critically incorporate selected information into
- Knowledge base and value system.
- Effective use to accomplish a specific purpose.
- Understand economic, legal and social issues surrounding the use of information and to use information ethically and legally.

4. Scope of Information Literacy

The scope of Information Literacy has become very large. So, it is pertinent to point out here that Information Literacy is a wide concept that encompasses many kinds of literacy. A very brief view of other kinds of literacy covered in Information Literacy is presented below: *Library Literacy* relates to an individual's ability to explore the library efficiently with ease. Thus, the proficiency in the use of library resources and services is referred as Library Literacy.

Media Literacy: Today an individual receives information from a variety of media of communication like books, newspapers, magazines, television, radio, Internet or even cell

phones. Media Literacy refers to the ability to evaluate the information received from such diverse sources of information.

Computer Literacy: Since computers have pervaded almost the entire area of human life, any literate person now must have the skills to interact with the computer. Thus, Computer Literacy denotes the skills needed to interact with the computer and have some general idea about its hardware and software.

Network Literacy: The ability to type in the computer alone is not enough if one wants to access and use the billions of documents available on the World Wide Web. It is essential to have the ability to navigate the Internet or any other computer network. Such ability is called Network Literacy.

Digital Literacy: The searching and retrieving skills that are required to explore the online databases, digital libraries or documents on CDs and DVDs are referred as Digital Literacy. *Visual Literacy* is the ability to understand and produce visual content. Owing to the prevalence of multimedia environment, visuals are often used in teaching learning process. Hence, Visual Literacy requires not only skills relating to the art, design and technology aspect but also skills of deep perception and visual intuition.

Thus, Information Literacy covers all the above mentioned literacy and goes much beyond that, as it also takes into consideration the efficient, effective and conscientious use of information.

5. Benefits from Information Literacy

The benefits of information literacy may include: Expansion of knowledge through substantive operations of knowledge creation, Synthesis of data and information into knowledge, Appropriate and critical application of information and knowledge in problems solving, Enhancement of the critical thinking, Incorporation of validated information in the personal or corporate knowledge base, Motivation for self-directed learning and Appreciation for lifelong learning.

6. Information Literacy Standards and indicators

Number of studies and research in the area of Information Literacy has caused many propositions in terms of models, standards and indicators. Some of the major professional groups who have done substantial work in this domain are Association of College and Research Libraries (ACRL) under the American Library Association (ALA), the Australia and New Zealand Institute for Information Literacy and UNESCO. The various standards and indicators of IL have been listed below:

1. **Association of College and Research Libraries (ACRL) standards** (Association of College and Research Libraries 2000). Information Literacy Competency Standards for Higher Education, Chicago, ALA.

- **Standard 1:** The information literate student determines the nature and extent of the information needed.
- **Standard 2:** The information literate student accesses needed information effectively and efficiently.
- **Standard 3:** The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.
- **Standard 4:** The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.
- **Standard 5:** The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally.

2. **Australia-New Zealand framework: Australian and New Zealand Institute** for Information Literacy (Bundy Alan ed. 2004).

- **Standard 1:** The information literate person recognizes the need for information and determines the nature and extent of the information needed.
- **Standard 2:** The information literate person finds needed information effectively and efficiently.
- **Standard 3:** The information literate person critically evaluates information and the information seeking process.
- **Standard 4:** The information literate person manages information collected or generated.
- **Standard 5:** The information literate person applies prior and new information to construct new concepts or create new understandings.
- **Standard 6:** The information literate person uses information with understanding and acknowledges cultural, ethical, economic, legal, and social issues surrounding the use of information.

3. **UNESCO's proposed IL indicators towards information literacy indicators (Catts, R. and Lau, J.** 2008):

- Recognizes information needs
- Locate and evaluate the quality of information
- Store and Retrieve information
- Make effective and ethical use of information
- Apply information to create and communicate knowledge

7. Role of Librarians

In the present scenario Information & Communication Technologies have changed the libraries. Now a day, library has become the centre point of resources and resource based learning and the role of Librarian is also changing radically. 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.

Librarians have to identify and select good and specific literature. They have to look more online and other electronic sources to meet the information needs. Acquisitions and selection criteria take an entirely new meaning when considering access to online services. Traditional materials evaluation measures have little meaning when applied to Internet sites.

8. 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 illiteracy. The other obstacles in promoting information literacy may include lack of cooperation among professional organization and promoted information literacy policies and programs, underdeveloped library & information systems and networks, expensive telecommunication infrastructure services, shortage of information & library educated and trained professionals who would give the necessary impetus to the information literacy promotion and implementations, intimidated users who are not so well acquainted with the nature of information and its creation, how information is published and disseminated I.e., the pattern of flow of information within a discipline.

The suggestions, which can be considered for the induction of information literacy programs at various levels, may include: Government and concerned controlling and funding bodies should make efforts in preparing policy guidelines and standards at national level and should come out with the National Information Literacy Programme. Conducting seminars, workshops, conferences to define role of information literacy in the growing digital environment. UGC should take initiative in directing the higher educational institutions to integrate the information literacy in the curriculum.

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Information Literacy and Lifelong Learning: *Role of Electronic Media*

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Abstract: Information Literacy covers knowledge of one's information concerns and needs, and the ability to identify, locate, evaluate, organize and effectively create, use and communicate information to address issues or problems at hand; it is a prerequisite for participating effectively in the Information Society, and is part of the basic human right of lifelong learning. This rights include right to information literacy is learnt through osmosis ,information literacy is covered by or is the same as information technology and Electronic Mass Media ,as technobgy improves access to information will become easier and therefore negate the need for information literacy, information literacy is an updated version of library skills and is therefore related to printed sources, with the emergence of electronic media .This Research Paper Explore and evaluate the role of Electronic Media to facilitate Information Literacyand Lifelong Learning.

Keywords: Information literacy, Lifelong learning, electronic era.

1. Introduction

Information literacy is part of the basic entitlement of every citizen, in every country in the world, to freedom of expression and the right to information and is instrumental in building and sustaining democracy. Information literacy is essential for good governance and represents a basic condition for any successful e-governance programme. Media literacy, a major component of information literacy, is about how to actively analyse, evaluate and produce media in all their forms. It is no longer enough simply to read and write. Students must also become literate in the understanding of visual images, how to spot a stereotype, isolate a social cliché, and distinguish facts from propaganda, analysis from irony...There is considerable value of including media and media literacy curricula in civics education or infusing media education across numerous subjects, so as to prepare students for democracy and the lives they will lead beyond school. Issues of source credibility, long taught in journalism classes, have taken on even greater significance today with so many students now relying on the Internet for their information and knowledge (Robert Kubey (2004). Information literacy forms the basis for lifelong learning. It is common to all disciplines, to all learning environments and to all levels of education, while recognizing the disparities in learning styles and in the nature and development of literacy in differentcountries. It enables learners to master content and extend their investigations, become more self-directed, and assumes greater control over their own learning;

information literacy should be introduced wherever possible within national curricula as well as in tertiary, non-formal and lifelong education. Information literacy is an intellectual framework and a social process for understanding, finding, evaluating, communicating and using information—activities which may be accomplished in part by fluency with information technology, in part by sound investigative methods, but most important, through critical discernment and reasoning. Information literacy initiates, sustains, and extends lifelong learning through abilities which may use technologies but are ultimately independent of them.

2. Media and Information Literacy

Empowerment of people through Media and Information Literacy (MIL) is an important prerequisite for fostering equitable access to information and knowledge and promoting free, independent and pluralistic media and information systems. UNESCO When a person is conceived; lifelong learning is automatically activated and continues throughout life. Therefore, things work better if the educator teaches critical thinking and Information Literacy to enhance this already activated, built-in learning process.

New information and communication technologies: Recently, ICT tools and systems have been developed that provide sophisticated functions for publication, organization, visualization, contextualization, search, retrieval and distribution of knowledge as well as functions supporting communication, collaboration, cooperation and linking of individuals in social networks, sometimes called social software, at comparably low cost. They are also relatively easy to use. The situation as found in many organizations is that there is an advanced ICT infrastructure in place. This is regularly a solution based on a set of Internet technologies (Intranet) or based on a Groupware platform, such as Lotus Notes or Microsoft Exchange. The United States National Forum on Information Literacy defines information literacy as "... the ability to know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand (National Forum on Information Literacy).

Knowledge as the key resource, not labor, raw material or capital, changes production functions in organizations significantly. Knowledge represents the key concept to explain the increasing velocity of the transformation of social life in general and the way businesses and social institutions work in particular. Introducing new media technology – let alone the kinds of 'critical thinking' and the new pedagogies associated with information literacy– is almost bound to meet with considerable inertia, if not overt resistance. A vigorous information literacy campaign may result in the long run in the emergence of an 'information culture'. In the new information environment information is not only used in an effective and ethical way, but also people understand the economic, legal and social issues surrounding the use and sharing of information. An effective information literacy programme for the whole society should be developed and delivered in two parts: one as part of the formal education, and another as part of an informal education, in course of, and as part of, the day-to-day activities and life of people. The target audience should not only be the teachers or students, but also professionals, decision makers, etc. who need to acquire the necessary information skills to make informed decisions. Information literacy is essential for workforce performance and economic development. You will not become

information literate overnight. Just as with speaking skills and writing skills, your abilities will improve over time as you gain expertise in the topics you choose to investigate and as you practice searching for, selecting, and evaluating the information and ideas you encounter. Information literacy classes can take place in a range of institutional settings, both 'formal' and 'informal'; and they can be provided by bodies from both public and private sectors.

3. Empowering People through information literacy

Empowerment of people through information, media and ICT literacy is a prerequisite for harnessing ICTs for education and fostering equitable access to information and knowledge. Information literacy enhances the pursuit of knowledge by equipping individuals with the skills and abilities for critical reception, assessment and use of information in their professional and personal lives. As information is increasingly codified in digital forms, new skills are needed to operate the technology to search for, organize, manage information and use it to solve problems and create new knowledge and cultural products. Since the Internet is a common information and communication tool, information literacy is often understood as digital literacy. Computer literacy is an essential component of information literacy, media education forms another important part of information literacy, but there are differences between computer literacy, media education and information literacy. The impact of information and communication technologies (ICTs) on teaching and learning has been increasing at all levels, from basic to higher and life-long education, providing new perspectives and opportunities for expanding traditional education processes and systems. ICTs are more and more becoming an integral part of educational strategies, providing greater flexibility in learning situations, promoting increased interactivity for learners and connectivity to people and learning resources in different parts of the world.

4. Application of I.C.T. Digital Media on Education lifelong learning

Print Media: Print is the most common medium used in education. Forms of print are textbooks, manuals, note and study guides. Point materials are relatively inexpensive to develop or distribute. Print is used in some form by almost all educational courses, regardless of what other media they employ. Print is the foundation of open distance learning education (ODLE) and one basis from which all other delivery system have evolved.

Limitations:

- Passive and self-directed:- Numerous studies have shown that higher learner motivation is required to successfully complete print based courses. to a certain extent, the passive nature of print can be offset by systematic learner. Still, it takes more motivation to read a book through a written that it does to which a television programmer participate in an audio conference with an instructor encouraging student participation and response.
- Dependent on reading skill :- Feedback and interaction : without feedback and interaction ,instruction suffers, regardless of the delivery system in use. By nature print materials are passive and self directed.

4.1. Broadcasting Media

Radio and Television Broadcasting has been used for educational purposes for many years. There are different types broadcasting: public, cable and satellite some of the advantages of radio and television broadcasting is that they audio and videotapes have come to play on increasingly important role as media for higher education especially (ODL Education) open distance learning education. These technologies are convenient and cost-effective, and video is a powerful media in terms of capturing attention and conveying a lot of information quickly. There are many distance education and other agencies for example, Canada (Athabasca University, Tele University, Quebec, China, (Central broadcasting and television University, United Kingdom (Open University) to native a few that broadcast educational radio programmes.

Television, which has an important place in mass communication, has a significant role in higher distance education with its special position, the way of presentation and qualities peculiar to itself. Telecommunication after a vast number of practical and innovative opportunities for audio in higher distance education (H.D.E.) in teaching, television can be used interactively or one way. In one way teaching, by producing the programs before hand they can be delivered as video tapes or television broadcast contrary to this, interactive television sheathes the effect of teaching by allowing the participation of the audience. Live broadcast is good way of broadcasting from the point of gaining interaction.

5. Education and Learning Scenario in India

The new era of globalized 'one world' has made it necessary to bring about an integrated methodology in teaching-learning environment. The movement of knowledge (technology) and knowledge workers across the countries fills the knowledge gap (Beteille, A (2001). Here Hecksler-Ohlin's theory of comparative cost advantage of international trade becomes applicable in the knowledge trade. The countries which are in comparatively better knowledge are in a position to trade their ideas, till the rest of the countries are brought abreast of them. This can be called as comparative advantage theory of knowledge. In India, globalization has generated a good vibration and life for higher education. The new era of technology enabled education or 'e -learning' is displacing the outdated traditional methods of learning. e Learning is displacing the outdated traditional methods of learning's. e Learning is also a broader term than 'online learning' or 'online education' which generally refers to purely web-based learning. In cases where mobile technologies are used, the term 'm-learning' is used. (Banduni, M). BUt the major challenge faced by e Learning is that it cannot replace human being. Hence, while designing e Learning packages, it is necessary to realize that the learners are not isolated with technology. According to IDC, the revenue earned worldwide from e Learning was $6 billion in 2003. That's expected to rise to $21 billion by 208. NASSCOM reports that Indian companies will get revenues of $7 million to $9 million by the end of 2005. e Learning in India has a very big potential and a bright future. Since virtual classroom has got bright future, all technical higher educational departments should start preparing separate virtual reality modules for each lesson. It is also suggested to attract affordable international students, to utilize the adventurous faculty collaborators, to bring about e-twinning of institutions and to plan

more inter country exchange programs. To conclude global exploration into any branch of knowledge is possible only through technology enabled learning.

6. Internet and computer based Instruction in Education

It is through the internet the video offers its greatest promise for educators. In the near future, then the teachers will have access to support and vast libraries of educational video content, from second to hours in length. The computer can interface with the TV systems for showing graphics or other visual aids and the internet teleconferencing is provided using a variety of communication technologies such as satellite, microwave and instructional television fixed services. These are four different types of teleconferencing: audio, video graphics, video and computer teleconferencing allows learners and interactions to interact two ways. With the fast growth of the Internet, and the fast progress of communication, the World Wide Web (www) is a new promising medium for lifelong learning.

7. Application of e-Learning in various types of methods used in Studies and Learning

Multimedia is highly useful in Research, Teaching, and Learning. In research, review or related and earlier studies can be done through various search engines. Panel discussion, presentation by learners and teachers, submission of assignments feedback from students, 3600 performance appraisal system for teachers, recording for future, workshops, multiple choice tests, guest lecturers from distant university experts, case study, projects, remedial teaching, training the absentees, disseminating instructions, easy evaluation methods, on-line objective testing, student-created projects, experimentations, e-merging learning workshops etc are some of the easy tasks where e-Learning can take place easily. 3D graphics are used for creating various models of science and maths. Hypermedia, interactive multimedia, multimedia presentations, virtual reality community, personal information management programs, departmental information management programs, documentation of teaching material, etc will also enhance applications in higher educational system (manetta, C and Blade, R).

8. Importance of e Learning

- **Integration and Control: -** All institutions, research institutions, regulatory bodies, professionals, academicians and students can be integrated on regional, state, national and international level. Sharing of knowledge, experience, infrastructure and technology will enhance the effective and efficient utilization of available resources. Students can have an access to unlimited storehouse of information at any hour and from any place.
- **Access to best faculty and quality study material: -** since e-Learning has ability to cover distances, a few good teachers a can be scaled up. Faculty availability is not restricted by geography or even time because of recorded classrooms. The expert teachers also will be identified and honored by the demand for them from learners.
- **Human bias: -** e-Learning helps removes the bias of sex, religion, colour, caste etc.

- **Dust free environment:** - Unlike in chalk and talk method, learning atmosphere becomes dust free.
- **Individualized instruction:** - e-Learning also offers individualized instruction, which print media cannot provide. It makes learning exciting, engaging and compelling. Blended programmes can integrate e-Learning with face-to-face workshops, coaching, action learning and a huge range of other learning methods to cover a range of needs, styles and approaches. Private messaging readily supports these exchanges while protecting the participants' privacy. Based on the individual and/or group needs, interest, career objectives and job profiles, lesson modules can be chosen.
- **Swift learner:** – slow learner mechanism: - Quality of output information can be adjusted to the required level and are flexible. E-Learning emphasizes continuous learning and promotes "just-in-time" and "just enough" learning. Both slow and fast learners can take their own time of learning because they do need separate timings. And hence the overall stress in the classroom environment can be removed.
- **Flexible:** - On-demand availability enables them to remove stress. E-Learning empowers you to take charge of your learning and to access online library resources. Since the playback of recorded sessions is possible, absentees can learn the lesions when they are back and the slow learners can listen for more than one time.
- **Cost effective for both students and organization :-** e-Learning makes the best knowledge products available at an affordable rate by cutting down the travel and extra living expenses. Overall cost for the organization is also reduced (instructor's salaries, meeting room rentals, and student travel, lodging, meals, etc).
- **Zero opportunity cost of time:** - Since learning can be planned after regular working hours or on holidays or at home, the opportunity cost of the time spent on training is zero. Learning time is also reduced to an average of 40 to 60 percent, as found by Brandon Hall (Web-based Training Cookbook, 1997, p. 108)
- **Reproduction, gaming and. interactivity will enrich e-Learning:** - Research shows that student understanding and retention improves when they learn by experience. Technologies such as collaboration, interactivity, modeling, simulations, virtual reality interfaces and gaming will help students experience the skill while being taught. This will help the students in Albert Einstein's scientific method of learning. He says 'I do not teach my pupils. I provide conditions in which they can learn.' And hence e-Learning is a wholesome learning.

9. Conclusion and Suggestion

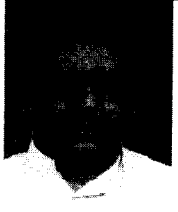
An effective education in the 21st century must provide a harmonious balance between academic education and practical skills development, including technical and vocational education: - UNESCO. The management of universities who do not understand the changing requirements of knowledge-based societies and the importance of ICTs within all professions, and when they do recognize this, their failure to set and implement strategies to support the integration if ICTs within teaching throughout the university, which usually

requires finding new or reallocating existing resources to make this happen. Too often it is left to individual professors to innovate without organizational help and support. Electronic Media and information technology paled an important role in providing education and lifelong learning. The following should be planned prior to switch over from conventional learning method to e-learning: The networking infrastructure, Trained Manpower and Inter country exchange will be promoted .

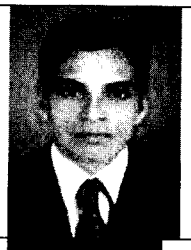
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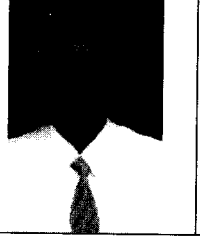
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Information needs and information seeking behaviour of faculty members in electronic environment: *a survey of teacher education colleges of Amritsar*

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Abstract: The paper examines information needs and information seeking behaviour of faculty members in electronic environment and to know types of e-resources and reasons for using e-resources by teacher education colleges' faculty. A well-structured questionnaire was administrated to all the faculty members of three teacher education colleges of Amritsar city. The survey revealed that all the respondents are well aware of e-resources and used both subscribed and open sources of electronic information resources. Most of them accessed e-resources for updating their knowledge. Suggest to organise regular training/orientation programmes for faculty members to use e-resources effectively.

Keywords: Information seeking behaviour, Information needs, Electronic environment, Teacher education

1. Introduction

Teaching is considered a noble profession in the society. Teachers are important facet of the society as they educate the youth and make them responsible and productive members of the society. So we can say, the progress of a society depends on the quality of its teachers. Professional training of the teachers is required to equip them with adequate knowledge and skills to perform their fuctions properly. Therefore, teachers' training assumes special importance and it is important component of teacher education. As stated by NCTE (1998) in Quality Concerns in Secondary Teacher Education, "The teacher is the most important element in any educational program. It is the teacher who is mainly responsible for implementation of the educational process at any stage."

2. Literature Review

Brown assessed the information seeking behaviour of the scientists at the University of Oklahoma using an electronically distributed questionnaire. The findings revealed that the preferred source for information was printed journal articles. All the scientists scan latest issues of journals to keep themselves abreast of current developments in their fields and personally obtained the journal articles. Patikungkho and Deshpande conducted a study on seven faculties of Rajabhat universities to know the purpose and method of users' information seeking in the library. The results indicated that 41% of the respondents consulted the knowledgeable person in their respective fields. 82% of the faculty members sought information for preparing class lectures and 37% of the faculty members used

internet on daily basis. 76% of the respondents used internet at home. Khan conducted a survey to find out the impact of ICTs on information needs and information seeking of teachers of government colleges of Bahawalpur.

The study indicated that majority of the respondents sought information for lecture preparation (4.28 w.m). Major obstacle faced while seeking information was lack of computer hardware and software (3.25). Google (23%) was mostly used search engine. Bhatti conducted survey on selected four faculties i.e. faculty of Arts, Education, Islamic learning and faculty of science to know kind of information needed for teaching and research and their preferred study places. The study revealed 70% of the teachers used main library and most of them (56%) were not satisfied with current stock of books.88% of the respondents sought information for preparing class lectures. Computers shortage and lack of internet access were main problems faced by the faculty members. Kadli and Kumber explored information seeking behaviour of faculty members of the commerce colleges in changing information and communication technology. The study revealed that majority of the respondents (88.11%) sought information to prepare class notes/mainly on lecturing. Most of the faculty members (95.8%) spent their time on accessing e-books. Khan and Bhatti carried out survey on information needs and information seeking patterns of the law faculty members.

The study revealed that the respondents used a variety of legal information sources. Majority of the law faculty members (91%) preferred information in print format and in English language. Most of them availed internet facility at home and preferred Google search engine (93.1%). Bansode and Nargide carried out survey on the faculty members of the business school in the digital environment to get aware as how they access information resources while searching for desired information. The survey revealed that all the respondents preferred full text e-resources and accessed these e-resources on their table (84.62%) on daily basis (73.08%).

3. Objectives of the study

- To determine preferred types of e-resources used by the faculty.
- To determine preferred location to access electronic resources by them.
- To examine the reasons for using e-resources over printed resources.
- To know the problems faced while using e-resources and requirement of training.

4. Research methodology

For the present study, data was collected through a structured questionnaire. This study covers the faculty members of three teacher education colleges of Amritsar city only. viz

Khalsa college of Education, DAV college of Education for women and Khalsa college of Education, Ranjit Avenue .

The faculty members both regular and adhoc who were teaching in service teachers, B.Ed, M.Ed and research scholars were considered for the study. These colleges provide pre-service and in service teacher education with an aim to update and improve their professional knowledge and develop scientific temperament among student teachers and teacher educators. The collected data have been analysed by MS-Excel and SPSS for descriptive statistics and presented in tabular form and graphic form.

5. Analysis of data and interpretation

- **Data Collection**

Table 1- Data Collection

Colleges	Frequency	Percentage
Khalsa College of Education Ranjit Avenue	12	26.7
DAV College of Education for Women	17	37.8
Khalsa College of Education	16	35.6
Total	45	100

- **Gender wise distribution of respondents**

Table 2 - Gender wise distribution

Gender	Frequency	Percentage
Female	45	100

Table 2 given above shows that all the respondents (100%) are females.

- **Status wise distribution of respondents**

Table 3 given above shows that majority of the respondents (84.4%) are assistant professors followed by associate professor (8.9%). Principal of Khalsa College of Education Amritsar was abroad.

Table 3 - Status wise distribution

Status	Frequency	Percentage
Principal	1	2.2
Vice-principal	2	4.4
Associate Professor	4	8.9
Assistant Professor	38	84.4
Total	45	100

- **Qualification wise distribution**

Table 4 given show that majority of the respondents (66.7%) hold post graduate degree.33.3% of the respondents hold Ph.D degree.

Table 4 - Qualification wise distributions

Qualification	Frequency	Percentage
M.Sc	30	66.7
Ph.D	15	33.3
Total	45	100

- **Purpose of seeking information**

Table 5 above demonstrate the purpose of seeking information. Majority of the respondents (66.7%) need information for updating knowledge followed by for supporting research (57.8%) and 22. % need for spending leisure time.4.4% of the respondents mention entertainment as 'any other' sources. It reveals that most of the teachers' purpose of searching information is to keep their knowledge up to date.

Table 5 - Purpose of seeking information

Purpose (Multiple choice)	Frequency	Percentage
For lecture preparation	11	24.4
For updating knowledge	30	66.7
For research	26	57.8
For spending leisure time	1	22
Any other	2	4.4

- **Aware about e-resources:** Table 6 above shows that all the respondents have the knowledge of e-resources.

Table 6 - Aware about e-resources

Awareness	Frequency	Percentage
Aware	45	100
Not aware	-	-
Total	45	100

- **Type of e-resources access**

Table 7 exhibit electronic information resources used by the faculty members to meet their needs. Most of them (60%) use online databases for information followed by e-journals (53.3%). 20% of the respondents mention e-thesis/research reports. The data shows that online databases are mostly used e-resources and e-thesis/research reports

Table 7 - Type of e-resources access

Type of e-resources (Multiple choice)	Frequency	Percentage
E-Books	22	48.9
E-Journals	24	53.3
Online Databases	27	60
E-Reference sources	12	26.7
E-Thesis/Research reports	9	20

- **Preferred e-resources**

Table 8 depict e-resources preference given to e-resources by the respondents for desired information.44.4% of the respondents prefer both for information followed by open source (46.7%), 8.9% prefer subscribed e-resources. It shows that the faculty prefer both subscribed as well as open source electronic information resources to get required information.

Table 8 - Preferred e-resources

Preferred e-resources	Frequency	Percentage
Subscribed	4	8.9
Open Source	21	46.7
Both	20	44.4
Total	45	100

- **Preferred location to access**

Table 9 - Preferred location to access

Preferred location to access	Frequency	Percentage
Library	3	6.7
Home	21	46.7
Computer Lab	4	8.9
Wi-fi Campus	17	37.8
Total	45	100

Table 9 exhibit place preferred by the respondents to access e-information.46.7% of the respondents prefer home for accessing e-information followed by Wi-fi campus (37.8%), computer lab (8.9%). It shows that the college teachers preferred place is home to use e-resources.

- **Frequency of using e-resources**

Table 10 depict the frequency of using electronic information resources. Majority of the respondents (33.8%) use e resources for desired information 2-3 times a week followed by

need based/ as per their need (31.1%). It shows that faculty mostly use e-resources 2-3 times a week.

Table 10 - Frequency of using e-resources

Frequency of using e-resources	Frequency	Percentage
Daily	12	26.7
2-3 times a week	17	33.8
2-3 times a month	2	4.4
Once a month	-	-
Need based	14	31.1
Total	45	100

- **Frequently used search engine**: Table11 exhibit frequently used search engines. 95.6% of the respondents use Google search engine and 4.4% use Yahoo search engine

Table 11 - Frequently used search engine

Frequently used search engine	Frequency	Percentage
Google	43	95.6
Yahoo	2	4.4
Any other	-	-
Total	45	100

- **Reasons for using e-resources over printed sources**

Table 12 and figure 10 reveal reasons for using electronic information sources. Most of the faculty members (71.1%) use electronic information resources for easy access followed by quick retrieval (55.6%) and time saving (46.7%). 4.4% of the respondents use these for authenticity. It is found that the main reason of using electronic information sources by college teachers is for easy accessibility.

Table 12 - Reasons for using e-resources over printed sources

Reasons	Frequency	Percentage
Easy accessibility	32	71.1
Time saving	21	46.7
Flexible	13	28.9
Quick retrieval	25	55.6
Related links	8	17.8
Keywards	9	20
Any other	2	4.4

- **Problems faced while using e-resources**

Table 13 reveal the problems faced by faculty members while accessing electronic information resources. Most of the respondents (57.8%) faced too much information is retrieved followed by low bandwidth (42.2%). It shows that the main problem encountered while accessing electronic information resources by college teachers is retrieval of too much information.

Table 13 - Problems faced while accessing e-resources

Problems(Multiple choice)	Frequency	Percentage
Too much information retrieved	26	57.8
Lack of IT infrastructure	4	8.9
Low Bandwidth	19	42.2
Demotivated library staff	4	8.9

- **Requirement of training:** Table 14 exhibit need of training/orientation programmes for use of electronic information resources. Most of the respondents (48.9%) agreed there is need for use of e-information resources followed by most required (46.7%). It show that the there is need of training programmes for increased use of electronic information resources.

Table 14 - Requirement of training

Requirement of training	Frequency	Percentage
Most required	21	46.7
Required	22	48.9
Not required	2	4.4
Total	45	100

6. Major Findings

The major findings of the present study are:

- All the faculty members of the colleges (100%) have the knowledge of e-resources.
- Most of the teachers search information mainly to keep their knowledge up to date followed by for supporting research and for lecture preparation.
- Majority of the faculty members search information online databases 2-3 times a week.
- Most of the faculty prefer to search information from both subscribed and open sources of electronic information resources.
- Majority of the teachers prefer home to access electronic information resources followed by Wi-fi campus.

- Most frequently used search engine by the faculty members is Google.
- Easy accessibility, quick retrieval and time saving are the reasons for using e-resources over printed sources.

7. Suggestions

On the basis of the findings of the study following suggestions are put forth:

- There should be regular training/orientation programmes on information search strategy for the faculty members for increased use of e-resources.
- Library staff must be well- trained in handling modern gadgets of information technology so as to guide and assist the faculty in using e-resources whenever the need arises.
- Libraries should upgrade ICT infrastructure regularly.
- Libraries should organise information literacy programme for the users.

8. Conclusion

The study revealed that information needs and information seeking behaviour of faculty members of teacher education colleges in present electronic environment has shifted from printed to electronic resources for the reasons of easy accessibility and quick retrieval of the information. Fast growth of ICT and electronic resources has changed their way of seeking desired information. In order to meet e-information needs of the faculty members, library should provide latest information technology infrastructure, fast bandwidth to increase speed and subscribe to variety of e-resources.

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Information Seeking Behavior of Post Graduate students and teachers of DSCW Library Ferozepur City: *a Case Study*

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Abstract: In order to provide adequate library services to library clients it is necessary to understand the information needs and information seeking behavior of library users. So that we can develop our library collection, improve our library services and library communication and information technology to satisfy the students and teachers of college library. This paper gives us the results of our weaknesses and strengths of library and library staff. It gives us information that students feel easy to use e-resources and internet. but it also reveals that still in this age of ICTs books and other printed material is also very important role among students and teachers .it also gives us information that there is a need to to make the readers aware about latest facilities in the library.

Keywords: Information Seeking Behavior-post graduate Students and Teachers-use of ICTs-E resources.

1. Introduction

Information Communication and Technology has great impact on libraries and information seeking behavior of library users. All the libraries are upgrading their infrastructure related to ICTs in order to provide access to e-resources libraries are getting the membership of different consortiums like DELNET and N-LIST according to the need of the institution. Most of the libraries are providing a separate computer lab with computer internet facilities. Almost all the libraries have Wi-Fi Connection or broadband internet connection in order to provide internet facility to its readers. ICTs has influenced the information seeking behavior of all the readers in general and especially of millennium generation. College authorities are spending a lot of money on library management software and computerization of the library. Librarian is the only person who has to justify the big amount of money spent on libraries by providing effective library services to millennium generation by making sure whether the users are using e-resources of the library or not. For this librarian gets the feedback from the library users from time to time. Even the suggestions are welcomed and looked into.

2. Need and Scope

There is a need to examine whether our library facilities are meeting the needs of students and teachers. Does it has suitable latest ICTs and E-resources in its collection. The aim of writing this paper is to ascertain the user's contribution to the use of e-resources by observing the changes in their information seeking behavior of the students and teachers of Dev Samaj College for Women Ferozepur City, Punjab. This article gives a view of

Information needs information seeking behavior of post graduate students and teachers of Science, Computer science, Commerce, Cosmetology, Punjabi language.

3. Objectives

- To find out the information needs and information seeking behavior of post graduate students of DSCW College.
- To what extent they use internet and printed material.
- For what purpose they use internet.
- If the library is fulfilling their information needs or not?
- Attitude of college teachers and students towards ICTs.
- What other methods students use to get information
- Whether the library users are satisfied with library services or not?

4. Methodology

It is based on Questionnaire, Observation, Depth interviews of students and teachers of different disciplines were held by going to classes. For this study a questionnaire is prepared and distributed among students and teachers to get the answers of questions. Only 165 users give back the questionnaires with answers.

5. Analysis and Interpretation of Data

Table 1 shows that 25 students of M.sc., 34 students of M.Sc. IT, 24 students of M.Sc. Cosmetology, 20 students of M. Com, 40 students of M.A. Punjabi and 22 teachers of these subjects are included in this study. Table 1 shows that highest number (24.24%) of respondents belonged to Punjabi M.A., second highest number920.60%) of M.sc. IT.

Table 1 - Distribution of respondents

Classes	No. of Students	%
M.Sc. Physics	25	15.15%
M.Sc. (I.T.)	34	20.60%
M.Sc. Cosmetology	24	14.54%
Commerce	20	12.12%
M.A. Punjabi	40	24.24%
Teachers	22	13.33%

Table2. shows the information needs of the above mentioned respondents.96% respondents need information for their study materials. 86% need information for general awareness. Teachers need latest information on their subjects in order to keep them up-to-date.22.47%teachers and students get information for participating in seminars and conferences. Both teachers and students need information for preparing class notes and for delivering class lectures. 48.48% respondents need information to prepare power point presentations.

Table 2 - Information Needs

Information Needs	No. of Students	%age
Study Material	160	96%
General Awareness	143	86%
Keeping Upto Date	22	13.33%
Seminars & Conference	37	22.42%
Preparing Class Notes	143	86.66%
Preparing Projects & P.P.Ts	80	48.48%
Preparing Assignments	65	39.39%
Participating in Declamation Contests	16	9.69%

Table 2 indicates 39.39% respondents prepare assignments and 9.06%usera need information for declamation contests and poetical recitations.

Table 3 - Use of Printed Material

Use of Printed Material	%
Books	100%
Journals	50%
Magazines	14.54%
Reference Books	92%
Thesis	13.33%
Conference Proceedings	13.33%

Table 3 shows that 100% students and teachers are still use books .50% users are using journals. Students of cosmetology are using Fashion Magazines like style speak. Vogue Inside ouside, Glamstar, Spa Mantra etc. Teachers and students are using Reference books thesis and conference proceedings. But students do not use Theses, dissertations, Conference proceedings. It is clear that all the users are still using printed materials for getting there required information in this age of Information technology. Because most of the research work is published in print form.

Table 4 - Use of E-Resources and Internet

	M.Sc. (I.T.)	M.Sc. Physics	M.Sc. Cosmetology	M.A. Punjabi	M.Com	Teachers
WWW.use	100%	80%	100%	55%	90%	54.54%
Google	100%	96%	100%	55%	90%	54.54%
Wikipedia	100%	80%	100%	50%	90%	54.54%
Offline Resources CDs & DVDs	35.24%	16%	50%	5%	30%	9%

Table 4 indicates that 100% students and teachers of computer science and cosmetology department are using World Wide Web, search engine Google, Wiki pedia for getting required information. Only 35.24% Computer students use offline resources like CDs and DVDs for getting their required Information. 16%respondents of M. Sc. Physics,505 of cosmetology , 30%M. Com. Students are using off line resources. 5% Students of Punjabi and 9%teachers of all subjects use offline students.90% M. Com. Students are usingW.W.W. Google and Wiki pedia and about 55% punjabi language students use Google and www. They are of the view that information is available in English, that is difficult totranstlate.

Table:-6: Advice & Help

Advice of Teachers	**100%**
Friends	**100%**
Library Staff	**50%**

100% respondents get advice of teachers and friends and 50% users take the help of library staff for using computer technology for getting information.

Table:-5 Awareness & Use of E-Resources

OPAC	31.51%	52
Web OPAC	6%	12
Consortiums Delnet N-List	18.78%	31
Institutional Repository	6%	10

Table 5th indicates that only 31.51% respondents know how to use OPAC facility. Only 6% users have knowledge of Web OPAC. Only 18.78%use e- resources of DELNET and N-List. Most of the teachers use e-resources. Only 6% users have knowledge of Institutional Repository.

6. Major Findings of the Study

- Teachers need information for preparing class lectures. Secondly they need latest information to update their knowledge in their subjects.
- They use internet for preparing their assignments, class notes, preparing projects and for making Pos.
- They are of the view that they get their notes in easy language from internet.
- Only 31.51% users have awareness about OPAC. No one has knowledge about Web OPAC.
- Students have no knowledge about institutional repository of the institution.
- Students have no knowledge about the e resources of DELNET and N-LIST.
- Teachers use printed as well as E- resources of Consortiums.
- I also have find out that printed material has equal value to E-resources.

- Aged Teachers use several methods to seek information but have problems to use Internet so they seek the help of Library staff.

7. Suggestions

- All the libraries should provide a separate computer Lab with computer internet facilities. It is the need of the day for all libraries.
- Librarians should help the students that they copy the information in English and paste it on Google Translate and click on Punjabi and translate it in Punjabi.
- More orientation Programmes should be organized to give knowledge to the the students about institutional Repository, Web-OPAC.
- Students should be given training by the librarian how they can use OPAC facility.
- Librarians should develop ability to educate the faculty members, help them to understand the power and applicability of E-resources.
- Students should have practical hands how they can use the E-resources of DELNET and N-List.
- The problem of slow speed of internet should be solved.
- Students want to use a pen drive but they are not allowed to use it because of the fear of virus. So Antivirus should be used in order to protect the computers from virus in lab.
- Printed should be provided in the library for getting a hard copy of information.

8. Conclusion

Study gives us information that students and teachers are using both e-resources and printed material. Students and young teachers of all disciplines feel easy to get information from internet, but aged teachers need help of library staff. Librarians should know that how the college faculty seek information and purchase more e-resources and books to fulfill the needs of the library users. They should improve their skills to teach the users about the use of library infrastructure in order to provide value added services to the library users.

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Information Seeking Behavior of Students and Faculty Members of Punjab Agriculture University, Punjab

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Abstract: The introduction, monitoring and management of Quality Information Services is a benchmark for the performance of systems. The quality of the data is essential to the acceptance of International standards and reputed research journals. Users will only rely on libraries which are an integral part of any academic system. The quality of data can be expressed in terms of accuracy, reliability, age, correctness, completeness etc. The present article highlights information seeking behavior of PG students and faculty members of Punjab Agriculture University Punjab, India. The study focuses on the ICT facilities provided and the satisfaction level of users, quantum of time spent in libraries and the habit of visiting other libraries by the respondents.

Keywords: Computer Software, ICT Facilities, Infrastructure, Quantum of Time Spent

1. Introduction

The essential components in a library and information system are documents, users, and librarians. It has often been complained that the information professionals have neglected the users and their information needs. One of the main goals of any information system is to provide pin-pointed, in-depth and expeditious information service to users. In order to achieve this goal, various pieces of recorded information are gathered in information centre and qualified personnel are recruited to establish purposive contact between the users and the information embodied in variety of documents. User study means a systematic examination of characteristics and behavior of the users of the information system. It is directly linked with effectiveness of library and information services as they aim at satisfaction of user's needs. The term user study "Mainly focus on user to measure their information use pattern, information needs, and information seeking behavior.

2. Information Communication Channels

Channels are the means by which ideas, opinions, facts, and interpretations are communicated. These channels may be formal books, journals, research reports, slides, audio-tapes, gramophone records, films-or inform-after-dinner discussions, casual meetings with colleagues, correspondences. The line between formal and informal channels is difficult to draw; a reasonable approximation might be that formal channels are susceptible of use by a number of people, not necessarily at the same time, while informal channels operate on an individual interpersonal basis. Channels may also be classed as primary and secondary; the primary channel carries the actual message, while the

secondary channel leads one to the primary channel. Review articles, abstracting journals, and indexes are all secondary channels.

3. Literature Review

Partap (2007) conducted a survey of the libraries of 18 colleges of education in 3 districts of Punjab. He found that collection size of the libraries varied considerably and comparatively older colleges had large collections. Kumbar et al. (2007) "Use of Periodical Literature in the University of Agricultural Sciences Daharwad: A Case Study". Authors assessed the extent of use of periodical literature by agriculture scientists. Authors suggested that to encourage users to make use of e-resources. Achonna (2008) in research article "Awareness, Access and Usage of E-Journal Resources of the Library, by the Students of Yaba College of Technology, Study concluded the need for the training skills, provision of adequate computers, need to popularize the information technology and its usage and to motivate the students to use e-journal resources. Sujatha and Mudhol (2009) in the paper titled "Evaluation of Electronic Information Services in the Fisheries College Libraries in South India: A Study" described the electronic information services in four fisheries college libraries.

Biradar et al. (2009) conducted a survey under the title of "Use of Information Sources and Services in Library of Agriculture Science College, Shimoga: A Case Study". About 72.27% users were using lending service and among them 54.79% were satisfied. The services like SDI, ILL, CD Rom search etc. were fairly used, while non documentary sources were less used. Authors concluded with the urgent need to establish e-consortia model among agriculture libraries in India. Balasubramanian S. S & Sadik Batcha M (2011) carried out a study under the title of "Users Perception and Satisfaction on the Services of Academic Libraries in Puducherry Region: A Study" to find out the users perception on quality of various types of services provided in academic libraries of Puducherry region. The authors have concluded that lack of IT initiatives, lack of technical knowhow in IT enabled services, lack of subscription of International Journals have considerable impact on library services provided to users.

4. Objectives of The Study

- To know the usage of ICT facilities by respondents for academic purposes in University Libraries of PAU, Punjab
- To know the Respondents' frequency of visiting other Libraries for collecting academic information.
- To know the Quantum of time spent in Libraries everyday by the respondents.
- To know usage of Computer software by the Respondents for their Research work.
- To know the level of satisfaction of respondents on the ICT facilities provided in the Punjab Agriculture University, Punjab

5. Hypotheses of the Study

1. There is no association between the categories of respondents and the use of ICT facilities in libraries.
2. There is no association between the categories of respondents and their frequency of visiting other libraries.
3. There is no association between the categories of respondents and the quantum of time spent in libraries.
4. There is no association between the categories of respondents and the usage of computer software.
5. There is no association between the categories of respondents and the level of satisfaction on the ICT facilities provided in libraries is accepted.

6. Method of Study

Normative survey method has been used for this study. The respondents were selected by the method of random sampling. It is through the questionnaires, an attempt has been made by the researcher to know the users' Information Access pattern of PG students and Faculty members of Punjab Agriculture University, Punjab (India).

7. Data Analysis

The table analyses how many respondents get use of ICT facilities in libraries for their academic purposes. The data in the table explains that out of 582 students, 340 Respondents (58.41%) get use of ICT facilities in Punjab Agriculture University Libraries. 242 respondents (41.49%) found not using ICT facilities in libraries. The gender wise data of these students further explains 222 male and 118 female populations who actively use ICT facilities. The Faculty members who get use of ICT facilities are 110(50.46%), and 108(49.54%) members do not use ICT facilities in university library or its department libraries. The overall data in the table explains that out of total 450 respondents, (56.25%) make use of ICT facilities in libraries at the fullest extent. The calculated chi-square explains the value of 37.15 which brings out the p-value of 0.001 and it is significant and less than the table value.

So the formulated null hypothesis of **"There is no association between the categories of respondents and the use of ICT facilities in libraries"** is rejected.

The table analyses the frequency of visiting other libraries by the respondents apart from using their university and department libraries. Out of 582 PG Students about 272 respondents are found visiting other libraries 'daily'. The next higher frequency noted in this category of respondents is 'once in a fortnight' showing 152 responses. The third frequency observed is 'once in a week'. The same results are noted in the case of their gender wise analysis.

Table 1 - Analysis of Respondents' Using ICT Facilities in University Libraries for Academic Purposes

Category of Respondents	Gender of Respondents	Used		Not Used		Total	
		Respondents	%	Respondents	%	Respondents	%
PG Students	Male	222	49.33	200	57.14	422	52.75
	Female	118	26.22	42	12.00	160	20.00
	Total	340	58.41	242	41.49	582	72.75
Faculty Members	Male	80	17.78	98	28.00	178	22.25
	Female	30	6.67	10	2.86	40	5.00
	Total	110	50.46	108	49.54	218	27.25
Grand Total		450	56.25	350	43.75	800	100

Chi-square	Df	L.S
37.15	3	0.001 Significant

Table 2 - Analysis of the Frequency of Visiting Other Libraries by The Respondents

Category of Respondents	Gender of Respondents	Every Day	Once in a Week	Once in a Fortnight	Once in a Month	Very Rarely	Total
PG Students	Male	180	105	125	10	02	422
	Female	92	33	27	07	01	160
	Total	272	138	152	17	03	582
Faculty Members	Male	89	55	26	06	02	178
	Female	16	12	07	04	01	40
	Total	105	67	33	10	03	218
Total	Overall	377	205	185	27	06	800

Chi-square	Df	P Value
	6	0.001 Significant

The analysis regarding the faculty members explains that they also rely on other libraries with the frequency of 'daily'. Yet the next higher frequency noted in this category is 'once in a week'. The third frequency is 'once in a fortnight'. The overall total data also support the same fact. It is inferred that the library of PAU should improve the collections to meet the needs of P.G students and Faculty members. The chi square analysis results the p value at 0.001 which is found to be significant. It is less than the table value. So the formulated null hypothesis of **"There is no association between the categories of respondents and their frequency of visiting other libraries"** is rejected.

The study also concentrates on the time spent by the respondents for collecting information in the University and Department libraries for their academic purposes. The voracious readers in the category of Students observed in total are 44. They spend up to 6 hours in libraries every day. The next major group of 90 respondents spends up to 4 hours in libraries. The other timings of up to 2 hours consists 178 respondents and in up to one hour falls 261 respondents of students at a major level. The gender wise data also supports the same fact.

While analyzing the category of faculty members, the voracious readers of the library are about 22 who spend up to 6 hours in libraries every day. It is followed by 33 members who

spend up to 4 hours in collecting their information from library. The maximum number of 109 respondents falls in the timing of up to 1 hour. It is deduced that about 06 from this category and 09 from students do not visit any time to library for any purpose. The data in the above table lights on the fact that the number of users decreases while analyzing the increased time of using the library.

The chi square analysis results the p value at 0.001 which is found significant. It is less than the table value. So the formulated null hypothesis of **"There is no association between the categories of respondents and the quantum of time spent in libraries"** is rejected.

The study also focuses whether the respondents make use of any computer software for their research purposes. The data in the table explains that Out of 582 P.G. Students about 380 among them are noted using computer software for their research purposes yet 202 respondents are not using any computer software. The use percentage in this category of respondents is about 77.55 percentages.

Table 3 - Analysis of Quantum of Time Spent in Libraries Everyday by the Respondents

Category of Respondents	Gender of Respondents	Below 1 Hour	1 to 2 Hours	2 to 4 Hours	4 to 6 Hours	Never Visited Library	Total
PG Students	Male	204	109	69	34	06	422
	Female	57	69	21	10	03	160
	Total	261	178	90	44	09	582
Faculty Members	Male	91	36	27	18	06	178
	Female	18	12	06	04	0	40
	Total	109	48	33	22	06	218
Total	Overall	366	226	123	66	15	800

Chi-square	Df	P Value
41.89	12	0.001 Significant

Table 4 - Analysis of Using Computer Software by the Respondents for Their Research Work

Category of Respondents	Gender of Respondents	Used		Not Used		Total	
		Respondents	%	Respondents	%	Respondents	%
PG Students	Male	272	55.51	150	48.39	422	52.75
	Female	108	22.04	52	16.77	160	20.00
	Total	380	77.55	202	65.16	582	72.75
Faculty Members	Male	88	17.96	90	29.03	178	22.25
	Female	22	4.49	18	5.81	40	5.00
	Total	110	22.45	108	34.84	218	27.25
Total	Overall	490	61.25	310	38.75	800	100

Chi-square	Df	P Value
35.58	3	0.45 not Significant

While analyzing the faculty members there are about 110 respondents who are found using computer software but equal number of 108 respondents do not use any software for the research purposes. The user percentage in this category is observed less than that of the students. The overall data explains about 61.25 percent of respondents use software and 38.75 don't use it. The table infers that students are highly using software than faculty members. The chi square analysis explains the p value at 0.45 which is found not significant. It is more than the table value. So the formulated null hypothesis of **"There is no association between the categories of respondents and the usage of computer software"** is accepted.

The study explains the level of satisfaction of respondents on the ICT facilities provided by Punjab Agriculture University Library. The analysis is made in 4 point scale. The category of students has exposed their satisfaction at highly satisfied point scale at the maximum response of 282. It is 73.25 percentages out of total highly satisfied scale. Still about 162 respondents of this category are found with partially satisfied level and 110 are in the scale of just satisfied. Yet about 28 respondents feel not that much satisfied. The same kind of results is shown in the case of gender wise analysis of data in this category.

Table 5 - Analysis of The Level of Satisfaction of Respondents on The ICT Facilities Provided in The PAU Library

Category of Respondents	Gender of Respon-dents	Highly Satisfied	Partially Satisfied	Just Satisfied	Not Satisfied	Total
PG Students	Male	232 (60.26)	90 (40.17)	82 (52.91)	18 (50.00)	422 (52.75)
	Female	50 (12.99)	72 (32.14)	28 (18.06)	10 (27.77)	160 (20.00)
	Total	282 (73.25)	162 (72.32)	110 (70.97)	28 (77.77)	582 (72.75)
Faculty Members	Male	88 (22.86)	50 (22.32)	35 (22.58)	5 (13.89)	178 (22.25)
	Female	15 (3.90)	12 (5.36)	10 (6.45)	3 (8.33)	40 (5.00)
	Total	103 (26.75)	62 (27.68)	45 (29.03)	8 (22.22)	218 (27.25)
Total	Overall	385 (48.13)	224 (28.00)	155 (19.36)	36 (4.50)	800

Chi-square	Df	P Value
41.89	9	0.001 Significant

Whereas the analysis of faculty members brings out the result that out of 218 respondents about fifty percent i.e. 103 of them are found highly satisfied and about 28 percent of respondents fall in partially satisfied point scale. Only 8 respondents are noted to be unsatisfied level. So the study infers the fact that the majority of respondents are quite satisfied at the percent of 48.13 and about 224 are observed partially satisfied at the percent of 28.00 yet 4.50% of user's respondents feel dissatisfied. The steps should be

taken to maximize the satisfaction level among the users. The chi square analysis results the p value at 0.001 which is found significant. It is less than the table value. Therefore the formulated null hypothesis of **"There is no association between the categories of respondents and the level of satisfaction on the ICT facilities provided in libraries"** is rejected.

8. Conclusion

The study has brought out the important findings that the PG Students and Faculty members of Punjab Agriculture University Punjab, India highly use Computer software, Visiting other libraries and make use of library at a maximum level for their academic purposes and in result it has made high impact on the information seeking behavior on par with the changing ICT environment.

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Management of e-Resources: *Issues & Challenges for LIS professionals*

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Abstract: The advent of IT has made a clear and pervasive impact in almost every area of library services. As such, the library environment has undergone a rapid changes leading to new generation of libraries with an emphasis on e-resources. Moreover, as the popularity of e-resources increases, the librarians and staff are also concerned about e-resources, their methods accessing, evaluation, selection, organization etc. The present paper is an aim to know how to manage e-resources in the modern LIS for better digital information services and challenges facing with e-resources. The paper defines the need of e-resources and their management in libraries and discusses the features, types, advantage & disadvantage of e-resources & Web technology tools.

Keywords: e-Resources, accessing, evaluation, selection, organization, management, digital information.

1. Introduction

In this IT dominated era, everyone is striving and determined to keep pace with the technology and developments that take place everywhere in the world. Due to information explosion, advancement of education system and technological changes the choice, requirements and demands of the users are changing and increasing in rapid way in this age. The traditional, conventional and old pattern of accessing information and knowledge is becoming outdated as it is more time consuming, troublesome and dependent on the place, person and availability concerned person and resources. Whereas the electronic resource is easily accessible from anywhere across all geographical boundaries. E-resources add value while conducting R&D and consultancy activities. It saves time of users, service provider, librarians and is the fastest mode of transmitting acquired information from one to another. E-resources are becoming increasingly important to libraries of all types and sizes. Now a-days the information and communication technology is growing in such a way that it is not possible for traditional library system to provide information at a speed comparable to e-resources.

2. Features of E-Resources

Now competition is to put more and full text on web for wider use. The main future of digital world, through now commonly known to most of us, however is being summarized as below:

- Easy access to information any where any time to any one without physical existence.
- The potential to display materials that are in inaccessible formats, for instance, large volumes or maps.
- Comparatively economical and potential for integration into teaching materials.
- Access to related material though linkage.

- Enhanced search ability, including full text.
- Integration of different media (images, sounds, video,etc.)
- The ability to satisfy requests for surrogates (photocopies, photographic prints, slides, etc.).

Having all these features and advantages over printed material, some may join, Martha Pankake who commented that "we see that the types of materials scholars use correspond poorly with the types of material most readily accessible by computer". At the same time, the mode of users' information seeking behaviour change very quickly and adapt to the new scenario and new model which is easy and convenient, though it may take time for such changes.

3. E-Resources Life Cycle

The e-Resources life cycle is entirely different from that of the print resources. The management of the e-Resources will become easier when the life cycle of the e-Resources is completely understood. The e-Resources life cycle consists of 5 different phases and each phase of it is associated with several activities.

Acquire : E-resource is acquired by the Library;

Access : E-resource is accessed by the user;

Administer : E-resource is administered during the subscription process;

Support : User needs support in content delivery;

Evaluate : At the end of the cycle, the E-resource needs to be evaluated for considering its renewal or otherwise; several activities as associated with each phase above makes the Management of the E-resources as more complex and challenging.

4. Management of E-Resources

Management of e-Resources effectively is a big challenge for LIS professionals as these resources require special skills and expertise to build up, organize such collection. Connell is being quoted here from Morning Herald 0f 23 Sept.05 stating rightly that 'It all seems very attractive-scanning documents, taking pictures, putting them into computer for safekeeping, allow us to through away the hard copies and save spaces. But what happens sometimes later when we discover that we no longer have machines, programs, the hardware, the software, know-how to access all that computer based digital material. There has been continuous increase in printed as well as e-Resources. But increase in e-Resources is likely to increase manifold in near future. With this rapid increase in production of e-resources, would result in larger collection of such resources in all the libraries. As such the management of large virtual collection would become more and more complex which would require good e-Resource management system so that e-Resources and other resources could be integrated for effective use. Moreover, every organization is going for building up institutional repository that would also need proper management as an open source for wider use. Cole (2005) described that complexities that those who manage electronic resources face (problem) on daily basis. However, Celeste Feather (2006) feel that e-Resource management has evolved to a point where the matter where the matter of

troubleshooting an access problem does not need to be shared with so many individuals unless it is major or unusual.

5. Advantages of E-Resources

The numerous problems associated with the present system of research publication through print journals include high journal cost; the scattering of articles on a subject due to the proliferation of journals, lengthy delays in publication; reviewer bias in the refereeing systems; low-circulation journals, lack of timely feedback to authors; and the reselling of scholarly writing will be minimized due to inclusion of e-journals in library and information centers. Apart from the above, some of the other advantages of e-resource are as follows:

- 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 does not require physical processing
- It can easily merge with altering service.
- It provides improved access through full text searching
- It can solve the problem of missing issues of journals
- It can be updated more easily
- Reduce storage space
- It can easily be managed by adding bookmarks and personal notes to the sites or by downloading in to private files or databases for coping and editing.
- Compatibility with the search engine.
- No concern about theft or mutilation

6. Disadvantages of E-Resources

Although there are many disadvantages of e-Resources in Llibraries;

- Initial high infrastructure and installation cost.
- Need special equipment to access.
- Lack of compatibility among different publishers.
- Hardware and software compatibility issues between publishers and users.
- Excessive printing of documents.

- Difficulty inherent in relating to a large amount of data on a screen.
- Causes more concern about copyright.
- Efficient manpower is required.

7. Issues and Challenges of E-Resources

With the considerable increase in the considerable increase in the number of e-Resources, the issues are multiplying making the management of the e-Resources more difficult. Some of the issues to be address are as follows:

- **Justification:** The library has to assess the need for obtaining the budget related sanctions. LIS professionals need to be more responsible for managing their budget effectively. They should ensure that they were spending money on needed resources i.e, those e-Resources that were being used. In this regard, 'cost per user' formula will help the librarians for making decisions whether or not to go for a certain e-Resources. It is nothing but result of dividing the annual cost of the e-resources by the number of times the same resource was used; though, it appears to be simple task, it is one of the challenges in the management of e-Resources.
- **Open Source:** These resources are free and downloadable. Even though they are easily acquired, the continuity of availability of such resource would be an important issue.
- **Trail Access:** Vendors and aggregators are coming out with newer marketing techniques such as providing trail access of the resource with nominal fee or free many a times. But such an access is limited for a certain period.
- **Multiple Access Models:** The prices e-Resources are offered in a variety of access models. Different subscription models are made available depending on the requirement of the libraries. These include for single site, different geographical sites. The content is made available for the current year as well as for back years as archival.
- **License Agreement:** Libraries need to go into deep when they enter into license agreement, as it contains several legal issues. This agreement differs from vendor to vendor and is not uniform. Hence each time before any e-Resource is considered for acquisition, one has to be careful in NOT violating the terms and conditions of such agreements.
- **Authorized Users:** In general e-Resources are subscribed and made available on the campus network and or wide area network which are IP-enabled; there is need to define the authorized user in order to prevent the e-Resources from misuse. The library should ensure that only authorized patrons should get access to the content; the range of IP-address, registration of Proxy Server, are the issues to be sorted out for better management of e-Resources.
- **Hardware & Software:** Considering a suitable hardware and software for the proposed e-Resources is an issue. The content of e-Resource usually is not stored

in the library. Hence managing links to the content through the link resolvers is another challenges, which should be taken care in the selection of Hardware and Software.

- **Tracking and Linking:** The website of the e-Resources provider or the host will have different administrative modules. Exact location of these modules, the procedure for logging on their site, setting parameters are some of the issues to be considered.
- **Usage Statistics:** Generating usage statistics is another challenging task. Different procedures are being adopted for generating usage statistics. While some publishers do allow libraries to generate usage statistics on their own, some do not. The library needs to obtain these statistics from the publishers at regular intervals for consolidation, which would play an important role in evaluating its value/usage before considering them for renewal.
- **Trouble Shooting:** A directory of trouble shooting should be compiled and made available to the users. This will be useful both for the library professionals as well as the end-users.
- **User Feedback:** Since the E-Resources subscribed is meant for use, feedback from users is a vital input in the decision making process. User satisfaction, usefulness of the e-Resources, down-time analysis, rights of the user is some of the issues to be considered.
- **Monitoring and Evaluation:** In order to evaluate e-Resources, the library should obtain usage statistics, feedback from faculty, end users. Also if any serious issues like problem logs etc., are to be evaluated carefully.
- **Vendors' Role:** While the libraries play important role for managing their print resources, when it comes to e-Resources, the management of e-Resources is shared both by the libraries and by the vendors. The role played by vendors is of great concern and filled with many challenges. There is a need for vendors to maintain detailed knowledgebase for e-Resources in addition to many other tasks.

8. Future of E-Resources

Management of e-Resources is receiving high attention in the present day digital world. Growth of e-Resources, even though slower than what is expected will force the libraries to switch over to more and more e-Resources in future. Several Open Access & evolving scholarly communication models ensure that e-Resources will continue to increase, but the future of pricing models of accessing etc., remain unclear. It is most likely that many challenges are encountered during implementation of ERM systems. However, with the innovative approaches to solve these issues and with a high degree of emphasis on standardization, the task of managing e-Resources will become less complex in the future.

9. Conclusion

There is a need to improve efficiency and workflow for e-Resources management. Since technology continues to evolve, the evaluation and implementation of new technologies

become significant. It is perceived that patrons will be in favour of e-Resources and demand for a simplest most direct path to information irrespective of the methods that are increasing important for end-users. In order to provide enhanced patron access and services, libraries need to manage e-Resources effectively to the optimum utilization by overcoming the above issues and challenges.

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Restructuring Academic Libraries through Information Literacy: *Redefining the Role of Academic Librarians*

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Abstract: Information and Communication Technologies (ICT) in education is often perceived to be the critical element in the drive towards a knowledge-based society. The challenge for teacher-educators is to prepare teachers to teach the skills, strategies and attitudes that are part of information literacy. They recognize the critical need for students to learn information literacy, to develop higher order thinking skills, to understand concepts and ideas, to apply what they learn, and to be able to pose questions- to solve problems and be capable to do some amount of quality original research. For this there is a need for effective teaching, information literacy training for teacher-educators, effective implementation of the technological tools in education, proper functioning of the academic libraries, research in instructional technology, creating collaborative learning environments, application of the principles of instructional technology and pedagogy. Information literacy and technology have brought a revolution in education. The present paper also discusses about the multidimensional roles of the academic librarians in the information age, provides few suggestions to academic librarians and concludes by giving a call to academic librarians to implement new technology, impart information literacy education, take all necessary steps and act-in-time to contribute to the goal of providing quality education.

Keywords: Quality Education, Technology, Information literacy, Academic libraries, Librarians

1. Introduction

The higher education landscape is changing beyond recognition and the ubiquity of the Internet and digital technologies are driving these imperatives, offering new opportunities for the application of Information and Communication Technologies (ICT) in support of the five agendas of learning, technology, research, information literacy and restructuring- each one is a powerful vehicle for improving the quality of education. Each of these agendas is interdependent and all the five are beginning to come together. There is a need for pursuing their quality concurrently for them to be maximally effective in contributing towards the fulfillment of the academic goals. The new information environment allows the scholarly world to employ new methods of research and collaboration that exclude many traditional library services, such as collection development, cataloging and archiving. Researchers and scientists can find, gather and organize information in ways that are

useful to them and share directly with their community of peers. The internet technology has proved its potentiality in improving teaching, learning and research. One of the goals of education is to make the student-learners information literates (who are capable to recognize, locate, evaluate, synthesize, and use needed information from a variety of sources) and lifelong learners. Academic librarians have an important role in providing the information literacy education mainly to faculty, student-learners and researchers. Information literacy is an institution wide strategy. Information literacy is a set of abilities the individuals possess to recognize when information is needed, how to locate the needed information, evaluate it, and use the retrieved information effectively for their purposes or to create new knowledge. Information literacy and technology together equip information users with tools needed for their own education, profession, training and lifelong learning.

2. Need for adoption of new technologies and restructuring academic libraries

Technology is a great thing. It needs to be applied through innovative ideas to solve real problems in education. Educators will have the responsibility for deciding how to reach the goal of restructuring and how to implement technology effectively to improve the quality of education. Restructuring is essential for active learning, adventurous teaching and increasing the quality research output. The central idea underlying many restructuring efforts is that the entire educational system it self must be reorganized in order to achieve the kinds of learning and thinking outcomes now seen as necessary for students. The role of the library is necessarily dependent upon the educational objectives of the institution. The academic library is anchored to an organizational form whose social contract and mission need not be radically altered by any technological advance. The academic libraries especially in higher education need to be restructured by providing them enough space, funds, trained-dynamic human resources and organizational scope to implement new technologies (example: opening an e-resource center and a separate information literacy section in each and every college & university library) for improving the library and information services and providing effective user-education. Libraries provide some of the best organized and most easily used information resources and materials and making them available on the Internet is a relatively easy task. Integrating teaching styles and learning styles with instructional technology need to be brought into practice. Understanding the needs of the future learners and exploring conceptions of learning and teaching through the creation of flexible learning spaces is necessary. Learners are now experiencing a wide range of technologies, and these will be pervasive for example, mobile technologies (phone and personal digital devices) with the expectation that their higher education experience will include the daily use of ubiquitous computing. Creating an innovative technology rich-learning space like the learning gateway, implementing the services, facilities and support, and ensuring that they in turn drive the envisaged changes in tutor and student approaches to facilitative learning, are a massive cultural change for any organization. The governance of technology on campus is a crucial issue. The academic librarian with the support from administrative-heads need to implement technology to support the library functions. The library must be a key player in striking a balance best suited to campus needs.

Access to the Internet technology provides an opportunity to enhance students' reading and writing proficiency and to promote their skills in information gathering and problem-solving. It provides immediate access to countless sources of information and direct communication with individuals throughout the world instantly (through e-mail, social networking sites, instant messaging, etc). Internet also is now explored as a medium for research. Internet is helpful for learners, teachers, layman, all professionals and researchers. Hence every academic library should be provided with necessary infrastructure for internet facilities and adequate number of library-instructors to guide the users. Learning to use the Internet involves gaining access to an Internet connection, setting up the appropriate software on a computer, and acquiring knowledge of how to use various tools and resources on the Net. Web pages allow teachers to post lectures, assignments, and exams in an electronic format; the World Wide Web and electronic libraries provide rich sources of information for almost any discipline. PowerPoint slides provide interesting visual presentations, and the telephone and television bring guest experts from distant locations into a classroom. The WWW is a tool that enables teaching, learning and research to take place without being tied to a particular physical educational institution or site, empowers the student, giving him/her greater freedom to acquire knowledge and information and its qualities of easy accessibility has increased the number of users. Course information can be accessed from a distance using television, Web pages, e-mail, chat rooms, and electronic bulletin boards. Multimedia technologies also provide much richer sets of materials for learning than are typically available in class rooms or libraries today. These contribute significantly to students' exploration, teaching and research. It must be remembered that access to technology and exposure to information are not equivalent to learning. Telecommunications technologies (video conferencing, electronic mail, on-line bulletin boards and databases) can strengthen the connections among student teachers, experienced classroom teachers and tertiary educators. Technology can facilitate access to additional resources, such as exchanges of ideas and lesson plans with peers or experts on professional bulletin boards and curriculum materials posted on the Internet. With the inevitable increase in use of new technological tools, networking and the use of networked resources, the traditional approach to teacher-directed pedagogy, where the governing metaphor is that of the lecturer-listener, will gradually change. Faculty, librarians, and student-learners will become a 'community of learning' where all enrich each other and all learn together.

3. The Impact of Google

Librarians have learned to like not only Google, but also some helpful social networking applications that allow them to keep informed, up to date, and connected. Librarians need to be the Google experts since it enables librarians to be more competent in educating users. The more a user knows about any search system, the more effective he or she is at obtaining the best possible results. Becoming a Google expert requires an appropriate strategy for keeping up with Google. Keeping up with google is necessary to take full advantage of the search system, to be a google expert so that he can train users about how to use the new gadgets and google tools, to help keep faculty and library staff alert to change and improvements and to fulfill some queries by mere use of Google. The librarians need to provide tips to users to optimally utilize all available information

options and which is the best among them to suit a particular research task. The librarians need to teach the users when it is best to go for google and when to go for a library database. The G-mail, Google blogs, Google search engine, Google scholar are widely used throughout the world. The i-google page has a lot of options for customization using the useful Google gadgets (like currency converter, news gadgets, dictionary, virtual library gadgets, Google calendar, climate gadget, calculator, etc). Librarians are important partners in promoting, marketing, and teaching the effective use of these Google products. A good amount of literature has been published in the recent years on Google, its products and innovations and usage in libraries.

4. Information literacy

Today's definition of literacy goes beyond the ability to read and write to include thinking critically, reasoning logically, and being globally and technologically aware. A US group, the National Forum on Information Literacy, has identified literate students as those who can: successfully complete a complex problem-solving process that requires them to define the need for information, determine a search strategy, locate the needed resources, assess and understand the information they find, interpret the information, communicate the information, and, finally, evaluate their conclusions in view of the original problem (Cohen, 1995)[1].

Based on the Association of College and Research Libraries' (ACRL, 2000)[2] Information Literacy Standards, an information literate individual is able to:

- Recognize a need for information
- Determine the extent of information needed
- Identify and locate appropriate in formation sources effectively and efficiently
- Apply research skills to scholarly, professional, and personal information needs
- Critically evaluate the quality and usefulness of information in a variety of formats
- Incorporate selected information into one's knowledge base
- Apply technology appropriately and competently
- Use information ethically and effectively to accomplish a specific purpose, including communicating information knowledgeably and persuasively to others
- Understand the economic, legal, and social issues surrounding the use of information, such as plagiarism, citation styles, copyright, intellectual property, and the research and publishing process

Most current work in information literacy is focused on the research needs of students. Effective information literacy is field and discipline specific and needs to be embedded in the curriculum so that it can be a part of teaching and learning arrangements of a course.

5. Information literacy to enhance Teaching, Learning, and Research

The influence of information literacy continues to grow in the libraries. Information literacy training needs to be tailored depending upon the type of user-whether they are teachers, library staff, research scholars or students. Information literacy instructional activities may include course-integrated instruction, use of online tutorials, class web pages, research consultations, a customizable subject guide database, one hour class, etc. Instruction must focus on the learning styles and preferences of the target group. Instruction programmes are not a part of curricula. Discipline specific information literacy courses or instructions receive more interest from the student learners because a majority of the students devote more attention to their curriculum, degree-programmes and their subjects rather than general library instruction. Collaborative teaching including one or more library professional and one or more subject expert(s) will be more helpful while teaching discipline specific information literacy. Information literacy can also be taught at the reference desk. The term techno-savvy is not synonymous to information literacy. First of all before starting to teach about information literacy this has to be made clear. Student search behaviour is an ongoing concern for those committed to designing and delivering effective information literacy programmes. Although internet has potential power in teaching, developing curriculum, student learning and an important source of information for research, it has its own limitations. Without systematic information literacy instruction students, teachers and research scholars cannot realize the full potential of the internet. Moreover it may create confusion for teaching and learning processes. Using survey sites for information literacy scheduling and teaching is a better way to save time while planning for teaching information literacy. Internet survey sites can be used to collect the required information. These sites allow a library's information literacy staff to structure a questionnaire that elicits all of the information (instructor contact information, discipline, desired dates, times, number of students, and session topics) required to design instruction and schedule busy classrooms. Survey sites offer librarians the opportunity to streamline a number of repetitive communication tasks and to collect information quickly and easily. They also allow library patrons to respond to structured requests for information, at a time convenient to them. They are a resource well worth exploring.

The following areas are commonly identified where library-users actually need teaching and training whether they are teachers, beginners, student learners or research scholars: The importance of information literacy and information skills

- How to recognize what information they actually need.
- A strategic approach to interpreting and analysing the assignment question or for their research project or to prepare for a seminar/lecture.
- An ability to work independently to find new information, rather than rely on reading list material alone.
- An awareness of a broader range of information resources (beyond books and web pages).
- Searching skills using electronic information resources, such as electronic databases and electronic journals.

- Searching and evaluation skills using the World Wide Web.
- Applying the information found in the proper manner.
- How to avoid plagiarism.
- *How to develop own tutorials.*
- How to prepare oneself for giving an effective presentation or a class-lecture.
- How to practice effective academic writing.
- How to do conduct a literature search on a given topic using WWW.
- How to work before writing a dissertation for beginners.
- How to use WWW for beginners.
- How to use library-softwares/OPAC/e-resource collections, etc.
- How to collect information to prepare notes, research papers, etc.

Teacher skills in information literacy instruction are critical for improving student capabilities. To encourage the adoption of new instructional strategies requires raising awareness of how students learn and supporting efforts to teach differently. Creative and flexible teaching requires an awareness of different methodologies, developing new skills with these methodologies and knowing when to apply these methods to optimize students' learning. Hence each teacher needs to seriously take part in information literacy and develop self-interest in learning and teaching information literacy and applying it to the respective discipline. By collaborating on course design and teaching, information literacy can be integrated into introductory courses, helping students to recognize the importance of information literacy in their career, become more-informed with improved intellectual capability and gradually develop higher-order thinking skills thus making them critical participants in academics and profession. A librarian or faculty member is a facilitator and motivator in inculcating information literacy but information literacy cannot be completely taught either in libraries or classrooms. The student learners need to learn information literacy through self-efforts and through the experiences shaped by their librarians and faculty. Ultimately, information literacy programmes must be flexible enough to evolve with a dynamically changing environment and substantial enough to respond to the ongoing and complex needs of students, researchers and teachers.

Sometimes the librarians may also face language barriers while teaching student-learners with limited English language proficiency. In such a situation they need to support their teaching by making use of the local language. To develop effective information literacy instructions for distance education students, academic librarians must consider instructional design issues including important factors in selection of distance education technologies, the incorporation of active and flexible learning and periodical assessment of learning to improve instruction. Library and information professionals, students, teachers and research scholars need to master information literacy skills to harness the full potential of the libraries as well as the internet. Information age technologies have

improved the quality of information and thoughts that teachers convey to their students. Information literacy contributes in developing information technology related competencies and skills among end-users. Teaching the evaluation of internet resources is an important part of information literacy instruction. More time is to be spent in explaining how information is created and communicated, help students to develop a sense of context when using information, and the ability to evaluate, guiding them towards assimilation, deep thinking, reflection, and insisting on the ethical use of material. Integrated instruction promotes the discovery of connections, a vital skill in the changing world, where learning how to learn is more important than memorizing specific data that may soon become obsolete or irrelevant.

The essential steps in effective instruction in literature are summarized as follows and the same also do imply for effective information literacy instruction:

- analysis of the subject matter to be taught and student-learners needs;
- specification of the objectives of the course or programme;
- sequencing of the objectives in terms of subject matter coherence and student-learners ability or level of learning capacity;
- selection or development of appropriate methods, tools and media to achieve the desired objectives;
- evaluation of the outcomes of instruction;
- revision of objectives, content, instructional approach in light of the evaluation results.

6. Accelerating learning and knowledge discovery: Redefining the role of the Academic Librarians

Libraries have confirmed their role as reference points for technological and social education in a learning society requiring new forms and new places of learning. Academic libraries are multi-dimensional. As collections become more virtual, they are evolving, and their missions are changing. They emphasize a host of activities, such as information literacy training, shared computing centers, group learning spaces and wireless computing. Academic libraries need to prove that their resources, services and training are effective in aiding student-learning and supporting the research activities of student-learners, research scholars and staff. Knowledge implies a deep understanding of information i.e., bits of information form the building blocks of knowledge. Information professionals and librarians do more than just connect people with information—they provide context and analysis and also provide information skills that turn information into knowledge and results. Academic librarians are the information literacy instructors and technology-teachers. They can play a key role in creating information literate citizens. The librarian encourages the users, helps and guides them in formulating the right request. Librarians need to update themselves with the changing trends in education, technology and training and the impact that these trends have on the delivery of library and information services. They are the ones who develop e-resource collection

and resources supporting curricula and teaching, plan the information literacy programmes, provide effective tutorials, engage classes (short-term or periodically) to the library users based on their level of information literacy, provide training on using the new library and information resources, give web-based instructions, advise faculty and administrators, provide digital reference services and internet service to all types of users and develop the technological infrastructure of the library to support information literacy training. Academic librarians teach information-literacy skills and technological skills by creating both printed and online user guides, information-research tools and materials. They also help students learn at reference desks, over the phone, by e-mail, and increasingly through "digital reference" mechanisms using academic portals, live chat, instant messaging. They also suggest information literacy teaching-learning tips, teach how to use the library software, online catalogues, and discuss them with faculty to promote higher order thinking skills related to information research and design sample information-literacy assignments to help student-learners achieve expected learning outcomes and inculcate the 'graduate attributes' in them thus significantly contributing to the academic success.

Through all of these means librarians with the support of their staff help student-learners and faculty learn how to identify, locate, evaluate, and use information effectively and ethically. Academic librarians have an opportunity to be a relevant guide and effective motivator and teaching-learning collaborator in the academic environment of the future. This depends on the educationalist perspectives, research interests, having an in-depth understanding of what meta-learners require, know learning metaphors, ability to apply innovative ideas in the work-environment, flexibility to learn, re-learn and adapt to new technologies, ability to collaborate with other professionals and being able to work confidently with academic, technical and support staff across organizational structures. Institutional rewards which encourage academic librarians to develop their work, knowledge and technical skills are also important. Academic librarians are well placed to take leadership in educational administration too and demonstrate that their roles are both adaptable and multi-faceted, assume new identities in order to fulfill the goal of quality education and acquire hybrid skills, research capabilities and knowledge that bridge information work pedagogy and technology. To some extent academic library staff has also been learning space managers and service planners, able to assist students to achieve their learning goals. Academic librarians play a key role in teaching information literacy. They also create collaborative learning environments. They need to partner effectively with student-learners, research scholars and instructional collaborators to identify their expectations from the library and plan and take necessary actions accordingly to fulfill their learning, information and research needs. This imperative needs to go far beyond the strategic exploitation of learning resources, promoting information literacy and the embedding of ICT, to ensure that academic librarians and library staff are true partners in the academic enterprise supporting and driving meta-learning, teaching, research-support and student success. Library learning environments that truly engage with the multiple perspectives of learners and tutors must also examine the conceptions of support staff while developing a strong underpinning pedagogical framework.

7. Suggestions

Here are a few suggestions for academic librarians:

- Use technology to promote information literacy training. Develop users with the right level of information skills, appropriate to their needs to allow them to access, find, use and manage these electronic collections.
- Bring technology and learning to the same "table" when restructuring is being planned in academic libraries.
- Reconsider how technology is organized in other well developed libraries.
- Work toward a critical mass of equipment and expertise and betterment of technology-integration.
- Use the media to provide awareness of academic libraries, the library and information services provided and new technology adopted and information literacy awareness.
- Continuously work towards the goal of attaining quality education and research.
- Most importantly, the information skills training that is delivered will be built on asking the right questions to users, listening to them, and giving the right answers in a way which grabs their attention.
- Conduct workshops, seminars and conferences on new technologies adopted in academic libraries and classrooms and information skills.
- Continually develop library staff knowledge and skills in designing and delivering training.
- Understanding of ethical and professional responsibility.
- Research on expanding the capabilities of the library's information delivery systems to include cutting edge technologies for experiencing multimedia, especially to enable collaborative learning; and, adaptive technologies that enable access to library resources by all patrons is necessary.
- Encourage, promote and practice collaborative learning environments, collaborative intelligence, collaborative authorship, collaborative consortia, collaborative instruction and collaborative research projects.

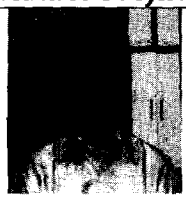
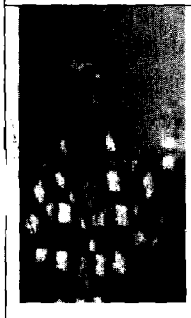
8. Conclusion

Libraries have a central role in education, learning, and training with the purpose of increasing knowledge. The needs of the Google generation, reinforced by the developing Web 2.0 information environment, are increasing the importance of libraries, technology and information literacy. Developing a new educational model in which the student-learners are educated for future workplace and social responsibilities and where information literacy is viewed as a lifelong learning requirement is to be given attention. Restructuring, adoption of technology and information literacy training are the three

points of concern in improving the quality of education and research. Despite the promise that new technologies like World Wide Web, e-learning, digital technology, etc offer to academic institution and despite the encouraging developments, the full potential of the technologies is not being widely realized. Some problems also arise during the use of some of the new technological tools. This is mainly due to lack of updating oneself with new knowledge and lack of information literacy training. Recently educators have been making efforts to integrate the use of computers into subject-matter teaching and learning. But technology is not likely to have a qualitative impact on education unless it is deeply integrated into the purposes and activities of the class room as well as libraries. Integration of information technologies and giving information literacy training as and when necessary to keep them updated throughout the teacher-preparation experiences is important in preparing the next generation of teachers to meet the global challenges of education. Information skills training has always been the responsibility of the academic libraries and hence academic librarians need to recognize their own significant role in providing quality education, learn to collaborate, prepare themselves to take-up new educational administrative roles in higher education to make remarkable changes, take necessary steps to improve the quality of library and information services and act-in-time to make every library-user an information literate person, technology-fluent and lifelong learner.

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Shannon's Information and Communication Model for Information Indexing and Abstraction in Libraries

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Abstract: The word information has been around for a long time and, surprisingly with more or less the same understanding that we have today. The oxford dictionary has a long entry for information tracing the word back to 19th century word information and information. By 1274 the word was being used as an investigation term in criminal matter by legal officers. By 14th century the word was being used as something obtained from individuals, piece of information data and knowledge. Information is certainly not a modern year.

Keywords: Shannon's Model, Information, Indexing, Abstraction, Libraries

1. Introduction

In the most basic sense, information can be defined as pattern imposed on matter or energy. Pattern exists in everything in universe. Living thing survive by looking and responding to the pattern in their surroundings. That is especially true when the pattern are complete. To stay alive an organism must be able to detect the pattern that announces "There is food", or "Danger". To read a paper you need to understand the pattern formed by ink and if it is an e-material you have to understand the pattern formed by pixel or screen of an electronic device. In both the cases meaning is derived from the pattern.

For a full understanding of information, we also need to look beyond the definition to its properties. Just as we can investigate gravity and electricity, we can look into the properties of information. You may not properly understand gravity from its formal definition, but if you jump off the Eiffel tower you will surely be able to understand some of its properties. When you study gravity, you learn mathematical formulas and you get to understand why everything feels a downward pull on earth... Those formulas can tell how long it will take you to fall to ground from the tower..The processing of information begins with the recognition of pattern that represent the information. Information classification and structure of information are based on universal recognition of pattern. It is fundamental understanding of information. When any organism makes choice it's based on understating of pattern. One way we can understand information is by starting to think it as a part of system. Everything on universe is a part of system because it is a part of

another larger system. All of this system are structured and held together. These structures hook together and provide a communication channel between corresponding function and layer in the system.

2. From data to Information to Knowledge

Is information the same thing as data or knowledge? These words are closely related, but they are very different from each other. The main distinction among them has to do with meaning.

"Data" is plural from the word "datum", which means a fact. People often use the word data as if it were a singular. Data is simply a collection of values and symbols such as string of 9 symbols: 21, 3, 13, and 0, 80, 0. without a set of rules it has no meaning. You can read it as symbol like two one comma three comma..... or in some other creative way. But without a format or organization you can find no meaning.

These symbols become information when it is formatted , organized and put into a context that we understand, such as Sunday match score India 21 runs in 3 wickets and 13 over's and so on..... Notice that these steps include not only gathering the data but organizing them.

Information becomes knowledge when we combine it with other information on the same topic. For example by using information about cricket scores from earlier seasons and the way the cricket league is divided, we can decide which team will win the world cup. But it is not that simple. Making an actual distinction between the word data, information and knowledge is difficult to do, because they exist in continuity and are related to context and individual perception of reality. For sure, knowledge is something that is personal and specific to a person and a group of people collectively.

Many a times when we talk of information a fourth element is added, Wisdom. This is the final and apex of scale, which starts with data. Wisdom is an extrapolative and non probabilistic process. It calls upon all previous knowledge, consciousness and specifically upon special type of human programming. In doing so it goes far beyond understanding and asks questions which has no answers or which can have no humanly known answer. Wisdom is therefore the process by which we judge between right and wrong and good and bad.

3. Thermodynamics, Entropy and Information

Thermodynamics is related to movement of heat and heat is related to kinetic energy of the body. The more heat the body possesses the more it has kinetic energy, the more it has energy the more it vibrates and the more it vibrates the more it distorts the pattern of the atom. So what does this have to do with information? To understand this lets have some basic knowledge of thermodynamics.

The first law of Thermodynamics tells that heat can neither be created nor be destroyed; it can only be transformed from one form to another. This means when we break a high speed vehicle the break shoe becomes hot i.e. the whole kinetic energy of the body is

converted into heat energy of the break so, can we use the same heat generated in the same to accelerate the vehicle to initial speed? The answer is NO. Why? Here comes the second law of thermodynamics which tells that:

Heat flows from warm area to cool area to make it flow to the opposite direction we need to add some extra energy. The second law of thermodynamics is usually expressed in the mathematical form using a quantity known as entropy. Entropy is a measure of disorder and the second law of thermodynamics tells us that it tends to increase unless an extra energy is used.

How is this related to information? Information means an orderly pattern and less entropy. When you receive a message, you are decreasing the entropy by using some energy for your receiver to work.

4. Claude Shannon Information Entropy

Much Pioneer work of information entropy approach to information comes from mathematician Claude Shannon, who observed that to make the best of any transmission channel; we need to measure the effectiveness of its flow. How well is it working? He began with this simple diagram known as Shannon's model of communication.

The communication source is where the information comes from. The source has information, which encodes it in such a way which makes it possible for the rest of the system to encode it. The Information goes through a channel and is decoded by the receiver at the final destination. The channel can include many things like Light waves, sound waves, wires, and so on.....This model of communication holds true in any kind of information transfer. In every case source contains the information which is encoded and transferred and decoded by the receiver so it can be used. For example:

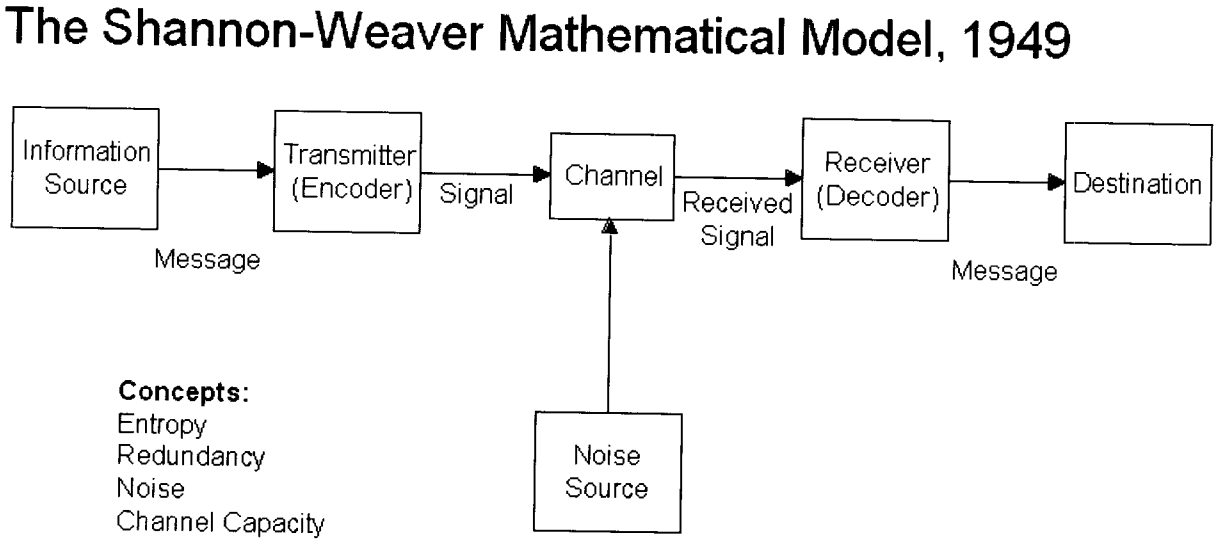


Figure 1- Shannon's Information model

Source: Grandfather tells a story to his grandchild.

Encode: The brain encodes his thoughts into words.

Channel: His speech works as the channel between him and his grandchild

Decode: The brain of the grandchild decodes the words of his grandfather and understands the story.

Destination: The brain of the child is in some manner affected by the story.

Noise: Some noise may enter the process during encoding, transmitting or decoding like the grandfather may sneeze at the middle of the story, and someone may interrupt at the middle.

Shannon notes that information can exist on three levels:

- Physical
- Semantic (Meaning)
- Effectiveness

For example:

A fire breaks out in a school. An alarm goes off and principal's voice comes through the PA system "Please Evacuate!" Fortunately everyone knows what to do and where to go from the last fire drill. Teachers lead their students in fire exit path. There are three levels of information involved here:

- The alarm and the speaker were the physical transfer of information.
- "Please Evacuate" people's brain processed this information on a semantic level.
- The information had a strong effect on students and teachers and made them to evacuate.

These three levels of Shannon's model are very important as many a times we have the information but in the depth we do not know the usefulness of the information and decrease its effectiveness.

5. Information, Indexing and Abstraction

In certain sense, indexing and abstraction are channels in Shannon's information model. Providing timely, accurate information to society is more than a technological problem, solvable if the computer is big enough and superfast. Providing information is a complex intellectual problem that has long been familiar to librarians and information scientists, and is catching the attention of people in all segment of the society. It is now marked as a powerful economic tool marketed so that human can use information to maximize success and effectiveness of their endeavors. Efforts and money are being invested to find out how best to weld Humans, system and information technology. Task is how to effectively manage information and develop a mechanism to ensure that information is accessed and delivered where and when it is needed.

6. Libraries in the digital Information age

As we are advancing in the digital information age it is clear that Libraries are not getting old fashioned. Libraries have been around for thousands of years and are everywhere today. There are almost 16,698 Public libraries in India, in addition there are around 128,350 school libraries, 4516 academic libraries and 12,116 special libraries, total of about 1,75, 000. Current trends show that libraries are changing in to "Cultural Hubs" from the depositories of knowledge. Libraries are now getting wired is the fastest part of any organization to get digitized and online. Without doubt libraries of the future are going to be wired, webbed, and Windowed, with expanded mission and services. The information revolution has not left the libraries behind. Modern libraries, backed by modern information management methods, have adopted modern ways to access information. Those ways include methods of indexing and abstracting that can get job done.

7. Conclusion

Information professionals, including abstractors and indexers should have a basic idea of what information is and its impact on society in digital information age. Indexing and abstraction are key link in the communication process and serve as a critical channel in the communication model Professional indexer should see information as a natural phenomenon that can be researched, studied and used to create effective information system. Understanding the properties of information and its human application is the first step in creating effective and efficient indexing and abstraction system.

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Status and Management of E- resources and Services at present in University Libraries of Uttarakhand: *A case study*

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Abstract: Advancement in E-resources has brought fast changes. Most of the University libraries in Uttarakhand are in the process of developing stage and some have already developed in which some are using E-resources. The present study in this paper has used Sample Survey methodology for collecting data and analysis to get proper conclusion and needful suggestions. The work flows of management & acquisitions of electronic resources and services are quite different. Due to tremendous uses of E-resources, the State Government has decided for implementation of using E-learning, management standards and to improve their University level electronic resources, library systems, training skill development and establishment of E-library. So, there could be innovative environment in Uttarakhand based University Libraries. The analysis reveals major findings with some important suggestions also in this paper.

Keywords: Management, E- resources, Digital library, Internet, University libraries, Uttarakhand State

1. Introduction

Today all the universities and academic institutions have a common purpose i.e. to provide best services to its users. S.P. Singh (2005) indicates in his book that how well a service is rendered depends on how well activities are carried out by its employees and this is in turn depends on what and how much they know. For this purpose, the basic concept of participating management is to give equal opportunity to everyone to learn new things which help to drop differences and utilize energies with a more personality responsible attitude towards achieving the philosophy and the goals of the organization. [1] The flexibility

of E-resources, Services and their workforce is new trend offering great help to library manager, if such poor force is educate and effectively trained to meet the changing needs of users.[2-4]

2. Objectives

- To find out the available infrastructure of Electronic resources and services under the aegis of Digital India initiative format demanded by UGC from observed Universities.
- To find out the information about the awareness and seriousness for providing the required information about E-resources and services in universities.
- To finds out E-resources availability, accessibility, awareness, most used E-resource impact, learning method, impact of E-resources.
- To know about use and acceptance of E-resources, satisfaction, user preferences, determining the frequency of E-resources using, usefulness, time spent.
- To find out the training needs of users in accessing E-resources and to know the problem faced by library staff and users while browsing, evaluating etc. in University libraries of Uttarakhand State.

Lastly to provide solution and suggestions for the above entire problems relating to acquisition & management of E-resources and services for these University libraries are also provided.

3. Research Methodology

To achieve the objectives set forth for this study, the research scholar has done survey through the structured questionnaires and over all conclusion of different libraries, with the help of Sample Survey methodology. Although, there are different methods available for collecting the data to active the objectives but this methodology has been adopted to know his objected problem as the same may differ from problem to problem. Here, the Scope of research methodology is wider than that of any research methods. The reasonable answers have been collected with the help of analyzing data collected by other research scholars and the present scholar of Library and Information Science for university libraries of Uttarakhand State. We have tried to get conclusion through scientific and logical ways. The scientific analysis of data has been done by research scholars in different tabular form and then after analyzed for logical findings .[14-15]

4. Scope of the study and Limitation

At present there are more than 23 Universities are running in this State but to study for this paper, 11 University libraries have been taken for survey and to access the present management of E-resources and services of Uttarakhand State. For the welfare of society students and research scholars of this state, getting information about acquisition & management of electronic resources are basically based on work done by five previous research scholars' questionnaires data and present research scholar's effort. The present objectives of the study are confined only to University libraries of Uttarakhand State. [16-17]

5. Data Analysis and interpretation:

The study was limited to the faculty members, research scholars, postgraduate students and other users of university libraries to know about acquisition, management of Electronic resources and services covering 10 universities in the state of Uttarakhand .[18-20]

Table 1 - Distribution of Questionnaires

S.N.	Name of Universities	Establishment	Type of Library	Form of organization	Questionnaire distributed		Response Received or not	Library Incharge
					Post	Individual		
1	Kumaon University, Nainital	1944	Academic	SGFU	No	Yes	Yes	Prof N.C. Dhaundiyal
2	Doon University, D.Dun	1995	Academic	SGFW	No	Yes	Yes	VC & Reg/Prof.Inch.
3	IIT Roorkee University, Roorkee	2001(1853)	Academic	SGFSW	No	Yes	Yes	Director/ Reg/Prof.Inch.
4	Himgiri Zee University D.Dun	2003	Academic	SGA/PW	No	Yes	Yes	Hina Dora
5	Graphic Era University, D.Dun	2008	Academic	SGA/PW	No	Yes	Yes	Reg./ Balvir Bhandari
6	GUKU, Hardwar	1902	Academic	CGF/PM	NO	YES	YES	Prof. Incharge
7	GBPU, Pantnagar	1960	Academic	CGF &PU	NO	YES	YES	Dr. A Ahuja/ Prof. Incharge

8	HNBU, Srinagar	1973	Academic	CGU	NO	YES	YES	Dr. M.S Rana
9	DITU,D.Dun	1998	Academic	SGPU	NO	YES	YES	Sanjeev K. Sen
10	DEVSU, Hardwar	2002	Academic	SGPU	NO	YES	YES	Dr. K Gayakwad

A survey was conducted through distributing questionnaires more than 20 university libraries of Uttarakhand state to collect information regarding the use of E-resources, frequency of locating desired information, purpose of using E-resources, problems faced by the users while using E-resources and benefits of electronic resources. Only 10 questionnaires were considered for data analysis received in response from Universities.

The questionnaire was designed with 25 questions of multiple choices to represent choice by ticked out regarding the status of management of E- resources and services. In this table, there are all type of universities, viz. central govt., state govt., UGC added, private & Deemed university level are included to study the purposed research theme and to get proper findings in a scientific way. At present, in uttarakhand state, only 10 university libraries have been seen E- resources management and library infrastructures properly.

Table 2 - Frequency of using Electronic resources and no of users used Electronic resources

S.No.	Name of Universities	Lib. Frequency	No. of users	Student of PG	Research Sch.	Faculty member	Student	Daily users	2-3 times in week	Weekly	For t	Monthly	Occai.
1	Kumaon University, Nainital	NM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	Doon University, D.Dun		E- Resources can be assessed at each user desktop in their home										
3	IIT Roorkee University, Roorkee	NM	More than 200 daily	NM	NM	NM	NM	Yes	NM	NM	NM	NM	NM
4	Himgiri Zee	All of NM except weekly											

	University D.Dun										
5	Graphic Era University , D.Dun	All the NM	NM	NM	NM	NM	NM	NM	NM	NM	NM NM
6	GUKU, Hardwar	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
7	GBPU, Pantnagar	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
8	HNBU, Srinagar	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
9	DITU,D.Dun	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10	DEVSU, Hardwar	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

Abbreviations : SGFU -State Govt. Funded Univ; CGFSU-Central Govt. Funded State Univ; SGA/PUState Govt. Affiliated Pvt University; SGFU-State Govt. Funded University; SGF/PM-State Govt. Funded & Private Managements SGA & AUTO PL-State Govt. aided and autonomous/ library,

6. Data interpretation

Using E-resources in Universities play an important role for every category of user to seek their information need and meet their demand. Among 20 universities in Uttarakhand, only 10 universities in Uttarakhand have given data's through filling questionnaires.Only IIT Roorkee University provides better E-resources facilities to their users effectively according to need have today. In response, data received from other universities mentioned in this Table shows that there is no interest to attend regarding the E- resources questions and to fill their answers.

Table 3 - Purpose of using Electronic resources

S.No.	Name of Universities	Primary research purpo	Study Response	Update of subject knowle	Using conference	Project assignment	Teaching purpose	For publishing article	Current awareness	SDI

		se		dge						
1	Kumaon University, Nainital	NA	NA	NA Answer	NA	NA	NA	NA	NA	NA
2	Doon University, D.Dun	NM	Morethan n200 daily	NM	NM	NM	NM	Yes	NM	NM
3	IIT Roorkee University, Roorkee	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	Himgiri Zee University D.Dun			Yes						
5	Graphic Era University, D.Dun	Yes	NM	NM	Yes	Yes	NM	NM	Yes	NM
6	GUKU, Hardwar	Yes	yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	GBPU, Pantnagar	yes	yes	Yes	yes	Yes	Yes	Yes	Yes	Yes
8	HNBU, Srinagar	yes	yes	Yes	yes	Yes	Yes	Yes	Yes	Yes
9	DITU,D.	yes	yes	Yes	yes	Yes	Yes	Yes	Yes	Ye

	Dun									s
10	DEVSU, Hardwar	yes	yes	yes	yes	yes	yes	yes	yes	Yes

Data interpretation: Use of purpose of using E-resources was asked through questionnaire. Data collected in responses is analyzed, classified and represented by Table-3. The trend of data reveals that over all universities are using E-resources in Uttarakhand for their primary research purpose and update of subject knowledge , using conference data also reveals that maximum universities are often used E- resources to prepare their project assignment and teaching purpose as well as for publishing article . It is interesting to note that except Kumaon University all have SDI Services in their library, while it is very necessary service for research scholars in university libraries.

Table 4 - Users Level awareness About Using E-Resources

S.No.	Name of college – organization & University	Graduation level Awareness	PG. level Awareness	M.Phil. Phd. Level Awareness	Teaching official staff Awareness	Non teaching level Awareness	Outside users Awareness	School college level students Awareness
1	Kumaon University, Nainital	time spent	time spent	s time spent	time spent	time spent	s time spent	time spent
2	Doon University , D.Dun	Answer has given as not applicable in this university						
3	IIT Roorkee University, Roorkee	NM	NM	Yes	NM	NM	NM	NM
4	Himgiri Zee University D.Dun	All the users are awared about using E-resources.						
5	Graphic Era University,	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	D.Dun							
6	GUKU, Hardwar	yes	yes	yes	yes	yes	NM	NM
7	GBPU, Pantnagar	NM	NM	yes	yes	yes	NM	NM
8	HNBU, Srinagar	YES	YES	YES	YES	YES	YES	YES
9	DITU,D.Dun	YES	YES	YES	YES	YES	YES	YES
10	DEVSU, Hardwar	YES	YES	YES	YES	YES	YES	YES

Table 5 - Learning method to use Electronic resources and satisfaction level with uses of Electronic resources in UK state

S.No.	Name of universities	Training method	From Colleagues	Guidance from Lib. Staff	From Friends	Courses Offered by the Univ.	Fully satisfied	Satisfied	Not satisfied	No comments for this
1	Kumaon University, Nainital	YES	YES	Guidance from Lib. Staff	YES	YES	NM	YES	NM	NM
2	Doon University , D.Dun	NM	NM	NM	NM	NM	NM	NM	NM	NM
3	IIT Roorkee University, Roorkee	Yes	NM	Yes	NM	NM	Yes	NM	NM	NM
4	Himgiri Zee University	NM	NM	Yes	NM	YES	NM	Yes	NM	NM

	D.Dun									
5	Graphic Era University, D.Dun	NM	NM	NM	NM	NM	Yes	NM	NM	NM
6	GUKU, Hardwar	YES	YES	YES	YES	YES	NM	NM	NM	NM
7	GBPU, Pantnagar	YES	YES	YES	YES	YES	NM	YES	NM	NM
8	HNBU, Srinagar	YES	YES	YES	YES	YES	NM	NM	YES	NM
9	DITU,D.Dun	YES	YES	YES	YES	NM	NM	YES	NM	NM
10	DEVSU, Hardwar	NM	NM	NM	YES	NM	NM	YES	NM	NM

Table 6 - Types of Electronic resources / Ranking of Electronic resources used in University Libraries of UK State

S.No.	Name of Universities	E books Resource	E-Journal	CD ROM	Online Database	Internet	E-newspaper	E-dictionary	E-Encyclopedia
1	Kumaon University, Nainital	YES	YES	YES	YES	YES	YES	YES	YES
2	Doon University , D.Dun	NM	YES	YES	NM	YES	NM	NM	NM
3	IIT Roorkee University, Roorkee	YES	YES	NM	YES	YES	NM	NM	NM
4	Himgiri Zee University D.Dun	NM	YES	YES	NM	YES	NM	NM	NM
5	Graphic Era University, D.Dun	YES	YES	YES	YES	YES	Yes	YES	YES

6	GUKU, Hardwar	NM	YES	YES	YES	YES	YES	NM	NM
7	GBPU, Pantnagar	YES	YES	YES	YES	YES	YES	YES	YES
8	HNBU, Srinagar	NM	YES	YES	YES	YES	NM	NM	NM
9	DITU,D.Dun	NM	YES	YES	YES	YES	NM	NM	NM
10	DEVSU, Hardwar	NM	NM	YES	YES	YES	NM	NM	NM

Table- 4 highlights the status of where the users know about the using of E-resources. Maximum awareness in all level was found among users in GBPU, HNBU, DITU, HIMZU. Rest of other universities response of using E-resources was not up to the mark.

Table-5 the learning method to use E-resources and satisfaction level used of E-resources in UK highlights that status of satisfaction level in some universities not enthusiastically mentioned but some universities like GBPU, KUMU, DITU, HIMZU reveal that their users are fully satisfied. Electronic –resources are even growing phenomenal aspect pertaining at present scenario and the craze of using and demands of such resources by researchers day by day in multiple quantity.

Table 6 reveals over all majorities of users used E- journals resources for research work followed by online database, internet, CD ROM. GUKU, GBPU, HNBU, KUMU, DITU except GUKU, DITU, DEVSU, HIMZU, all other universities are not interested to give response about their users using E-dictionaries, E-encyclopedia, and E- newspapers. It is also observed from this table that these things are used lesser in comparisons to other resources where as E- journal and Online database resources are dominating than other resources in us daily practice of users.

Table 7 - Problem faced while using Electronic resources by users in University Libraries of UK State

S.No.	Name of Universities	Lack of training problem	Technical problem	nternet access prob.	Slow down loading prob.	Limited scanning to computer	Finding irrelevant information	Lack of printer prob.

1	Kumaon University, Nainital	YES	YES	YES	YES	NM	NM	YES
2	Doon University, D.Dun	NM	NM	NM	NM	NM	NM	NM
3	IIT Roorkee University, Roorkee	NM	NM	NM	YES	NM	NM	NM
4	Himgiri Zee University D.Dun	NM	NM	NM	YES	YES	YES	NM
5	Graphic Era University, D.Dun	NM	NM	NM	NM	NM	NM	NM
6	GUKU, Hardwar	YES	YES	YES	YES	YES	NM	YES
7	GBPU, Pantnagar	YES	YES	YES	YES	NM	NM	NM
8	HNBU, Srinagar	YES	YES	YES	YES	NM	NM	NM
9	DITU,D.Dun	NM	NM	NM	YES	NM	NM	NM
10	DEVSU, Hardwar	NM	NM	YES	YES	NM	NM	NM

Table-7 indicates that 5 universities have technical problems in using E-resources by users; 6 universities have Internet access problem and 2 universities feel that the limited access to computers. GUKU and Kumaon face a lack of problems, but 4 universities denied

disclosing and sharing their problems. Therefore, overall universities feel that access in electronic resources is slow access speed in Uttarakhand State. Perhaps, it may be caused due to hilly area phenomena.

Table 8 - Preference of using search engine and adequacy of information on E-resources frequency of using E-resources

S.No	Name of Universities	Google Search	Yahoo Search	Alta Vista	MSN Search	Lycos Search	Always adequacy	Mostly	Sometimes	Never	Maximum Search engine
1	Kumaon University, Nainital	YES	NM	NM	NM	NM	NM	YES	NM	NM	GOOGLE SEARCH
2	Doon University, D.Dun	YES	YES	YES	NM	NM	NM	YES	NM	NM	1,2,3
3	IIT Roorkee University, Roorkee	YES	YES	YES	YES	NM	YES	NM	NM	NM	ALL
4	Himgiri Zee University D.Dun	YES	NM	NM	NM	NM	NM	NM	YES	NM	NM
5	Graphic Era University, D.Dun	YES	NM	NM	NM	NM	NM	NM	NM	NM	NM
6	GUKU, Hardwar	YES	YES	NM	NM	NM	YES	NM	NM	NM	GOOLE
7	GBPU,	YES	YES	NM	NM	NM	NM	NM	YES	NM	GOOGL

	Pantnagar										E
8	HNBU, Srinagar	YES	YES	NM	NM	NM	NM	YES	NM	NM	GOOGLE
9	DITU,D. Dun	YES	YES	YES	NM	NM	NM	YES	NM	NM	GOOGLE
10	DEVSU, Hardwar	YES	NM	NM	NM	NM	NM	NM	NM	NM	NM

Use frequently of electronic resources based on received responses from respondents analyzed and arranged in Table-8, data indicates over all users of all universities use Google search engine and only 4 universities not mentioned their interests on using Yahoo search engine. Only DITU and IITU use Alta Vista.

All universities did not have any responses on Lycos Search. Although the internet services given by different search engines are necessary to most of all research scholars, faculty members, library staff of university, but the choice may differ according to their convenient at present.

Table 9 - Advantages of using E-resources and behavior of the staff in library for Using E-resources

S.No.	Name of Universities	Time saving advantages	Easy to use	More informatics	All three advantaged	Excellent behavior	Very good	Good	Fair	Avg,
1	Kumaon University, Nainital	YES	YES	YES	YES	NM	NM	YES	NM	NM
2	Doon University, D.Dun	YES	NM	NM	NM	YES	NM	NM	NM	NM

3	IIT Roorkee University, Roorkee	YES	YES	YES	YES	YES	NM	NM	NM	NM
4	Himgiri Zee University D.Dun	YES	YES	YES	YES	NM	YES	NM	NM	NM
5	Graphic Era	NM	NM	NM	NM	NM	NM	NM	NM	NM
6	GUKU, Hardwar	YES	YES	YES	YES	NM	YES	NM	NM	NM
7	GBPU, Pantnagar	YES	YES	YES	YES	NM	YES	NM	NM	NM
8	HNBU, Srinagar	YES	YES	YES	NM	NM	NM	YES	NM	NM
9	DITU,D.Dun	YES	YES	YES	YES	YES	NM	YES	NM	NM
10	DEVSU, Hardwar	YES	YES	YES	YES	NM	YES	NM	NM	NM

Table -9 shows here that electronic resources are showing surely their potential and effect on users. Therefore, some of the related aspects; time saving, easy to use, more informative and more useful to all university users, except 2 universities which denied expressing as per questionnaires. In case of behavioral norms of the staff, 4 universities said that they have very good behavior, 3 universities have declared excellent behavior whether they did not have any response about fair or average behavior.

Table 10 - Impact of Reading Articles from E- Resources on Academic Efficiency in University Libraries of UK State

S.No.	Name of Universities	Easier access to information	Expedited the research process	Access to current up to date	Improved professional competency	Inspires new things and ideas	Result in collaboration and joint research	Let to know authors/ data uses	Resolves technical problem	Some time on other sources
1	Kumaon University, Nainital	YES	YES	YES	YES	YES	YES	YES	YES	YES
2	Doon University , D.Dun	YES	YES	NM	NM	NM	NM	NM	NM	NM
3	IIT Roorkee University, Roorkee	All the impact								
4	Himgiri Zee University D.Dun	YES	YES	YES	YES	YES	YES	YES	YES	YES
5	Graphic Era University, D.Dun	NM	NM	NM	NM	NM	NM	NM	NM	NM
6	GUKU, Hardwar	YES	NM	YES	NM	NM	YES	YES	YES	YES
7	GBPU, Pantnag	YES	YES	YES	YES	YES	YES	YES	YES	YES

	ar									
8	HNBU, Srinagar	YES	YES	YES	NM	NM	NM	NM	NM	YES
9	DITU,D. Dun	YES	YES	YES	YES	YES	YES	YES	YES	YES
10	DEVSU, Hardwar	YES	YES	NM	NM	NM	NM	NM	NM	YES

Table10 Over all universities indicated that it is easier to access information. Only 6 universities expedited the research process whereas, 5 other s improved professional competency. Five Universities are in favor of the results in collaboration and joint research, data users and having resolved technical problems.

7. Findings

The following is the important findings of the study.[21-23]

- It is found that IIT Roorkee is only university having the fully awareness of electronic resources with proper managing & acquisitioned their E- resources & services while other universities of Uttarakhand are not fully aware with Electronic resources.
- The Electronic resources are more used and accessible only three universities which clears the environment of using E- resources in Uttarakhand is in childhood level at present.
- For some universities, the Electronic resources are easy to deal with comparison to conventional resources.
- Google search engine has the highest number of responses as the best search engine and Yahoo is a second choice for access their required information.
- Slow accesses speed and other problems are the major problems while access the information through internet for E-journals & articles accessing.

8. Suggestions and Conclusion

Library should be computerized with latest 'state of art.' Adequate trial access of web resources should be provided to research scholars from time to time .More e- book and e-journals should be organized & procured to develop the resources for SDI services, CAS, library development should be connected to each department of the university, students & library staff by which they can communicate frequently with new arrivals. Documentary sources (primary, secondary and territory documents). Non- Print/ videos tapes, cassettes, film stripes, machine readable forms, CDS and E- resource with others institutional and individual expertise help to provide library services should also needs exposes among

fresh and first time to new comers. Therefore, today the advents of E-resources are boon for each & every users of universities than any traditional way of library services. So we shout provide E- resources with proper acquisition & management in university level compulsorily to enhance career of users and posterity in modern digital era. [24]

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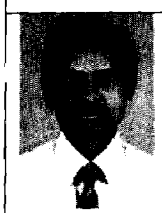
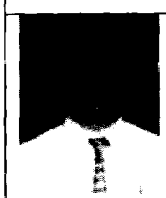
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Study of the Development of Collection and Utilization of Public Library Services in Barrackpore Sub-Division, West Bengal: *A Critical Assessment Study*

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Abstract: This paper discusses the present inconvenient scenario of public libraries in the Barrack pore Subdivision. Different aspects of public libraries such as- collection development, utilization, performance of staff, service, user's information needs, user's literacy etc., are highlighted in this paper. The actual reason behind this miserable condition has been tried to investigate in this paper. Then some attempts have been to evaluate the functions of public libraries in the sub divisional area. Finally the inferences and suggestions for development of library collection and improvement of public library's policy in that zone have been recommended.

Keywords: public libraries, collection development, user, information need, user's literacy, Barrack pore Subdivision, library's policy

1. Introduction

The public library is often called the people's university, because, this educational institution is open to all-rich or poor, young or old. It is the only institution, which has no age limit, no entrance requirements other than the desire to learn. It has no restrictions on progress other than those determined by the individual himself. Ralph Waldo Emerson defined the public library as the place where "a company of the wisest and wittiest men that could be picked out of all the civilized countries, in a thousand years, have set in best order the result of their learning and wisdom."

According to UNESCO Public Library Manifesto "the public library should be established under the clear mandate of law, so framed as to ensure nation-wide provision of public library service." Barrack pore Subdivision is a subdivision of north 24 Parganas district in the state of West Bengal, India. It consists of sixteen municipalities, one Cantonment Board, one Census town and two community development blocks (Barrack pore-I & Barrack pore-II). It is one of the most developed regions in west Bengal. The literacy rate in this sub-division is above the average standard of the state and district. The sub-division has a strong human resource connected with many colleges and technical institutions, universities.

In addition, the sub-division is enriched by number of active public libraries. Some of them are century-old and has been carrying on the responsibility of cultural heritage of that respective area. In this paper an effort has been done to assess the gradual development of collection and standard of service of those public libraries.

2. Scope

For the present study, the active public libraries of total Barrack pore Sub-divisional area were chosen. The survey work was done for data collection among these libraries. Government-sponsored, non-government, government-affiliated all type of public libraries included in this survey work. There are eighty-six public libraries existed in this sub-division which consist of one district library, one sub divisional library, one area library, eighteen town libraries, forty-six primary unit libraries, nineteen rural libraries in Barrack pore sub-division. The present paper has been built on the collected data from these libraries.

3. Literature Review

The literature related to this paper includes papers that present case studies or recommendations for how librarians and libraries can develop the policies regarding library's collection and quality of service in a systemic way. Library collection development is the process of meeting the information needs of the people (a service population) in a timely and economical manner using information resources locally held, as well as from other organizations. Collections are developed by librarians and library staff by buying or otherwise acquiring materials over a period, based on assessment of the information needs of the library's users. Paramjeet K Walia and EsmatMomeni(Walia,2011) has carried out a research-study on the topic and showed how public libraries are providing access to information resources and whether the book collections of the libraries are adequate as per international standards. It has also suggested certain improvements for the existing system. His paper has aimed to determine the adequacy of the public library system with respect to the total population as well as the viable population of different regions of Tehran city.

Waldomiro CS Vergueiro (Vergueiro,1997) reviewed the development of public libraries in Brazil, taking a close look at the reasons why such institutions have not developed their collections in a systemic manner. They deposit the necessity of organizing collection development activities rationally. He argued that a better management of public library collections can bring concrete benefits to every society, as well as help librarians to obtain better support from their clientele and from more senior management. Elizabeth Futas (Futas, 1982) said that building a collection in public libraries entails knowing the publishing markets and matching it to the community to be served. Marta Seljak (Seljak,1996) studied the Slovenian co-operative online bibliographic system and services (COBISS), a development of a shared cataloguing system based on a network of 99 co-operating libraries and linked with the Institute of Information Science Union Catalogue (COBIB). He demonstrated how this network of electronic catalogues enables effective online public access and allows co-ordinated collection development policies and interlending based on the use of electronic mail. Seamus Seanlon (Seanlon, 2011) have worked on the book collections on the Taliban in public libraries and argued that more extensive collections should be built despite the media and the general population's antipathy to the war.

A comprehensive collection for students, scholars, the public and the next generation of officers about a contemporary war which has propounded financial, political and military sequel should be a priority for collection-building librarians. Michael Stoller (Stoller, 2006) studied on the collection development expenditures between 1994 and 2004 among New York's Associations of Research Libraries (ARL) largest and smallest public and private academic libraries and showed that libraries have largely responded to the revolutionary changes of the last decade very conservatively, retaining their commitment to monographic acquisitions and to their paper collections even as they have built new, electronic libraries. Digitizing or digitization is the representation of an object, image, sound, documentor a signal (usually an analog signal) by a discrete set of its point or samples. The result is called digital representation or, more specially, a digital image, for the object and digital form for the signal. For a document the term means to trace the document, image or capture the "corners" where the lines end or change direction. Yan Quan Liu (Liu, 2004) investigated current practice in digitizing library materials in the USA. Building a good digital collection has been a common task, pervasive in all types of libraries. Digitization becomes more and more crucial, affecting libraries while they work towards becoming digital. Roxanne Missingham (Missingham, 2009) studied on Electronic Resources Australia and showed that ERA has provided access to quality online resources for approximately 8.5 million Australians.

The work has led to careful consideration of issues including subscription periods, governance, funding models, "best price" and collaboration with vendors for marketing and promotion. Interlibrary lending or interlibrary loan or document delivery is a service whereby a user of one library can borrow books or receive photocopies of documents that are owned by another library. The user makes a request with their local library, which acting as an intermediary, identifies owners of the desired item, places the request, and receives the item, makes it available to the user and arranges for its return.

The lending library usually sets the due date and overdue fees of the materials borrowed. Megan Allen (Allen,2003) studied on patron-focused services in three US libraries and showed that some libraries are exploring new models of collaboration among the interlibrary loan to improve service and increase user satisfaction. One public libraries and two university libraries present models in which funds were set aside to purchase materials requested by library users through interlibrary loan. John Carlo Bertot (Bertot, 2004) proposed that the internet is an integral part of library service that can take many forms-an extension of library collections and resources through licensed and or digitized content, a gateway service through public access workstations, or as a means through which customers can interact with the library through such services as digital reference.

4. Methodology

For the present study, data were collected through a combination of questionnaire and unstructured interview from public libraries of Barrackpore Sub-divisional area in West Bengal district. A pilot survey was done at the initial stage of this study. Based on the results of the pilot survey a questionnaire was designed with structured mode. Two types of questionnaires were made – one for librarian and the other was for users of the libraries.

Simultaneously observation process as non-participant was taken into consideration. The questionnaires were distributed to the librarians or library authorities of concerned public libraries. Besides, a thoroughly discussion was done with the users in a friendly mode about the service of the libraries and overall performance of the library staffs. For the present study, the data was gathered about collection development of libraries (nature and amount of documents during different years, tools used for book selection etc.,) and quality of services (performance of library personnel in various library services such as- circulation, reference service, etc.,) for testing the hypotheses. Survey approach was adopted using questioning method as a method of gathering data. In the full study survey responses were received from a very few libraries. Data collected in the above manner was tabulated and analyzed keeping in view the objective of the study.

5. Data Analysis

The data was analyzed using both descriptive and inferential statistics: -

Table 1 - Number of documents accessioned during the year of 2013 (N = 10)

Books	Newspapers	Journal
18817	48	14
10,429	48	40
1501	48	52
9563	40	45
184	40	48
5808	42	52
8004	12	-
8009	45	46
15646	30	52
1849	12	-
79810	365	349

From the above table it is proved that in the last year, among the accessioned documents, the number of books is highest and the number of journals is lowest in libraries. The number of newspapers is also in lower position. There is a big difference between the number of accessioned books and number of accessioned journals & newspapers.

The significance of the above analysis is that, among the accessioned books major part of the books are purchased from the publishers by the library committee getting donation by the government of West Bengal and the rest of the accessioned books are donated to the library by the members and common local people. In the case of newspapers and journal, priority is given to newspaper as daily newspapers attract more people to the library and next weekly or biweekly or monthly journals are purchased by the library.

Both newspaper and journals are purchased from the donation of government. Library's governing body should always be concerned about the wants of particular books, particular newspapers and particular journals of their choice.

Table2 - Source of Finance in the year 2013
(N= 10)

Source	Budget	Ratio of components	Degrees
State Government	401428	0.72	259.2
Subscription	141242	0.25	90
Others	9894	0.017	10.8
Endowment	38	0.00007	0.0252
Total	552602	1.00	360

From the above table, it is proved that, public libraries usually get financial aids mostly from the State Government. They get satisfactory aids from subscription field. They earn nothing through Endowment channel. It has been seen that when the number of requirements of books is informed to Government sanction committee i.e. D.L.O., their granted amount of money is not sufficient to fulfill the requirements. So respective state government should increase their aids to the public libraries. Amount of subscription from members can only be increased when number of members will be increased. Aids from other sources such as local book-lover public individually may donate books and money to the library. For that libraryadministrative body should arrange various type of extra-curriculum activities such as Library Foundation Day, birthday of great poet, writers, scientists, social workers etc. and lectures, seminars, debating, cultural competition, blood donation camp, sports etc. these will draw attention of public for the development of library. Lastly there should be arranged for some reward or promotion from the behalf of state government for individual creative activities of the library personnel for discipline maintain good relationship with users. As a result, local inhabitants will be gradually interested for being member of the library.

Table 3 - Subject wise breakup of accessioned documents during last five years

N= 10

Subject/Year	2009	2010	2011	2012	2013
Philosophy	12	-	1	3	2
Social Science	31	-	-	12	6
Literature	1798	1779	1925	1978	2294
Natural Sciences	30	29	12	15	24
Others	321	466	905	468	513

The above analysis indicates that, generally public libraries of Barrackpore Subdivision spend their major portion of funds in purchasing documents in literature subject. They purchase a few number of documents in Philosophy, Social Sciences and Natural Science subject. The above analysis has signified that common people like novel, drama, i.e. books of literature. Those who are involved with subjects other than literature, seeks books of philosophy, social sciences, natural sciences & other recreational books. So the library authorities purchase more books of literature than philosophy, science, social science and others.

Keeping the point of view of school and college student's textbooks and reference books of all of the subjects should be taken position in library shelf; otherwise there may be a possibility of decreasing the number of members.

6. Major Findings of the Study

The total observation has revealed some major limitations of the public libraries in Barrackpore Sub-division such as:

- Majority number of libraries has very poor and insufficient collection. They have no collection about the subject philosophy, social science and pure science. This weakness is mainly responsible for decreasing number of users in public libraries.
- In libraries, a large sum of money is spent for purchasing books (especially Bengali novels) than journals and newspapers. Libraries also lack recent publications and latest editions of old books.
- These libraries generally get maximum fund from state government still. They do not earn satisfactory money through subscription and endowment process. From RRRLF (Raja Ram Mohan Roy Library Foundation) they get various library equipment's such as computers, furniture, book shelf etc.
- The public libraries of Barrackpore Sub-division region spend maximum expenditure in purchasing of books than periodicals and newspapers. At present

expenditure of competitive magazines is increasing day by day, large number of users in public libraries comes for reading these journals regularly.

- Library authority does not spend money in purchasing furniture and maintenance work. Audio-visual material is totally absent from these libraries. Some libraries have special arrangement for child users.
- The work of book selection is generally done due to reader's demand or user's information needs. Besides, librarians usually take help also from Book Reviews, Indian National Bibliography, Trade Literature, online-search etc. Sometimes books are bought from book-fair. Library Committee often takes prominent role in book selection work. In collection building, importanceis given on old evergreen classic novels and stories than modern writer's work.
- Majority numbers of libraries do not provide any computer facilities and reference services.
- Library's hour of operation is not adequate for fulfilling the thrust for knowledge of users.
- Earlier times, there was a provision for neo-literate section, but now it is closed due to noncooperation of the user community.
- Among eighty-six libraries, only 10 to 15 libraries are involved in inter-library loan system. They take documents from the District Library, Khardah.
- From the data analysis, it has been proved that, majority number of users in this region come two or three times a week in libraries.
- Among various library facilities, library users give first preference in using reference books or newspapers or monthly journals.

7. Suggestions

The collection development for public libraries is probably the sophisticated activity and certainly calls for the most pervasive exercises. Here the information needs are more diffuse and the librarian has to anticipate needs –expressed or unexpressed –by providing an overall coverage to stock in most of the main subject areas. In promoting the culture of the community the public libraries should include works of literature, art, philosophy, history, biography and topography. In facilitating the non-formal education or self-education the public library should provide educational materials which include introductions or standard works on a subject. Most users of the public libraries read for recreation at one time or another and the provision of this kind of reading is essential. The public library should also encourage cultural reading which is always important in any society. Cultural reading according to Benge, involves disinterested pursuit of truth, beauty of goodness, even though it is always mixed up with other motivations such as search for social importance (knowledge is power), or for status and acceptance, or for comforts of a dream world, for the individual self-realization. In addition, the public library should provide the equipment for using audio-visual materials, micro productions and recordings.

Public libraries content should be a living demonstration of the evolution of knowledge and culture, constantly reviewed, kept up-to-date and attractively presented. In this way it will help people form their own opinions, and develop their creative and critical capacities and power of appreciation. The public libraries should conduct systematic reader's surveys to identify the actual and potential needs of the community. On the basis of such identification it should organize well-balanced collection suited to the needs of the area. It should also organize a program of public information to make its resources not only available but eagerly sought by its community.

8. Conclusion

In conclusion, it may be said that this paper has mainly highlighted to the present condition of the collection development and quality of services in public libraries of Barrackpore sub-divisional area, compared the present scenario with an ideal public library system and tried to investigate the reasons behind this limitations. This paper aims at demonstrating that the tough economic conditions may provide a setting for innovation and quality enhancement which may lead in turn to a corresponding growth in the library sector. During this work, potential responses and cooperation has been received from users than librarians or library authority. One of the significant reasons is the lack of awareness and obligations to the library and library users. Suitable training and education may fulfill this deficiency. Through the user survey a burning truth has been revealed and that is maximum number of users are not satisfied about the library's collection and limited area of library building especially the lack of sufficient reading room space. The quantity of document collection in different public libraries is not equal. One of the main reasons of this inequality is that, in the time of book selection, some libraries give importance in the quality of collection rather than the quantity. Keeping in view the student's needs in many libraries purchase authentic, expensive and standard textbooks and reference books. Obviously when quantity will increase quality will decrease. The process of changing libraries has started. It is the time for the profession of library and information science to tackle the task systematically. This subdivision is not ready yet to adopt this change.The new library of the Information Age should no longer be a physical depository of materials but a 'conceptual gathering', where the actual materials are dispersed all over the globe and accessed through the electromagnetic media. Modern societies need an 'information citizenry' by which we mean a citizenry that is up on the latest information. The public library system will play a lead role in this movement in future.Its contents should be a living demonstration of the evolution of knowledge and culture, constantly reviewed kept-up-to-date and attractively presented. In this way, it will help people from their own opinions, and develop their creative and critical capacities and powers of appreciation.

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The Changing Environment of IIT Libraries: *Internet and Users Information Needs*

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Abstract: The Information and Communication Technology (ICT) has influenced library services to a greater extent. The use of web is largely emphasised in the area of academics and the overall information literacy process. In the present survey, an attempt has been made to explore utility of web based e-resources and users needs in using various search methods and techniques to access and utilize open e-resources in Indian Institutes of Technology Delhi, Kanpur and Roorkee, India. The study also aims to identify the level of satisfaction with the information accessed by users through web. The results reflect that the majority of users using institute library and are satisfied with availability of electronic resources that facilitates to support their academic, research and developmental activities. It has been observed that all users in these IITs using web resources most of the time and have various reasons for utilization of e-services.

Keywords: Electronic Resources, IITS, Internet, Web/E-Learning, Users Needs, Academia

1. Introduction

The advancement of Information and Communication Technology (ICT) has made a tremendous improvement and change almost in all walks of life, especially the magnetic word information technology has been changed in all corners of the world. **Gilbert and Green (1995)** lamented that "over the past decade, and in particular within the past five years, information technology has become common with the academic enterprise including libraries". Today, the advent of information technology has resulted in reducing the size of libraries. In fact, these smaller modern libraries are rich potential of information. 'Thanks to the Internet, it playing a vital role in library-related activities in areas including cataloguing, user education, acquisition, resource sharing, reference sharing, reference services, classification, documentary services, documentation services, serial control, OPAC, database access, circulation, preservation and storage. What's more, it is working as an additional tool to professionals for providing various types of information services to the users' **(Singh, 2003)**.

2. Electronic Resources and Internet

E-Resources originated from the concept of E-publishing. Since 1985, significant developments have taken place in electronic publishing. It solves storage problems and controls the flood of information. Due to various features of E-Resources, now a days, print sources are being digitized. 'The electronic resources are helpful because of their easy portability and its feature of incorporating more than one book in a single hand held

device. The published material is also available on open access platform. **(Singh and Khan, 2012)**. The Internet is the one of the most important and complex innovation of mankind. Internet reduced the task of library in retrieving and disseminating the information. The valuable information on web is available to everywhere. Thus the use of the library has become unlimited. The library has an onerous responsibility to collate, distribute and be depository of local information/talent/resources to the world wide community, and connect, retrieve and disseminate the information available all over the world to the local users depending on their need and priority.

3. Definition

IFLA (2012) defines Electronic Resources as "to those material that requires computer access, whether through a personal computer, mainframe, or handheld mobile device. They may either be accessed remotely via the Internet or locally". Some of the most frequently encountered types are: E-journals, E-books, Full-text (aggregated) databases, Indexing and abstracting databases, Reference databases (biographies, dictionaries, directories, encyclopaedias, etc.), Numeric and statistical databases, E-images, E-audio/ visual resources.

4. Review of Related Literature

Review of literature is one of the important aspects of any research study. The investigator required to scrutinize the research findings of similar studies that act as a platform to his present research work. Therefore, some of the studies conducted on use of electronic resources by various scholars are worthy of examination.

In this context, **Lazinger et al. (1998)** in their study discussed that the use of the internet among various sectors of the faculty. The results indicated that internet is used consistently higher among faculty members in the science and agriculture than among those in the humanities or social sciences. **Majid and Abazova (1999)** pointed out that the use of electronic information sources relevant to computer literacy among academic staff of the International Islamic University, Malaysia. Nearly all respondents considered themselves to have good or very good computer skills. **Jagtar Singh (2001)** in his paper discussed about emergence of the web-based resources and services, such as electronic journals, computer conferences and scholarly discussion lists on the other have led to blurring of boundaries and transmutation of digital documents. **Herring (2002)** in his research studied that the use of information resources is greater as scholars and researchers feel comfortable and familiar with the resources available through the web. **Smith (2003)** in his work concluded that almost three quarters of respondents reported reading at least one article from an online source every week. **Siebenberg et al. (2004)** in their work results showed that generally, electronic journals were used heavily and the availability of electronic format enhanced the total use of most titles. **Liu (2006)** in his research work discussed that the arrival and proliferation of electronic resources and digital libraries have a number of significant impacts on the use of print resources and traditional libraries. **Joteen et al. (2009)** carried out a study under the title concluded that low speed internet access, erratic power supply and lack of required full text journals are problem with regard to the user of

internet based e-resource. **Habiba and Chowdhary (2012)** in their article discusses the purpose of using e-resources, benefits, subject coverage status, overall user satisfactions, problems that are faced by DUL users while accessing e-resources and perceived impact of e-resources on users. **Oyedapo and Ojo (2013)** carried a survey showed various electronic information resources available and the degree of its utilization by the researchers and postgraduate students. It was recommended that the library should organize teaching of information literacy skills through user education programmes.

5. Objective of the study

The library is a service organization. The fundamental characteristics of services are:

- **Intangibility:** Services cannot be evaluated in advanced of use;
- **Perishability:** Stock of the service element cannot be hold and services need to deal with demand and capacity directly;
- **Simultaneity:** The customer must be present before the service can take place;
- **Heterogeneity:** There is inherent variability in the services offered.

Keeping in view these characteristics of services the objectives of the study are:

- Quality of services cannot be improved by high investment of information resources and IT alone, quality comes from people; quality is the result of attitude and values; and organizational culture decides the quality of services. This study aims to create such working culture.
- To find out the awareness about free electronic resources and services on web,
- To identify the utilisation of different e-resources and e-information services,
- To study the utility of web resources for users through library services,
- To find out the frequency of usage of web/internet for subject/profession,
- To study the use of different types of information handling tools/utilities/devices by the users,
- To know the level of satisfaction with acquired information from Web,
- To determine the satisfaction and comfort level of the users while using e-resources,
- To know the common search strategies and retrieval tools used by users and while searching e-information,
- To ascertain the training/guidance needs of users in accessing electronic resources,
- To suggest the ways and means for improvement in effective use of e-resources available on the Web.

6. Research Methodology

Research Methodology is a way to systematically solve the research problem. It is necessary for researcher to know not only the research methods or techniques but also the methodology **(Kothari, 2004).** The entire work is based on survey and analysis of data. For collection of data two well structured questionnaires have been prepared and used. The questionnaires are designed in a way to extract maximum information regarding attitude

of users for the use of electronic resources through web. Questionnaire covers all aspects of the use of electronic resources by users. The data has been cross checked by the data obtained by personal interviews and direct observations.

7. Scope and Limitation of the Study

While studying the attitude of users towards e- resources in IIT libraries, the researcher remains confined to three IITs i.e., Delhi, Kanpur and Roorkee. The reasons behind this limitation being these are the oldest IITS in the country and also the convenience of the researcher, living in close proximity of these institutes.

8. Analysis and Interpretation of Data

On the basis of the responses received, the data collected by researcher is organised, analyzed and tabulated by using statistical measures such as figures, tables and percentages in the following sections:

Table 1-Survey of Population and Research Sample

Indian Institute of Technology (IITs)	Total Strength	Total users taken for survey	Question naires distributed	Responses received	Responses per IIT	Questionnaires analyzed (selected)
IIT Delhi	11064	UG N=100	150	118 (78.6)	76.4	100
		PG N=100	150	113 (75.3)		100
		RS N=50	75	59 (78.6)		50
		FM N=50	75	54 (72)		50
IIT Kanpur	7295	UG N=100	150	121 (80.6)	79.1	100
		PG N=100	150	117 (78)		100
		RS N=50	75	61 (81.3)		50
		FM	75	57 (76)		50

		N=50				
IIT Roorkee	7498	UG N=100	150	117 (78)	77.1	100
		PG N=100	150	119 (79.3)		100
		RS N=50	75	56 (74.6)		50
		FM N=50	75	55 (73.3)		50
TOTAL	25857	900	1350	1047 (77.5)	77.5	900 (85.95)

(*UG = Undergraduates, PG = Postgraduates, RS = Research Scholars, FM = Faculty Members *N= Number (Figures within the parenthesis represent %age)

A total number of 450 questionnaires for each institute were distributed among the users of IIT Delhi, Kanpur and Roorkee. Out of which, 344 filled-in questionnaires were received from IIT Delhi, 356 from Kanpur and 347 from Roorkee. Finally, 300 filled-in questionnaires each from IIT Delhi, Kanpur and Roorkee were considered and used for data analysis. The total response rate of users in IIT Delhi, Kanpur and Roorkee as shown in table 1 is found as 76.4%, 79.1% and 77.1% respectively.

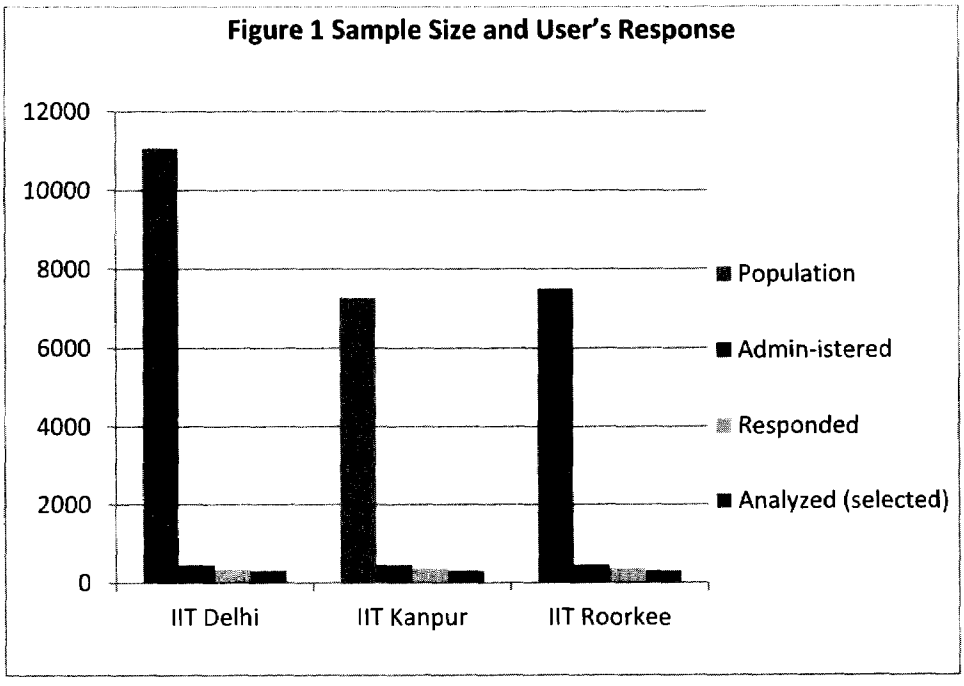


Figure 1 Sample Size and User's Response

Table 2 - Use of Institute Library

Response	Respondents											
	IIT Delhi				IIT Kanpur				IIT Roorkee			
	UG N=100	PG N=100	RS N=50	FM N=50	UG N=100	PG N=100	RS N=50	FM N=50	UG N=100	PG N=100	RS N=50	FM N=50
Yes	68	77	47	32	73	79	48	31	68	83	46	37
(%)	(68)	(77)	(94)	(64)	(73)	(79)	(96)	(62)	(68)	(83)	(92)	(74)

(Figures within the parenthesis represent %age)

The data in the table reveals that 68% undergraduates, 77% postgraduates, 94% research scholars and 64% faculty members in IIT Delhi use institute library, while, 73% undergraduates, 79% postgraduates, 96% research scholars and 62% faculty members in IIT Kanpur use the library, whereas 68% undergraduates, 83% postgraduates, 92% research scholars and 74% faculty members in IIT Roorkee responded that they use institute library for various purposes.

Table 3 - Awareness about Library's Electronic Resources/Services

Response	Respondents											
	IIT Delhi				IIT Kanpur				IIT Roorkee			
	UG N=100	PG N=100	RS N=50	FM N=50	UG N=100	PG N=100	RS N=50	FM N=50	UG N=100	PG N=100	RS N=50	FM N=50
Yes	69	95	49	50	71	96	48	49	64	94	50	50
(%)	(69)	(95)	(98)	(100)	(71)	(96)	(96)	(98)	(64)	(94)	(100)	(100)

(Figures within the parenthesis represent %age)

The data in the table shows that 69% undergraduates, 95% postgraduates and 98% research scholars in IIT Delhi are aware of library's e-resources and e-services, while 71% undergraduates, 96% postgraduates and research scholars in IIT Kanpur admitted their awareness about e-services and e-resources. In comparison to it, 64% undergraduates, 94% postgraduates are strongly response about their awareness regarding e-resources and

services. It has also been found that all faculty members of IIT Delhi and Roorkee as well as all research scholars of IIT Roorkee are aware of electronic resources and related services.

Table 4 - Preference for Electronic Resources over print resources

Response	Respondents											
	IIT Delhi				IIT Kanpur				IIT Roorkee			
	UG N=100	PG N=100	RS N=50	FM N=50	UG N=100	PG N=100	RS N=50	FM N=50	UG N=100	PG N=100	RS N=50	FM N=50
Yes (%)	65 (65)	75 (75)	39 (78)	31 (62)	76 (76)	81 (81)	41 (82)	38 (76)	71 (71)	83 (83)	37 (74)	39 (78)

(Figures within the parenthesis represent %age)

The table clearly shows that the users in all the three IITs, especially postgraduates and research scholars prefer electronic resources over print resources.

Table 5 - Level of Satisfaction with Electronic Resources

Response	Respondents											
	IIT Delhi				IIT Kanpur				IIT Roorkee			
	UG N=100	PG N=100	RS N=50	FM N=50	UG N=100	PG N=100	RS N=50	FM N=50	UG N=100	PG N=100	RS N=50	FM N=50
Yes (%)	68 (68)	89 (89)	46 (92)	50 (100)	79 (79)	93 (93)	50 (100)	49 (98)	85 (85)	95 (95)	48 (96)	49 (98)

(Figures within the parenthesis represent %age)

It is clear from the table that a majority of users i.e., 68% undergraduates in IIT Delhi, 79% in Kanpur and 85% in Roorkee are satisfied with available e-resources, whereas 89% postgraduates in IIT Delhi, 93% in Kanpur and 95% in Roorkee admit the same. Similarly, 92% research scholars in IIT Delhi, 96% in Roorkee and 100% in Kanpur are satisfied with e-resources. In its comparison, 98% faculty members in IIT Roorkee and 100% in Delhi and Kanpur show their satisfaction with available e-resources in their respective institutes.

Table 6 - Search strategy

Response (%)	Respondents											
	IIT Delhi				IIT Kanpur				IIT Roorkee			
	UG N=100	PG N=100	RS N=5	FM N=5	UG N=100	PG N=100	RS N=5	FM N=5	UG N=100	PG N=100	RS N=5	FM N=5
	0	0	0	0	0	0	0	0	0	0	0	0

Common search and retrieval techniques												
Keywords	57 (57)	63 (63)	38 (76)	29 (58)	52 (52)	77 (77)	37 (74)	26 (52)	55 (55)	67 (67)	40 (80)	32 (64)
Field Search	31 (31)	42 (42)	23 (46)	26 (52)	32 (32)	45 (45)	25 (50)	28 (56)	34 (34)	43 (43)	25 (50)	27 (54)
Phrase	28 (28)	39 (39)	20 (40)	19 (38)	29 (29)	34 (34)	17 (34)	25 (50)	27 (27)	36 (36)	19 (38)	23 (46)
Boolean Operator*	15 (15)	23 (23)	17 (34)	24 (48)	18 (18)	26 (25)	19 (38)	18 (36)	17 (17)	24 (24)	19 (38)	21 (42)
Wildcard	3 (6)	6 (6)	9 (18)	12 (24)	5 (5)	7 (7)	7 (14)	9 (18)	3 (3)	7 (7)	5 (10)	11 (22)
Truncation	1 (2)	3 (3)	6 (12)	8 (16)	2 (2)	2 (2)	8 (16)	7 (14)	2 (2)	3 (3)	5 (10)	4 (8)
Common search and retrieval fields												
Title	33 (33)	36 (36)	45 (90)	44 (88)	35 (70)	39 (78)	44 (88)	46 (92)	34 (68)	38 (76)	43 (86)	42 (84)
Journal Title	28 (28)	31 (31)	41 (82)	38 (76)	27 (54)	33 (66)	42 (84)	40 (80)	29 (58)	34 (68)	40 (80)	37 (74)
Author	25 (25)	28 (28)	37 (74)	34 (68)	27 (54)	29 (58)	35 (70)	35 (70)	28 (56)	26 (52)	38 (76)	35 (70)
Date/year of publication	19 (19)	23 (23)	32 (64)	29 (58)	21 (42)	25 (50)	31 (62)	32 (64)	20 (40)	27 (54)	34 (68)	25 (50)
Type of publication	15 (15)	19 (19)	28 (56)	25 (50)	14 (28)	18 (34)	26 (52)	26 (52)	17 (34)	16 (32)	25 (50)	22 (44)
Subject classification	21 (21)	24 (24)	34 (68)	31 (62)	19 (38)	22 (44)	31 (62)	28 (56)	21 (42)	25 (50)	30 (60)	27 (54)
Any other.....	6 (6)	9 (9)	13 (26)	10 (20)	4 (8)	8 (16)	10 (20)	9 (18)	6 (12)	5 (10)	10 (20)	7 (14)

(Figures within the parenthesis represent %age)

Note: Because of multiple choice options the percentage exceeds 100.

Table 7 - Utilisation of Electronic Information Services

Response (%)	Respondents											
	IIT Delhi				**IIT Kanpur**				**IIT Roorkee**			
	UG N=100	**PG** N=100	**RS** N=50	**FM** N=50	**UG** N=100	**PG** N=100	**RS** N=50	**FM** N=50	**UG** N=100	**PG** N=100	**RS** N=50	**FM** N=50
Internet services	82 (82)	85 (85)	48 (96)	50 (100)	88 (88)	88 (88)	47 (94)	46 (92)	69 (69)	82 (82)	45 (90)	43 (86)

World Wide Web	89 (89)	100 (100)	50 (100)	50 (100)	100 (100)	99 (99)	50 (100)	50 (100)	98 (98)	100 (100)	50 (100)	50 (100)
Listserv, Discussion groups	22 (22)	58 (58)	38 (76)	48 (96)	56 (56)	63 (63)	32 (64)	47 (94)	44 (88)	70 (70)	39 (78)	49 (98)
Search Engine	78 (78)	88 (88)	46 (92)	50 (100)	92 (92)	92 (92)	48 (96)	50 (100)	96 (96)	95 (95)	48 (96)	50 (100)
Library online catalogue	35 (35)	55 (55)	44 (88)	44 (88)	66 (66)	62 (62)	40 (80)	48 (96)	51 (51)	70 (70)	38 (76)	45 (90)
Ask-a-Librarian	5 (5)	22 (22)	38 (76)	45 (90)	29 (29)	23 (23)	27 (54)	46 (92)	16 (16)	19 (19)	34 (68)	43 (86)
Bibliographic / online databases	18 (18)	37 (37)	41 (82)	44 (88)	26 (26)	31 (31)	44 (88)	43 (86)	22 (22)	27 (27)	41 (82)	47 (94)
In-house databases	22 (22)	44 (44)	46 (92)	37 (74)	34 (34)	41 (41)	42 (84)	41 (82)	25 (25)	37 (37)	39 (78)	46 (92)
Inter Library Loan	12 (12)	33 (33)	44 (88)	24 (48)	24 (24)	40 (40)	39 (78)	34 (64)	18 (18)	25 (25)	38 (76)	40 (80)
Portals (Subject Specific)	26 (26)	34 (34)	32 (64)	32 (64)	36 (36)	35 (35)	37 (74)	45 (90)	31 (31)	40 (80)	35 (70)	47 (94)
Subjects gateways	27 (27)	55 (55)	43 (86)	39 (78)	45 (45)	64 (64)	41 (82)	44 (88)	40 (40)	69 (69)	39 (78)	48 (96)
Reference Service	45 (45)	63 (63)	29 (58)	21 (42)	38 (38)	60 (60)	38 (76)	32 (64)	32 (32)	64 (64)	42 (84)	41 (82)
Web Conferencing	24 (24)	49 (49)	29 (58)	43 (86)	33 (33)	59 (59)	39 (78)	44 (88)	27 (27)	47 (47)	34 (68)	47 (94)
Individual (personal)	44	53	39	34	51	55	37	40	43	12	39	38

webpage	(44)	(53)	(78)	(68)	(51)	(55)	(74)	(80)	(43)	(12)	(78)	(76)
Web pages of Professional organizations & asso.	65 (65)	79 (79)	46 (92)	43 (86)	68 (68)	85 (85)	46 (92)	41 (82)	71 (71)	80 (80)	40 (80)	43 (86)
Web pages of conference & congresses	36 (36)	65 (65)	49 (98)	46 (92)	74 (74)	72 (72)	50 (100)	49 (98)	70 (70)	79 (79)	40 (80)	50 (100)

Boolean search is a very common search technique used for combining the terms (Figures within the parenthesis represent %age)

Note: Because of multiple choice options the percentage exceeds 100.

According to Boolean logic. There are three types of Boolean operators such as AND, OR and NOT which are commonly used with any of the combinations available in OPAC. The table shows that majority of the users in all the three IITs use keywords and title to access electronic resources. It also reveals that research scholars and faculty members also prefer journal titles, author, type of publications and phrase as common search fields and techniques to access electronic resources for many purposes.

The table reveals various reasons for utilization of e- services. Maximum users in these IITs use WWW & internet services. The undergraduates use search engines, individual's webpage and pages of professional organisation & associations, while postgraduates use discussion groups, reference services, pages of congresses and conferences, online catalogue and in-house databases. In its comparison, research scholars and faculty members use subject portals, inter library loan, ask-a-librarian, web conferencing, search engines and web pages of professional organizations & association, conferences and congresses.

Table 8 - Purpose of Using Internet

Purpose	IIT Delhi				IIT Kanpur				IIT Roorkee			
	UG N= 100	PG N= 100	RS N= 50	FM N= 50	UG N= 100	PG N= 100	RS N= 50	FM N= 50	UG N= 100	PG N= 100	RS N= 50	FM N= 50
E-mail	68 (68)	88 (88)	46 (92)	50 (100)	64 (64)	75 (75)	48 (96)	50 (100)	68 (68)	78 (78)	48 (96)	50 (100)
Finding relevant informatio	62 (62)	65 (65)	42 (84)	41 (82)	77 (77)	79 (79)	46 (92)	39 (78)	67 (67)	75 (75)	45 (90)	48 (96)

n												
Career development	63 (63)	79 (79)	48 (96)	45 (90)	69 (69)	89 (89)	46 (92)	43 (86)	65 (65)	78 (78)	48 (96)	42 (84)
Entertainment	58 (58)	45 (45)	21 (42)	19 (36)	54 (54)	42 (42)	18 (36)	10 (20)	55 (55)	45 (45)	18 (36)	11 (22)
Research work	26 (26)	52 (52)	43 (86)	39 (78)	32 (32)	54 (54)	47 (94)	34 (68)	37 (37)	47 (47)	41 (82)	39 (78)
Other, if any	27 (27)	35 (35)	45 (90)	40 (80)	55 (55)	77 (77)	32 (64)	35 (70)	49 (49)	58 (58)	35 (70)	42 (84)

(Figures within the parenthesis represent %age)

Note: Because of multiple choice options the percentage exceeds 100.

The table reflects that the users have various purposes of using electronic resources. It shows that the majority of undergraduates and postgraduates in these institutes use web for e-mail, career development, relevant information and entertainment too. Similarly, in all the three IITs, research scholars and faculty members access web for their research work, e-mail, relevant information and many other purposes in their respective fields. The table shows that institute's library play key role by provides various e-services in concern to utilising web resources for their users. By this, undergraduates of these three IITs get help in learning new skills, assignments purpose, learn current events and writing papers. Similarly, majority of PG students in three IITs admitted to learn skills and current events, help for assignments, find a job and writing papers. It further shows that research scholars and faculty members looking for research work, current events, complete assignments and learn new skills.

Table 9 - Utility of Web Resources for users

Response (%)	Respondents											
	IIT Delhi				**IIT Kanpur**				**IIT Roorkee**			
	UG N=100	**PG** N=100	**RS** N=50	**FM** N=50	**UG** N=100	**PG** N=100	**RS** N=50	**FM** N=50	**UG** N=100	**PG** N=100	**RS** N=50	**FM** N=50
Writing Papers	43 (43)	55 (55)	23 (46)	9 (18)	58 (58)	54 (54)	21 (42)	11 (22)	44 (44)	40 (40)	19 (38)	12 (24)

Learn a new skill	65 (65)	70 (70)	38 (76)	30 (60)	55 (55)	76 (76)	45 (90)	36 (72)	54 (54)	66 (66)	38 (76)	43 (86)
Professional Development	23 (23)	33 (33)	20 (40)	18 (36)	34 (34)	29 (29)	15 (30)	14 (28)	42 (42)	37 (37)	30 (60)	28 (56)
Assignments	77 (77)	87 (87)	46 (92)	29 (58)	72 (72)	84 (84)	46 (92)	30 (60)	88 (88)	92 (92)	42 (84)	32 (64)
Research Work	29 (29)	42 (42)	40 (80)	34 (68)	24 (24)	50 (50)	42 (84)	36 (72)	25 (25)	46 (46)	39 (78)	33 (36)
Conferences	5 (5)	16 (16)	27 (54)	21 (42)	6 (6)	13 (13)	25 (50)	24 (48)	8 (8)	15 (15)	29 (58)	27 (54)
Find a job	23 (23)	53 (53)	40 (80)	12 (24)	24 (24)	54 (54)	19 (38)	20 (40)	32 (32)	52 (52)	43 (86)	18 (36)
Projects	21 (21)	19 (19)	8 (16)	3 (6)	32 (32)	27 (27)	12 (24)	1 (2)	22 (22)	13 (13)	9 (18)	0 (00)
Get legal information	14 (14)	35 (35)	21 (42)	32 (64)	20 (20)	32 (32)	17 (34)	30 (60)	20 (20)	33 (33)	18 (36)	25 (50)
Get medical/health information	13 (13)	28 (28)	15 (30)	24 (48)	18 (18)	31 (31)	22 (44)	26 (52)	15 (15)	33 (33)	19 (38)	25 (50)
Get business information	11 (11)	22 (22)	12 (24)	26 (52)	13 (13)	14 (14)	14 (28)	28 (56)	16 (16)	27 (27)	21 (42)	27 (54)
Learn about current events	36 (36)	45 (45)	13 (26)	33 (66)	41 (41)	49 (49)	16 (32)	34 (68)	35 (35)	41 (41)	22 (44)	28 (56)
Other, if any	8 (8)	11 (11)	5 (10)	4 (8)	9 (9)	13 (13)	6 (12)	7 (14)	9 (9)	14 (14)	5 (10)	6 (12)

(Figures within the parenthesis represent %age)

Note: Because of multiple choice options the percentage exceeds 100.

Table 10 - Frequency of using Web/Internet

Frequency	IIT Delhi				IIT Kanpur				IIT Roorkee			
	UG N=1	PG N=1	RS N=5	FM N=5	UG N=1	PG N=1	RS N=5	FM N=5	UG N=1	PG N=10	RS N=5	FM N=5

	00	00	0	0	00	00	0	0	00	0	0	0
Occasionally	3 (3)	0 (00)	2 (4)	1 (2)	4 (4)	4 (4)	0 (00)	5 (10)	6 (6)	5 (5)	1 (2)	2 (4)
Once a week	12 (12)	2 (2)	4 (8)	6 (12)	5 (10)	9 (9)	2 (2)	10 (20)	10 (10)	11 (11)	7 (14)	3 (6)
Daily	22 (22)	29 (29)	21 (42)	28 (56)	28 (28)	36 (36)	27 (27)	16 (32)	15 (15)	29 (29)	10 (20)	17 (34)
Most of the time	63 (63)	59 (59)	23 (46)	15 (30)	63 (63)	51 (51)	21 (21)	19 (19)	69 (69)	55 (55)	32 (64)	28 (56)

(Figures within the parenthesis represent %age)

The table shows that majority of the users in all the three institutes use web/internet most of the time. On the other hand, a thin percentage of users in these institutes use web once in a week and a very few occasionally.

Table 11 - Awareness about availability of open access e-journals/resources

Response	Respondents											
	IIT Delhi				IIT Kanpur				IIT Roorkee			
	UG N=100	PG N=100	RS N=50	FM N=50	UG N=100	PG N=100	RS N=50	FM N=50	UG N=100	PG N=100	RS N=50	FM N=50
Yes (%)	45 (45)	55 (55)	41 (82)	46 (92)	52 (52)	63 (63)	40 (80)	44 (88)	64 (64)	74 (74)	43 (86)	48 (96)

(Figures within the parenthesis represent %age)

The table reflects that majority of the research scholars and faculty members, while nearly 50% of the undergraduates and postgraduates are very well aware of open access e-journals/resources.

Table 12 - Utility of Electronic Resources in relevant areas of study

Response	Respondents											
	IIT Delhi				IIT Kanpur				IIT Roorkee			
	UG	PG	RS	FM	UG	PG	RS	FM	UG	PG	RS	FM

	N=100	N=100	N=50	N=50	N=100	N=100	N=50	N=50	N=100	N=100	N=50	N=50
Yes	65	78	50	47	69	83	50	46	68	80	49	45
(%)	(65)	(78)	(100)	(94)	(69)	(83)	(100)	(92)	(68)	(80)	(98)	(90)

(Figures within the parenthesis represent %age)

It is found that most of the research scholars admit key role of e-resources in their academic pursuits. Similarly, faculty members with 92% response with regards to utility of e-resources have deep concern with e-resources. A fair percentage of users under UG and PG studies also admit key role of e-resources with reference to their educational field.

Table 13 - Satisfaction with acquired information from web

Response (%)	Respondents											
	IIT Delhi				**IIT Kanpur**				**IIT Roorkee**			
	UG N=100	**PG** N=100	**RS** N=50	**FM** N=50	**UG** N=100	**PG** N=100	**RS** N=50	**FM** N=50	**UG** N=100	**PG** N=100	**RS** N=50	**FM** N=50
Not Satisfied	19 (19)	10 (10)	13 (26)	9 (18)	13 (13)	6 (6)	8 (16)	13 (26)	18 (18)	12 (12)	10 (20)	15 (30)
Partially Satisfied	32 (32)	39 (39)	10 (20)	24 (48)	30 (30)	31 (31)	11 (22)	16 (32)	31 (31)	30 (30)	16 (32)	19 (38)
Fully Satisfied	49 (49)	51 (51)	27 (54)	17 (34)	57 (57)	63 (63)	31 (62)	21 (44)	51 (51)	58 (58)	24 (48)	16 (32)

(Figures within the parenthesis represent %age)

The table shows that majority of the users in these institutes are fully satisfied with acquired information from web. The table also reveals that a considerable percentage of respondents, especially faculty members (48% in IIT Delhi, 32% in Kanpur and 38% in Roorkee) are partially satisfied with information accessed from web. A thin percentage of users in all the three institutes respond that they are not satisfied with acquired information from the web.

Table 14 - Provision of training/guidance for maximum use of electronic resources

Response	Respondents											
	IIT Delhi				IIT Kanpur				IIT Roorkee			
	UG N=100	PG N=100	RS N=50	FM N=50	UG N=100	PG N=100	RS N=50	FM N=50	UG N=100	PG N=100	RS N=50	FM N=50
Yes	21	05	03	0	23	06	04	1	19	03	04	0
(%)	(21)	(05)	(06)	(00)	(23)	(06)	(08)	(02)	(19)	(03)	(08)	(00)

(Figures within the parenthesis represent %age)

The table shows that 21% undergraduates in IIT Delhi, 23% in IIT Kanpur, 19% in IIT Roorkee and a low percentage of postgraduates and research scholars look for a provision of training/guidance for maximum utilisation of web based resources. It is also observed that the faculty members use maximum electronic resources and do not seek a provision of training/guidance.

9. Major Findings of the Study

On the basis of the analysis and interpretation of the collected data, the major findings are laid down:

- Most of the users in all the three institutes are using institute's library.
- A strong percentage of users in all the three IITs are aware about the availability of library's electronic resources and services provided.
- Majority of users in these institutes prefer electronic format of resources as compared to print format. In comparison to undergraduates, students of postgraduate studies, research scholars and faculty members are more interested in using e-resources.
- It is found that users are satisfied with available e-resources in their respective institutes.
- Most of the users in these institutes use internet for e-mail, searching relevant information, career, job and research work. Research scholars and faculty members prefer web resources for research work, assignments, conferences & congresses and their professional development.
- Nearly half of the respondents use e-resources to seek required information.
- A major portion of respondents use web resources to learn skills and to have knowledge of current events, find relevant information and a job, get legal & medical information and complete assignments, research work.

- It is observed that respondents of UG and PG studies use e-resources mainly to support their academic needs and entertainment purpose. On the other hand, the research scholars and faculty members of these institutes use web resources for their academic and research purpose.
- Majority of respondents use keywords, title, journal title, phrase and field search as common searching and retrieval tools/techniques.
- A considerable percentage of respondents, especially faculty members are partially satisfied with information acquired from web but some are not satisfied too. It is a prime problem while using electronic resources on web.
- Most of the users give preference to electronic resources over print resources.
- It is observed that users are very much aware about availability of open access electronic resources.
- The Study reveals that a considerable percentage of users are fully satisfied with acquired information from web.
- Users have various reasons for using e-services. Maximum users in these IITs use WWW & internet services.
- It is also observed that quite a few numbers of respondents seek training and guidance to get more benefits and maximum use of electronic resources.

10. Conclusion

The issue of quality in higher education has become more paramount now and to achieve this goal a library is to be developed with a rich collection emphasising upon electronic resources and providing information services for its users. We are living in a digital world. The evidence is everywhere. Some of these valuable and most sought after resources are freely available on internet. Internet is a dominant medium for information transmission. Everything needed for teaching, learning and research is made available on the internet. Through the optimistic role of web in using electronic resources, the libraries not only boost their efficiency in providing electronic services but also gain the trust of their patrons in doing so.

The emergence of electronic resources has opened new vistas for the academic world. The academia has been exploring the electronic resources and information services through libraries and the web to its maximum, for the development of its academic and personal skills and research needs. The study of the three IITS shows that the electronic resources have outclassed the traditional ones due to its various features and thus electronic format of information resources has become particularly for the academicians.

11. Suggestions:

On the basis of the findings and conclusion of the study, the following suggestions are submitted:-

- Library should develop an online visual user guide/manual for the users.
- More and more training programmes should be conducted especially for undergraduates and postgraduates.
- Libraries should be provided with adequate finances and other facilities to support the library's mission towards electronic resources and services.
- Library should make an on-line platform to suggest the most authentic web portals and open e-resources as per the users academic requirements.
- To motivate libraries users to use available open web sources, e-resources and e-services in respective libraries than common resources whose authenticity is not proved.
- An IL (Information Literacy) system for users be generated /developed on how to make the best use of open web resources and electronic services.
- Developing an OCB (On-line Chat Box) and VHD (Virtual Help Desk) on the library website which gives a 24 x 7 on-line support to the users to enable them to contact LIS Professionals to utilize best open web resource and services.
- To provide from, time to time, bunch mail facilities on users IDs, to update open web resources and e-services which users are unaware of.
- More updating tools and applications like SLA (Smart Library Apps) should be developed for smart devices like tablets / smart phones which are user friendly, to access web and open web resources.

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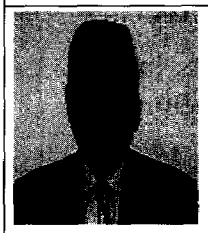
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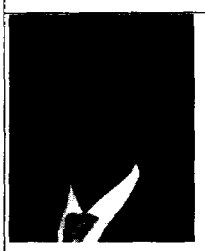
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Author's Profile



Prof. M.T.M. Khan at present working as Professor & Dean at School of Library & Information Science, Galgotias University, Greater Noida. 3 books and 23 articles are there in his credits. 30 ph.d were awarded in his guidance. He served as expert member on UGC panl for assessing Universities for General Development Grant and also in the UGC Subject panel for curriculum Development of LIS. His areas of interest are Social and Economic aspects of Librarianship; Computer applications in Library services



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Use of Electronic Information Sources by the Users of MLB Medical College, Jhansi: *An Analytical Study*

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Abstract: The article is an outcome of a survey conducted at MLB Medical College, Jhansi to find out the use of e-resources and services by medical professionals. Study highlights the level and usage of the available e-resources in the library. It also covers the impact of these resources on the work of practicing medicos & students of medical students. Concludes that more awareness about e-resources and training in use of the same needs to be provided by library professionals. These findings can be helpful for policy makers and librarians to provide better sources and services.

Keywords: E-resources, User Study, MLB Medical College-Jhansi, Medical Practicenor

1. Introduction

E-resources can be defined as 'resources which are available to the user in electronic format and whose contents can be read using computer programme(s) like word processing, Database Graphic or Audio-Visuals etc. "These electronic information resources and services that users access electronically via a computer network from inside the library or remote to library."

The advantages of having library material available in e-form are: Less space is required and can be replicated easily; access from any platform; and, provide enormous search speed and download facility.

2. Review of Literature

The role of library has changed dramatically and it is continuously changing. We have moved from the physical library housing the majority of books and journals needed by library users and supplemented by the collections of the other libraries to a service based around information delivery via computer. Electronic resources are accessible via the Internet, preferably from any computer in the world. They are search tools and provide access to current information.

Khan and Ahmed (2009) explore the comparative use of e-journals among researchers of AMU and BHU. They found that the researchers of the both universities are much aware about the use of e-journals facility in respective universities. They sought the purpose of using e-journal facility. Moghaddan and Talawar (2008) explore the use of electronic journals at the Indian Institute of Science libraries in India. The questionnaire method was used to collect the data from respondents. It has taken several issues regarding usage of e-journals among users and highlights the major problems to accessing them. They found

that lack of proper training and infrastructure facility hinders the use of e-journals. They have given prolific suggestions for further improvement.

Deshpande and Pathak (2008) analyze the role of e-journals among astrology and astrophysics libraries in India. They study discussed the matter of awareness, place, and frequency of accessing e-journals. They also have given emphasis to information literacy programmes.

Kumar and Kaur (2006) report on the results of a survey of Internet use, which also provides information about the benefits of Internet vs. print documents. Chestnutt and Reynolds (2006) conducted a study of 457 dentists in Wales to identify how patient information on the Internet has influenced the delivery of oral care and the use practitioners make of the Internet. Thirty -nine percent of respondents agreed that information gained from the Internet had led to patients demanding in appropriate care.

Ajuwon (2006) conducted a study of the physicians' use of the Internet for health information for patient care at the University College Hospital (UCH) Ibadan, Nigeria. The findings revealed that 98% of the respondents had used the Internet. A majority (75%) accessed the Internet from cyber cafes. Ninety percent reported that they had obtained information from the Internet for patient care; of this number, 76.2% had searched a database. Out Ashcroft, Linda and McLvor, September (2001), made a study, on the evaluation and promotion of e-journals in the UK and in North America.

The queen Elizabeth hospital library cancelled all print journals (year 1999-2000) where electronic access was readily available. The paper examines the experience between pitfalls and outcomes of committing to electronic resources in TQEH over the last four years and looks at where the future lies for e-delivery in TQEH. Chen, Liza (1999) reflecting upon the first development of e-journals marked that , there is no doubt that e-journals open up many exciting service opportunities in research libraries.

3. Statement of the problem

The problem of the present study is entitled. "Use of Electronic Information Sources by the users of MLB Medical College Library, Jhansi: An analytical study." Hard copies of literature in medicine especially the journals are very costly and uses can seldom afford to purchase them from -their personal resources. Also the latest information in this discipline an save many lives and hence it was focused to be very crucial to know the status of use of e-resources in the library.

4. Objectives

- To find out the purpose for which e-resources are used.
- To find out different kind of e-resources used by the users.
- To find out the frequency of the user to visit the library for using e-resources.
- To identify the problems faced by the users for accessing e-resources.
- To identify the satisfaction with e-resources.

- To study comparative usage of print v/s electronic form.
- To analyze search technique used by the users and most preferred format chosen by the users when borrowing e-resources through internet.

5. The following hypotheses were framed before conducting this study:

- Users are depending more on electronic resources rather than textual.
- Users are well aware of the qualities of electronic information sources.

This study is centered to investigate the views of the users towards electronic resources provided by MLB medical college library. In order to make an intensive study, the scope of the topic has been restricted to only sessions 2013-2014. The present study is confined only to the medical professionals of the MLB medical college library, Jhansi.

6. Methodology

This study is a questionnaire based survey of MLB Medical College Libraries use among users. The simple well recognized questionnaire was designed in a way to collect the relevant data from the respondents. The appropriate questions have been added in the questionnaire and discarded those questions which could create confusion.

The collected data through the questionnaire was thoroughly organized and tabulated by using simple statistical methods. It summarized and analyses user responses to understand the research problems and to findout the solution of related problems.

- **Population**: Users of MLB Medical College, Jhansi
- **Sampling method**: Random sampling
- **Sample size**: 150 Questionnaire distributed out of which 120 usable responses were received.
- **Scope and Coverage of the Study**

MLB Medical College, Jhansi was established in 1965. At present this institute is running with strength of 240 medical professionals, 45 faculty members and around 18 visiting faculty. The library is now providing electronic services, non- book materials like CD-ROM etc. Survey was undertaken in March, 2013.

7. Data Analysis and Interpretation

Table 1 reveals that most of the users responded from the age groups of 28-32 (41.47%); 32.55% of users belong to above of 36 ages and 17.5 % respondent belonged to 32-36 years of age group. The age groups between 24-28 years were only 8.33% of the total population surveyed and these were very least population among all of groups.

Table 1- Population Study

Member Age (in Year)	Responses	Percentages (%)
24-28	10	8.33
28-32	50	41.47
32-36	21	17.5
Up to 36	29	32.5
Total:	120	100

Figure 1 reveals that 73 (60.83%) of populations were male and 47 (39.17%) were female of the total population who access e-resources for different purposes related education, training, research and development.

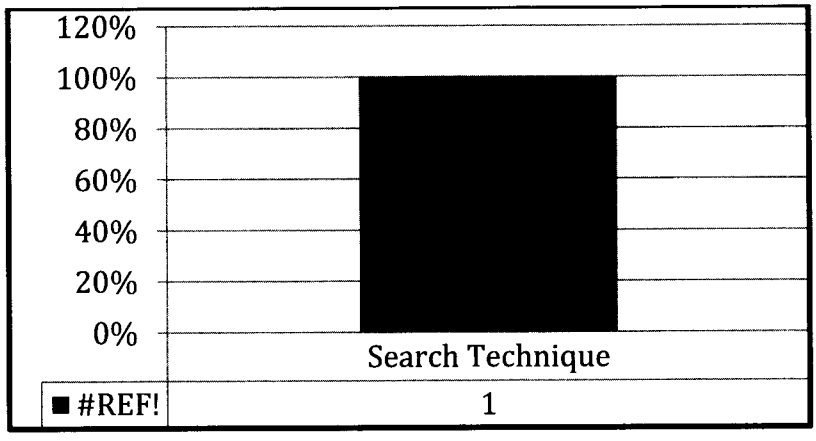


Figure 1- Gender-Wise Collection of Data

Table 2 - Profile of Respondents

Stream(Qualification)	Responses	Percentages (%)
Research Coordinator	57	47.5
Doctors	38	31.67
Allied Health Professionals	3	2.5
Nurses (Midwifery)	22	18.33
Total	120	100

Table 2 reveals that 57(47.5%) of the users belonged to Research Coordinator, 38 (31.67%) were Doctors (MBBS), 22(18.33%) of users were from midwifery sisters and only 3(2.5%) were from Allied Health Professionals (like Nutritionist, Lab Technician, and Psychologist)

Table 3 - Frequency of Access to E-resources from Library

Frequency	Responses	Percentages (%)
Daily	64	53.33
Once in a Week	15	12.5
2-3 times in a week	36	30
Occasionally	5	4.17
Total	120	100

Only 36(30%) of users access e-resources 2-3 times in a week from library; 15(12.5%) of respondents use e-resources once in a week, 64(53.33%) users use daily and only 5(4.17%) use occasionally. It is clear from the analysis of data most of the users are using library daily about to 64(53.33%). So for, from the above table 3 it's reveal that the most of the respondent were fully aware to e-resources and that's why they visit to library daily for getting e-resources.

Table 4 - Preference of Resources

Type	Responses	Percentages (%)
Print	18	15
E-journals	48	40
CD-ROM Databases	10	8.33
Both (Print+ e-Resources)	44	36.67
Total	120	100

Most of the respondents 58(48.33%) prefer e-resources over print resources. Only 15% users want to read from print materials and 36.67% users want to access from both print as well as electronic resources.

Table 5 - Purpose of Using Electronic Resources

Purpose	Responses	Percentages (%)
For writing	47	39.17
For Project	20	16.67
For Seminars	18	15
For research work	95	79.17
For clinical trial	15	12.5
For preparing notes	5	4.17
Any other work	10	8.33

[**NB**: Because of multiple choice options the percentage is exceeded to more than 100%.]

From table 5 it is clear that most of the respondents (79.17%) use e-resources for the research work.

Table 6 - Search Technique Used

Search Technique	Research Coordinator	Doctors	Allied Health Professionals	Midwifery	Total
Keyword	57	38	13	12	120
Author	42	18	10	15	85
Title	27	16	8	6	57
Source	13	7	4	5	30
Boolean Operator	15	13	2	0	30
Wildcard	2	0	0	0	2

Table 6 reveals that most of the respondents (120) make use of keywords to retrieve information, followed by 85 respondents who use authors as option for search their query. Search by the title is used by 57 respondents; by Source is 30; search by Boolean Logic is 30 and only 2 uses Wildcard as a technique to search query for retrieving information.

Table 7- Most Preferred Search Engine

Search Engine	Responses	Percentages (%)
Yahoo	54	45
Google	63	52.5
Alta vista	2	1.67
MSN	Nil	Nil
Any other	1	0.83
Total	120	100

It is revealed from the above Table 7 that most preferred search engine is Google 63(52.5%) followed by Yahoo 54(45%) for searching and browsing information. Most of the respondents were not aware of any other search engines.

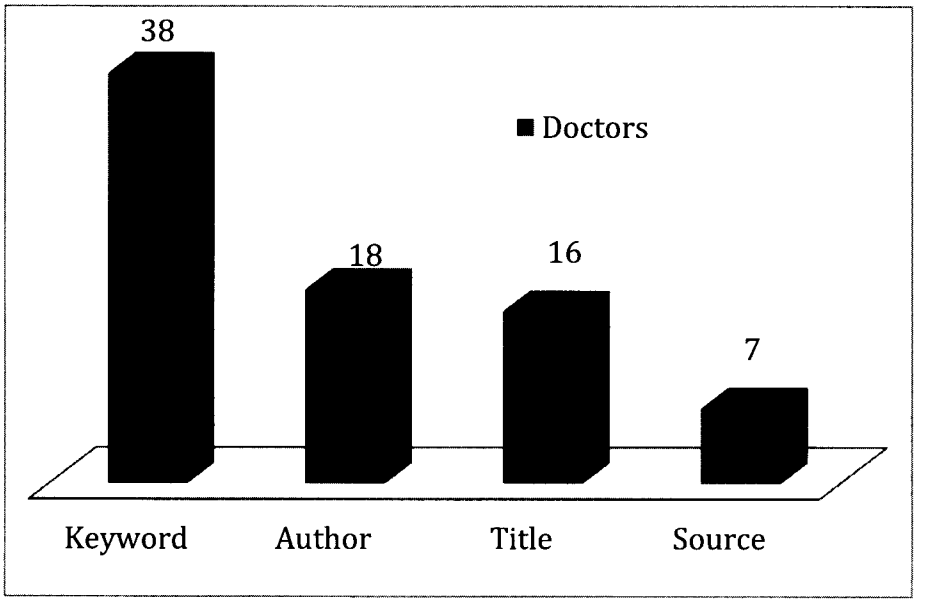


Figure 2 - Preferred Format Used

Format	Responses	Percentages (%)
DOC	38	31.67
PDF	58	48.33
HTML	8	06.67
Both	16	13.33
Total	120	100

Figure 2 revealed that most preferred file format for storing information is PDF 58(48.33%) and DOC 38(31.67%) even though mixed response followed by HTML and MS-word format respectively.

Table 8 - Problems Associated with Access to E-resources

Problems	Responses	Percentages (%)
Lack of qualitative information	53	44.17
Lack of training	80	66.67
Inadequate of PCs	38	31.67
Slow internet connection	20	16.67
Preferences to printed sources	40	33.33
Low configuration	12	10.00

[**NB:** Because of multiple choice options the percentage is exceeded to more than 100%.]

Table 8 reveals that 66.67 % of users found lack of training as the major problem for not using or less using of electronic resources. The 44.17% users find lack of qualitative information which was the main hindrance in using e-resources (like e-journals). The 31.67% respondents were facing problem with inadequate PCs. The 16.67% respondent felt that the internet connection provided by the institute is slow; where as 10% users responded that because of the low configuration of computers they could not have proper access to the e-resources. Forty users (33.33%) give more preference to printed materials than electronic resources.

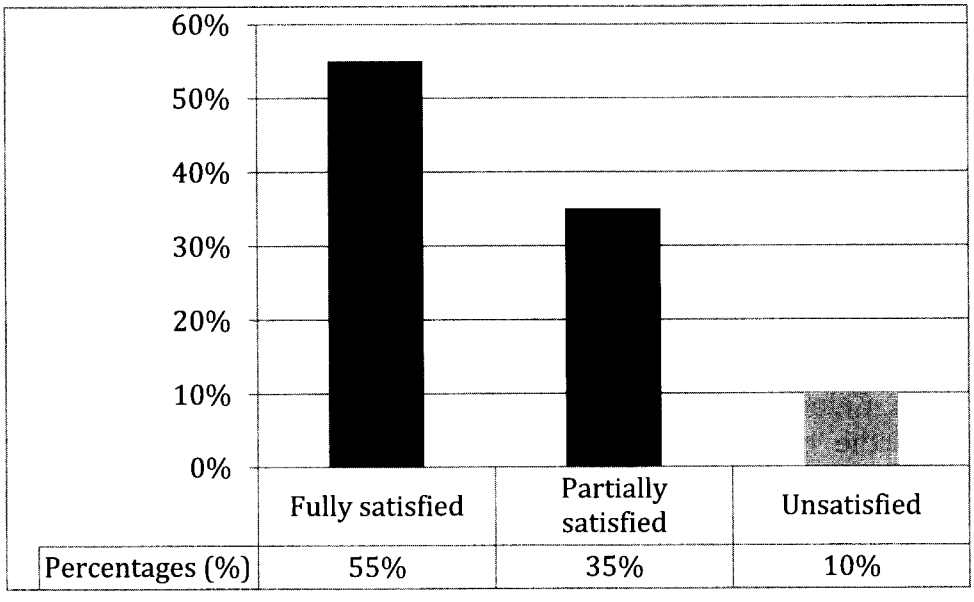


Figure 3 - Users Satisfaction Level with e-Resources

Figure 3 indicates 55% users are fully satisfied with e-resources, 35% are partially satisfied and 10% users were unsatisfied to using e-resources compare to print resources.

8. Findings and Testing of Hypothesis of the User's Study

Maximum users are using library extensively. Most of the users are satisfied with accessing of e-resources. Maximum users are facing problems with access of e-resources due to lack of training, lack of qualitative information. Most of users use the e-resources for their research work.
In future, major portion of respondents wants to access materials in electronic form. Major portions (47.5%) of the users i.e. research coordinators are more interested in accessing e-resources (Table 2). Major part (41.67%) of the users is from the age group of 28-32 years. In comparison to female respondents, male respondents are more interested in accessing e-resources. Majority of the users are following simple search when accessing e-resources from the internet. Most preferred format of information is portable document format.

9. The following suggestions are made on the basis of this study

Training is required by the users for better use of e-resources. Bandwidths should be increased in order to provide faster access that wills save much of the users' time and be sources of motivation to use the e-resources. Meeting with information professionals' who have to create more awareness in order to market their new electronic service being provided in the library.

10. Conclusion

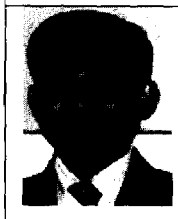
The above study reveals that users who visit library almost all the days use e-resources facility for research work. It is clear that younger has accepted the digital library and use of e-resources. Lack of trained staff and proper infrastructure in library is major de-motivating factors in the use of e-resources.

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Use of E-Resources: *a case study of Panjab University Library*

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Abstract: Today we are living in the age of information. Large amount of information is being generated every moment. E-resources are a very broad term that includes a variety of different file formats. Electronic resources are the products that deliver a collection of data, be it in text referring to full text basis, e-journals, image collection, other multimedia products and numerical, graphical or time based as a commercial available till that has been published with an aim of being marketed. Acquiring knowledge from e-books, e-journals, online resources, CD-ROM, internet with related databases are the impact of e-resources. The purpose of this paper is to identify the availability of e-resource facility and accessing mode in the Panjab University Library. A well structured questionnaire was distributed among under-graduate students, post-graduate students and research scholars of Panjab University Library to evaluate the e-resource facility.

Keywords: E-Resources, Electronic media, University Library, accessing e-resources

1. Introduction

Today, we are living in the age of information. Large amount of information is being generated every moment. Information is most essential to user to update their knowledge. The library is a wide resource to provide information to all kind of users. With the arrival of ICT (Information and Communication Technology), libraries are changing in terms of everything, terms of functions, resources, or services. The internet has played a major role in information storage, processing and dissemination. It means that the functioning of libraries for that matter is largely determined by the size, range, depth and collection holdings such as books, newspapers, journals, and audio-visuals. Meanwhile, the recent advances in science and technology have introduced a new dimension to library collection as well as their building process. Though, the general principle behind the collection development process remains essentially the same, building the library's e-resources has certainly introduced a new perspective. Due to continuous development of information technology and its impact on library collection development policies, is changing demand of users for the pin pointed and exhaustive information within a short time. With the growing popularity of e-resources, the traditional libraries are gradually migrating from print documents to e-resources where providing access to information is considered more important than owning it. This has compelled libraries to rethink about their collection. University libraries today are moving towards having access to more and more e-resources in their collection as they form major intellectual research output of the world. 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. Libraries have been moving towards an electronic environment, in which sufficient infrastructure and resources are necessary for patrons to access information.

2. Objectives

- Awareness about e-resources among the students
- To know the purpose, kind of materials, accessed through e-resources
- To find out the frequency of using e-resources and services
- To find out the basic search strategy for accessing e-resources
- To discover which type of problems faced by them, while using e-resources
- Study the impact of e-resources
- Know the quality of information retrieved through electronic resources
- To examine the hurdles in the way of e-resources
- Find out the satisfaction level of the students with existing information sources
- To recommend necessary measures to improve access to e resources in university library

3. Methodology

There are several research techniques and tools available for researchers to collect data within the scope of the study such as questionnaire methods, interview, pilot study, and observation, etc. For this study to collect data, questionnaire was designed with questions like frequency of use, problems in use, purpose of use, satisfaction level with e-resources. It consists of thirteen questions. 100 questionnaires were circulated among the researchers, under graduate and post graduate students of the Panjab University. Out of which 90 filled questionnaires are collected back from library users. Thus, the finding of the present study is based purely on the responses made in questionnaire.

4. Limitation of the study

Every university has e-resources collection in their library but the present study is restricted to the use and impact of e-resources by the users of Panjab University Library.

5. Review of literature

Although there is a wealth of literature on e-resources, Ramana (2006) explores the literature regarding the use of electronic resources by the post graduate students and research scholars of Vellor Institute of Technology (VIT). The study shows that a large majority of students use online journals for preparing project reports and for listing references only. In another study, Rokade and Rajyalakshmi (2006) conducted a survey on information needs of the users and electronic information services available in Dr. Panjabrao Deshmukh Krishi Vidyapeeth library, Akola. Shuling (2007) analyzed the use of electronic resources in Shaanxi University of science and technology. The sample consists of all types of library users. The study found that nearly 80 percent of respondents knew little about electronic resources. Nearly half the respondents use both printed and electronic resources, followed by print periodicals. Chinasamy,et al. (2008). The study

covers the impact of electronic resources on the academic work and study. Also describes the orientation given by the library staff members to the students and it was found that students using effectively the electronic resources every day, for their academic success. Swain and Panda (2009) in their paper attempt to measure the quantum of electronic resources accessed in the academic ambience of Business School Libraries in Orissa (India).

The electronic resources available in a library play a prominent role in facilitating access to required information to the users in an easy and expeditious manner. Hussain and Ansari (2010) opine that libraries should take more initiatives for developing awareness about electronic resources, so that the use of electronic resources can be made to its full extent. The electronic resources have become as important part of present life. Bhatia (2011), Studies on usage and users will certainly be important while university libraries continue to increase their expenditure on electronic collections.

Table 1 - Gender wise frequency of the respondents

Sr. No.	Gender	No. of Respondents	Percentage
1	Male	55	61.1%
2	Female	35	38.9%

Table No.1 shows that male respondents are 55 (61.1%) and female are 35 (38.9%).

Table 2 Category of users

Sr. No.	Category	No. of Respondents	Percentage
1	UG Students	17	18.9%
2	PG Students	49	54.4%
3	Research Scholars	24	26.7%

Table No. 2 replicates that 49 (54.4%) respondents are post graduate students, 24 (26.7%) are research scholars and 17 (18.9%) are under graduate students.

Table 3 Awareness of electronic resources

Sr. No.	Awareness	No. of Respondents	Percentage
1	Aware and use	70	77.8%
2	Aware but never use	15	16.7%
3	Not aware	5	5.5%

Table no. 3 shows that 70 (77.8 %) responded positively and acclaimed that they are fully aware of the electronic resources and using it and 15 (16.7%) responded that they aware about electronic resources but never used. Only 5 (5%) are not aware about the facility.

Table 4 Frequency of using e-resources

Sr. No.	Frequency	No. of Respondents	Percentage
1	Daily	48	53.3%
2	2-3 days in a week	27	30%
3	Once in a week	9	10%
4	Occasionally	6	6.7%

Table 4 shows that the 48 (53.3%) using e-resources daily, 27 (30%) of them are using 2 or 3 days in a week, 9 (10%) is once in a week, and only 6 (6.7%) of respondents using occasionally.

Table 5 Access point of e-resources

Sr.No.	Access point	No. of Respondents	Percentage
1	University Library	65	72.2%
2	Departmental Library	14	15.6%
3	Cyber cafe	4	4.4%
4	Laptops/Mobile	7	7.8%

Table 5 replicates the access points of accessing e-resources. 65 (72.2%) are accessing from university library, 14 (15.6%) from departmental library, 7 (7.8%) from their Laptops/Mobile and only 4 (4.4%) of the respondents from cyber café.

Table No. 6- Purpose of using e-resources

Sr. No.	Purpose	No. of Respondents	Percentage
1	Research work	35	38.9%
2	Writing papers	20	22.2%
3	Carrier development	11	12.2%
4	For updating knowledge	14	15.6%
5	Completion of assignments and projects	10	11.1%

There are different purposes amongst users in using e-resources. Table No. 6 reveals that 35 (38.9%) respondents are using e-resources for their research work, 20 (22.2%) to write papers, 14 (15.6%) for updating knowledge, where as 11 (12.2%) for carrier development and 10 (11.1%) are using it for the completion of assignments and projects.

Table No.7 Source of seeking information

Sr. No.	Source	No. of Respondents	Percentage
1	e-books	18	20%
2	e-journal	35	38.9%
3	e-newspaper	24	26.6%
4	e-thesis	8	8.9%
5	e-database	5	5.6%

Table No. 7 shows that 18(20%) respondents are seeking information from e-books, 35 (38.9%) are from e-journals, 24 (26.6%) from e-newspapers, 8 (8.9%) from e-thesis and only 5 (5.6%) from e-databases.

Table No.8 Satisfaction with e-resources facilities

Sr. No.	Satisfaction	No. of Respondents	Percentage
1	Fully	51	56.7%
2	Partially	28	31.1%
3	Least satisfied	11	12.2%

Table no. 8 reveals that 51(56.7%) respondents are fully satisfied from e-resources provided in the library, while 28 (31.1%) are partially satisfied and only 11 (12.2%) are least satisfied.

Table No. 9 Opinion for print v/s electronic version

Sr. No.	Opinion	No. of Respondents	Percentage
1	Better than print version	25	27.8%
2	Same as print version	42	46.7%
3	No better than print version	23	25.5

Table no.9 shows the respondent's opinion about e-resources. The majority of respondents, that is, 42 (46.7 %) indicate that e-resources are same as that of print version, 25 (27.8 %) indicate that e-resources are better than print version, whereas 23 (25.5 %) responds that e-resources are not better than print version.

Table 10 Sources through which e-resources are known

Sr. No.	Source	No. of Respondents	Percentage
1	Guidance from library staff	24	26.7%
2	Advice from friends	40	44.4%
3	Guidance from teacher	11	12.2%
4	Training offered by library	15	16.7%

Table 10 reveals that the majority of respondents, 40 (44.4 %) learn by the advice of their friends. This is followed by about 24 (26.7 %) respondents who learn by the guidance from library staff, 15 (16.7 %) learn by training offered by the library and about 11(16.7%) learn by the guidance from their teacher.

Table No. 11 Problem encountered while using e-resources

Sr. No.	Problem	No. of Respondents	Percentage
1	Slow speed of internet	35	38.9%
2	Lack of knowledge in using e-resources properly	18	20%
3	Limited online full-text journals articles	15	16.7%
4	Facing downloading problems	13	14.4%
5	Authenticity of information	9	10%

Table no. 11 shows that 35 (38.9%) of the respondents feel that slow internet access speed is main problem while using e-resources, 18 (20%) feel lack of knowledge in using e-resources, 15 (16.7%) feel that there is limited online full-text journals articles available, 13 (14.4%) are facing downloading problem and 9 (10%) respondents are not sure about authenticity of e-resources.

Table no. 12 Medium of information seeking

Sr. No.	Medium of information seeking	No. of Respondents	Percentage
1	Download the information and copy to CD/Mail	38	42.2%
2	Take printout	30	33.3%
3	Only reading	22	24.5%

Table no. 12 shows that 38 (42.2%) respondents are using e-resources to download the information and copy it to CD, 30 (33.3%) respondents take print out whereas 22 (24.5%) respondents using for reading only.

6. Major Findings of the study

The study offers a way to identity the acceptance of e-resources, advantages and the problems encountered while using them. The major findings of the study are:

- Almost all respondents are aware about e-resources available in library
- Majority of users use e-resources for their research work, updating knowledge and writing papers
- Maximum respondents access e-resources from university library
- E-journals are more popular among users
- Maximum users are fully satisfied with e-resources
- The frequency of using e-resources is increasing day by day
- Users have indicated that they learn about information skills for accessing electronic resources through friends
- Lack of training is the major problem in not accessing the e-resources

It is hoped that the findings of the present study might provide useful information to identify how users search for the e-resources in the internet age and will help plan for improvement in their service in the university.

7. Suggestions

The data about the use of e-resources reveals that users prefer electronic resources compared to print sources because of their format and delivery. Hence, libraries must make all efforts to increase the number of e-resources, such as e-journals, e-books and online databases in their collection.

- Users have indicated that they learn about information skills for accessing e-resources through friends. However, this results in users' wasting their precious time and places them into avoidable efforts. Hence it is suggested that the library authorities should develop new information literacy programmes, which impart required skills to users in accessing electronic resources.
- Users expecting more orientation and training programme for better usage of the resources so university library need to take some more initiative to enhance the utility by orientation and training programmes.
- Increased number of computers in the libraries to increase the use of e-resources.
- It is also recommended that more high- speed computer terminals should be installed in the various departments, departmental libraries or in the University campus to save the time of the users.

- Instructions for using e-resources should be available in the library and it is most important that users should be informed about the availability of e-resources for faster access. The users should be informed by email when new e-resources are subscribed.
- It is suggested that the personnel who are working in the library must take maximum interest in creating the awareness about the availability of e-resources, and their value and importance in improving the quality of the research. Then only it is possible for every user to make use of e-resources for updating their knowledge and bringing out the quality publications as well as thesis.

8. Conclusion

E-resources are the major source of information in this era of technology. The main purpose of any library is to provide relevant and up to date resources with a view to satisfy the information needs of the users. In order to cope with the present developments the library has adopted various e-resources for the collection development to fulfill the requirements of different users in a better way. The present study concludes that the use of e-resources is common in Panjab University and majority of the users are dependent on e-resources to get the desired and relevant information. The library should organize awareness and training programmes and seminars to educate the users for accessing e-resources, so that the services and resources of the library can be utilized to the maximum extent.

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Use of E-Resources through Consortia: *a boon to users of North East University Libraries*

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Abstract: The rapid growth and development of ICT have brought changes in the modes and methods of information storage, retrieval and transmission. Resource sharing has been one of the most prominent principles for supporting the library service. The increasing price of electronic journals, high price of books and low library budget along with the traditional print subscription are some of the important factor which lead the library to resource sharing, networking, coordination and consortia. Library consortia are one of the best means of resource sharing of e- resources. This paper discusses about the concept of resource sharing through consortium and describes the basic requirements for joining a consortium. This paper tries to highlight about the consortia initiatives in India and how this facility has been extended to North- eastern University libraries through the accessing of e-journals under UGC-INFONET e- journal consortium and Del-CON. This paper attempts to discuss about the consortia as a resource sharing activities. This paper reflects the challenges of university libraries of North- east region in accessing information through consortia and the current usages of various e- resources.

Keyword: Consortia, e-resources, Resource- sharing, North-east

1. Introduction

Change is the law of nature and it is very apparent in the present day library culture. Technological revolution in academic libraries have changed the ways in which today libraries are using fine information like e- resources to a large extent. A few decades back Lancaster talked about the "paperless society." R.G. parashwar stated in his one book that "paperless society is a distance dream. That day has gone when it was only a dream. Electronic medias like floppy discs, magnetic taps, CD-ROM, DVDs etc. and online e-resources are slowly replacing the physical hard volumes of books and journals. The concept and mode of presentation is changing from static text based to graphic, hypertext, audio, video, multimedia etc. In this changing library situation, collection development of e-resources has been a great concern for almost all the library.

2. University libraries of North East Region

Before independence of India, there were only 16 colleges in North eastern region, majority were located in Assam. The establishment of first university at Guwahati in January 1948 gave a real boost of the expansion of higher education. At present there are 4 state and 10 central universities in North East Region. 15 state private universities and one deemed university. Total nos. of universities in North East region is 30.

State- wise number of universities in North- East is as under.

State	No. of Universities				
	Central	State Govt.	State Private	Deemed	Total
Arunachal Pradesh	1	-	-	1	2
Assam	2	4	1	-	7
Manipur	2	-	-	-	2
Meghalaya	1	-	6	-	7
Mizoram	1	-	1	-	2
Nagaland	1	-	2	-	3
sikkim	1	-	4	-	5
Tripura	1	-	1	-	2

Source: UGC Annual Report 2010-11

3. Consortia Initiatives in India

Due to the wide variation in electronic information consumption by different libraries, the consortia based library acquisition has not so far reached significant level in our country. Library consortia have come up in India too. They are as follows:

- NKRC (CSIR- DST)
- Indian National Digital Libraries in Science and Technology (INDEST).
- INFONET Project of UGC- Health Sciences, Library & Information Network (HELINET).
- CSIR E- journal Consortium.
- DAE Library Consortium.
- IIM Library Consortium.
- DeLCON (DBT Electronic Library Consortiums) etc.,

Here we are going to discuss some of the important Consortium in India:

- NKRC (CSIR- DST): Established in 2002, Operation and Headquarter- NISCAIR, New Delhi, Funding –CSIR&DST - Number of participating Institution: 65. Serving to about 10,000 users
- INDEST- AICTE - Established in 2003-Operation/ Mgt. HQ- IIT Delhi Nature- S&T, Humanities and Social Sciences - Access to about 12000jls =6 databases
- DRDO Consortia: Established in 2007, Came in existence Jan. 2009, Funding- DRDO - Nature- S&T and Others: Number of participating institutions-50+DRDO institution Serving to about 7,000+users.
- DELCON: DeLCON established in 2009. Its operating Headquarter is NBRC, Gurugaon. It get funding from DBT, Govt. Of India. Number of participating

Institutions are 33(14DBT, and 18 NER institutions. Access to 917 jls plus SCOPUS database. DeLCOn E- Library Consortium subscribes are available from the publisher's website. In North 18 Universities participating in DeLCON programme. List of participating Universities are listed below:

1. Assam University, Silchar. Full text Resources 20 nos.
2. College of Veterinary Science, Assam Agricultural University
3. Gauhati University
4. Dibrugarh University, Assam
5. Indian Institution of Technology, Guwahati(IITG)
6. Institute of Bio resources and Substantial Development, Imphal
7. Manipur University, Manipur
8. Mizorum University
9. Nagaland University
10. North- East Institute of Science and Technology, Jorhat
11. North- Eastern Regional Institute of Science & Technology. NERIST, Arunachal Pradesh
12. North- Eastern Hill University(NEHU), Shillong
13. Rajib Gandhi University, Arunachal
14. Sikkim University, Sikkim
15. St. Antanys College, Shillong
16. Tezpur University, Tezpur
17. D. M. College of Science, Manipur
18. College of Veterinary Science, Mizoram

4. UGC INFONET Digital Library Consortium

The UGC INFONET Digital Library Consortium is a major initiative of University Grant Commission (UGC) to bring qualitative changes in academic libraries in India. It was formally launched in December, 2003 by honourable Dr. A P J Abdul Kalam, the then President of India. It is a national initiative for providing access to scholarly electronic resources including full text bibliographic databases in all subject disciplines to academic community in India. It is the largest consortium in India with a vision to reach out to all universities and colleges affiliated to the universities. The consortium provides current as well as archival access to more than 5,000 core and peer-reviewed journals and nine bibliographic databases in different disciplines from 23 publishers. The access to all major e- resources was given to 50 universities in first phase in 2004. It has now been extended more than 157 universities in three different phases. During the last few years, effective implementation and execution of this programme has made it as one of the largest and successful consortium around the world. Under the programme, over 4500 high quality peer reviewed priced full text scholarly journals in Science and Technology, Social Science and Humanities are provided free of cost to 157 universities through UGC-INFONET infrastructure. Centre has developed a website of UGC- INFONET Digital Library Consortium.

5. Accessibility of E- journal Consortium to the Universities of North- Eastern States

Access to electronic resources requires good ICT infrastructure, availability of satisfactory number of PCs in network environment and good speed of INTERNET connectivity. If any factor of this is not available, these facilities remain unutilized. Statistics reveals that most of the universities in the region are not desired use off e-journals due to some or other region. The North- Eastern States comprising of eight states where 550 colleges and 16 universities are there. Out of 16 universities only 11 universities are covered under UGC-INFONET E-journal Consortium. These universities were given more than1700 full text journals from different publishers. The accesses to e-resources to the colleges are in pipeline and it is extending. Considering the diversity of resources required and ICT infrastructure available in 11 universities in North -East, these universities have been covered in different phases. The first phase universities were given access to entire resources whereas second phase universities were given access to less resource. The list of e-resources accessible to various universities was given below:

- **Phase I:** Gauhati University, Manipur University, North -East Hill University and Tezpur University are covered under phase I
- **Phase II:** Assam University, Dibrugarh University, Nagaland University, Rajiv Gandhi University (Arunachal) and Tripura University are covered under phase II of the consortium.
- **Phase III:** Mizoram University and Sikkim University are covered under phase III.Under the UGC -INFONET programmed, internet connectivity of all these universities have been upgraded. The types of connectivity and the bandwidth provided to the universities are listed below:

Sl.nos.	Name of the University	Types of Connectivity
1	Assam University, Silchar	SCPC 512 kbps.
2	Dibrugarh University Dibrugarh, Assam	SCPC 256 kbps.
3	Gauhati University, Guwahati, Assam	LL 512kbps.
4	Manipur University, Manipur	SCPC 256 kbps.
5	Mizoram University, Mizoram	BB 512 kbps.
6	Nagaland University, Nagaland	SCPC 512kbps.
7	North- East Hill University, Shillong	LL 1Mbps.
8	Rajiv Gandhi University, Arunachal	SCPC256 kbps.
9	Sikkim University, Sikkim	2 Mbps.
10	Tezpur University, Tezpur	SCPC 256 kbps.
11	Tripura University, Tripura	SCPC 256 kbps.

SCPC: Single Channel Per Carrier; LL: Leased Lined; BB: Broad Ban

6. Conclusion

The advent of e-publishing has brought a revolution in journals publication, subscription as well as access to the scholarly literature. However, more steps to be taken to improved e-journal usages. INFLIBNET regularly organizes awareness programmes about its activities and resources. This awareness programme has had positive impact on all members of the scholarly community of the Country. The consortium provides current as well as archival access to core and peer- reviewed journals in different discipline. The age of is at the doorsteps to prove the library cooperation locally, regionally, nationally and internationally. Consortia based subscription has brought considerable benefits to the academic community in India in general and academic community of North – Eastern Region in practical. With globalization of education and competitive research the demand for the journals has increased over the year. Due to insufficient funds, libraries have not been forced to discontinue the scholarly journals, which have great impact to the users. In order to provide the current literature to academic world; UGC has initiated the UGC- Info net Digital Library consortium. Timely imitative of UGC is a big boon to academic circle in the country, which enables them to access large number of scholarly journals from reputed publishers , aggregators and society publications. Although Library Consortium are successfully implementing in develop countries, developing countries like India does not have a very rich tradition of consortia arrangement or resource sharing. For establishment of better consortium, interrelating intellectual access are all distinct steps moving towards the 21st century library. Librarian should seriously re think and reinitiate consortium movement like western countries for maximum utilization of resources at a reduce cost, time and space, thereby to provide better and effective services to its users.

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Use of Internet by the University Students: *Review of Literature*

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Abstract: Internet is perhaps the most important development in the field of information technology. It provides a host of other services apart from the normal data transfer. Studies involving students have also reported high e-mail use. Internet use is becoming more and more commonplace. There has been growing enthusiasm over the past decade for the integral role the Internet can play within higher education – not least as a means of providing students with ready access to educational opportunities.

Keywords: Internet, Undergraduate Students, Academic Use

Review of Literature

Computers were not developed a few decades ago as they are today. One of the main reasons of this rapid development is the Internet. Internet itself has been growing from a handful to millions of computers in only a few years. Internet is not a mere connection of hardware through wires; it involves software too. Internet provides specialized services to its users. [1] It has been rightly said that Internet is perhaps the most important development in the field of information technology that has been described as arguably the most complex structure yet discovered in the world. [2] Internet can and does provide a host of other services apart from the normal data transfer. These services include Chat, E-mail, News Groups, etc. Chatting refers to the interaction between two or more people through the Internet, as if they were talking to each other.E-mailing refers to the process of one person sending a message to another user through the Internet and the other user reading it when he wants to rather than as it is sent. Studies involving students have also reported high e-mail use. [3] News Groups refer to the specialized group of people who regularly remain in contact with each other for the purpose of discussions on a specialized topic. For instance, there could be a newsgroup of people who enjoy gardening,etc.Web browser is an application software that allows us to view web pages. Windows provides us with a browser known as the Internet Explorer. You could have other browsers as well from elsewhere like Netscape Navigator. [4] Generally, blogs have increased in popularity among Internet users, specifically among those who tend to be "young and internet savvy and connect to the Web via broadband" [5] Internet use is becoming more and more commonplace. Internet is holding enormous volumes of information in each and every field of human knowledge. Library catalogues including OPACs, bibliographies, indexes, databases of abstracts and reviews are the secondary sources available on Internet. Many major academic and special libraries, particularly from developed countries are maintaining their library catalogues on Internet. Internet also offers electronic resources including reference sources, electronic magazines (e-zines), e-journals, dictionaries,

encyclopaedias, directories, etc, many of them free of charge. Many e-journals are available either freely with print versions or at nominal extra cost. Web pages or home pages of publishers and institutions provide information that may help in evaluating them.

Today's college student has access to technologies that might have seemed virtually "science fiction" a mere 20 years ago. The Internet, WWW, cell phones, iPhones, and iPods are only part of a vast array of potential distractions to today's college students, who spend less time studying than their predecessors. Ubiquity of such technologies suggests that college students may in fact be unaware of these distractions. [6]. There has been growing enthusiasm over the past decade for the integral role the Internet can play within higher education – not least as a means of providing students with ready access to educational opportunities. Most universities now boast high-speed internet connectivity in classrooms, libraries, student accommodation and other public campus areas. Empirical studies of university students' actual in situ uses of the internet as a source of academic information are surprisingly few. [7] The presence of the Internet in the academic libraries or institutes has changed the learning environment. It is playing a vital role in meeting information and communication needs of the university community. [8]

In a survey, it was found that the college students who study more also tend to use the Internet more than the students who study for fewer hours per week. It was also found that having a computer at home also influenced Internet use. The students who have a computer at their home tend to access Internet for a longer time as compared to the students who do not have a computer at home. This could be because of the fact that such students have more time with computers. [9]

Dependency on the Internet is so heightened that educators must take initiatives not to let alternative ways of doing things fall by the wayside. For example, many of the participants in this study noted how the internet had replaced the need for traditional 'library' research. In a sense, for this group of young adults, a building full of books had been replaced by a computer and an internet connection. Students need to be counseled that the internet does not replace the need for traditional forms of research and instead should be viewed as supplemental to the learning process. As educators, we should instruct students that media technology is a tool, a means to an end, but not an end in itself. [10] The results of different studies reflect a strong and worrying tendency for the Internet to dominate the academic world as a leading source of information for study and research purposes. The academic world, with all its diversity and variations, chooses to ignore the common perception that Internet information is inferior; it also ignores other problems related to it, such as its abundance of irrelevant and inaccurate information.

The user needs hardly any professional knowledge when searching for information using a search engine. The ease of use, simplicity of search, and availability, enables the user to access the required information easily and swiftly. The information, although it may not be the best or most authoritative, may be good enough considering the small amount of effort invested. [11] It is not surprising that students are turning to the Internet for their needs. The results have so far demonstrated that the use of Internet contributes immensely to the academic performance of the students. [12]

Try as we may to offer quality services to our patrons, it remains practically impossible to offer the 24/7 service available from the Internet. This is not to say that we must give up our patrons to the Internet, but rather, we must accept their use of online sources and incorporate it into our interactions with them.

Librarians cannot simply scorn the student who comes to them with a Wikipedia article. Rather, we must take the information from that article and use it with the student in a productive way. We must give credit to the student for starting the search within their own knowledgebase, but then it is up to us to help extend that knowledge of where to search.

The Internet with its good sites and bad sites, has forced librarians to go beyond their comfort zones and to innovate. The breath and reach of our services can now extend far beyond the library. We are no longer the simple providers of information, but we are needed to help interpret that information. Evaluation and critical thinking skills have become vital components in choosing information. [13]

In a survey of medical students, it was concluded that to meet the need of increased computer and internet use among students, it is urgently required to introduce short refresher courses in computer application and Internet use among students. Students should be trained to extract valuable information from the special medical web sites and should be encouraged to check the authenticity of information by correlating with existing evidences. This will be helpful in promoting evidence based learning. [14]

In a survey of Information Science students, after ascertaining the need for information, the following question posed to the respondents was to identify the most suitable source of information from a predetermined list of options within the questionnaire. the top choice of all classes was the Internet. The results at the Hacettepe University correlate with the results obtained at the University of Johannesburg especially in terms of the response to this question indicating that 40% of the respondents meet their information needs while utilizing the Internet as primary source. [15]

In a survey of management students, it was found that a majority of the respondents opined that 'Time saving' is the vital advantage of using Internet. Thus, it is interesting to note here that emergence of Internet usage in library services is satisfying the fourth law "save the time of the reader and staff" of library science. So, it would be rational to comment in this context that more popularity and extensive usability of library e-resources sought a culmination with high bandwidth Internet connectivity to overcome erratic retrieval problems and for fast access of resources to achieve wide range of users' satisfaction with economy of time. The study exhibited that about (50%) of respondents strongly agreed "management study will suffer without Internet and e-resources". Hence, looking after such an impact of Internet over management studies the investigators like to suggest that the users should be well intimated with today's wide array of technology to handle their demands enhancing their skill and training at regular intervals, for simplifying and expediting access to information and enabling them to spend less time in surfing and more time upon reflection and experiment.

As it demands of the age there should be a rich information infrastructure to be managed in transparent manner for optimum use of e-resources and full satisfaction of the e-users so as to grant the ultimate duty of library and right of the users. [16]

In the academic world, though academic dishonesty is not a new phenomenon, it is widely acknowledged that access to online information has made it easier and more tempting to copy or quote another person's original work without attribution. So librarians have to encourage ethical use of information within their user communities. [17]. Internet usage is being widely researched in the business world. However, the use of the Internet in academic settings in general and in vocational and technical establishment in particular is a neglected area. [18]

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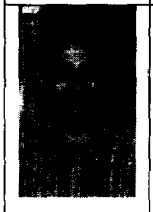
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Environment Friendly Library: *Green Signal for Green Libraries in Digital Environment*

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Abstract: The concept of Green Libraries is an advanced modern transformation of existing traditional libraries of India that were built decades ago and the digital technology started in 1980's faced difficulties for change over to new system, viz., the Green Libraries. The architecture of traditional Libraries (such as Bangalore University Visvesvaraya College of Engineering Library, the Mythic Society Library, the United Theological College Library and the State Central Public Library, Bangalore) built on Western Classic Architecture Style, present a unique combination of aesthetics and utility. The concept of Green Library applied to these traditional Libraries will serve as a cut-above-the-line incorporating State-of-the-Art features. The creation of a Green Library warrants many approaches and different points of imagination and thoughtfulness. If a green Library is constructed with a standard like LEED, the Green Library would become sustainable. Environmental challenges like Energy depletion, Global Warming, including Climate Change will have greater influential effect on information resources and programmes that the Green Library will provide to the users.

Keywords: Aesthetics, Traditional Library, Green Library, Green Signal, LEED, Library Architecture and Design.

1. Introduction

In the International agreement called the "Kyoto Protocol" (1997) the concept of "going green" emerged. In the later part of the ninetees "going green" was more a theoretical approach. But years later the concept of Green Libraries acquired world wide significance. It was said that Green Libraries were ment to acquire knowledge and practical uses that would lead to environmentally and ecologically friendly Library Life Styles. It was also pointed out that going green would help in protecting the environment and natural resources which would contribute for current and future generation.

Sometimes, the words "Sustainable" and "Green" are complementary and exchangeable – both meaning protecting an ecological balance by avoiding depletion of natural resources. The IGBC – Indian Green Building Council gives certain salient but only basic concepts of Indian Green Building System – Such as use of less water, energy, Conservation of natural resources avoiding less waste that would provide healthy atmosphere for the Library users, as compared to a Conventional Library building. Living close to nature is poetically defined as "Let Nature be my Teacher" (William Wodsworth who was a Pantheist). This paper tries to find out three important factors of the system of Green Libraries such concept of Green Library, Principles of Green Library, Going Green of Indian Libraries – the Present Scenerio.

2. Concept of Green Library

As said above the Kyota Protocol gave the concept of going green. The United Nations Frame Work Convention on Climate Change, which is mandatory for all the countries of the world to reduce Global Warming, emission reduction, ecologically balanced and an excellent Life Style, is a point in focus for the Library users. Green Libraries save energy and power. The United Kingdom's Commission on Architecture and Building Environment gives the definition of 'Going Green" as:

- Well – architecture Public Libraries.
- 'LEED' Certification for Green Libraries.

These require a large number of standards, which go to explain the definition of 'Going Green'. Andrew Garnegie a Philanthropist and a designer himself required the Green Libraries as a representation of rising sun, and above 'LET THERE BE LIGHT'. The most important point made by him takes us back to many decades. He observes that Libraries built 2,000 years ago (Alexandria Library, Nalanda Library in Ancient India) made the most of natural day light and natural ventilation and natural surrounding which are attributed now as hall marks of current Green Design.

3. Principles of Green Libraries:

- It is ironical that going green started in the early 1990's (The Green Library Journal authors like C. Atton (Anotnelli) did not have much response in the beginning. It was only in 2003 that the concept of going Green was recognized as an important aspect of Libraries Going Green.
- Well-designed Green Library buildings cost less to operate and maintain than conventionally constructed Library buildings. They should be more comfortable, enjoy more day light and more attractive to Library users.
- Public Libraries referred to as 'Cradles of Democracy' 'Peoples' University' or the Life-Long Learning Centres' of any nation in particular the developing countries. Cradle of Democracy or Peoples' University would cater much more to the Users when they go Green.

PADC is responsive to the present need to refocus attention in adding a performance dimension to form, rather than only aspects of style, construction methods, local materials, selection, conservation methods used and HVAC consumption natural lighting conservation of rain water and various techniques that are applied. One of the resources – efficient trends is 'Urban Mining' as it pertains to Information Technology. It is a platform where product life-cycle management meets the need for wise utilization of resources.

4. Traditional Libraries Vs Green Libraries

Architecture in India today is exploding, with the rise of materials availability and access to ever increasing, platforms for information dissemination, the built environments seem to

be running further ahead and faster to try out new technologies and follow fresh trends. Increasing energy demands add pressure to systems running at capacity to feed the electronic hunger of the nation. Keeping in mind these issues, research in building performance plays an ever more important role in discovering, testing and innovating better ways to use and save energy as we move towards greener pastures.

"Architecture is the Learned game, correct and magnificent, of terms assembled in the light" (Lecorbusier).

Technologies are being directed to achieve net zero-energy consumption and net zero-carbon emissions in the new evolving green building Landscape.

5. Green Features

The Library buildings should consist of skylit diminish floor plates with cutouts to fill floors with dynamic sunlight creating divine spaces. Large skylights can be used strategically to fill up the spaces with dynamic sunlight with high thermal efficiency glass. Considering the importance of good indoor air quality, indoor plants inside the Library Building do wonders in terms of bringing low power costs for fresh air toxin removing plants can be grown indoor.

Materials: Building should have been conceived in 'rustic untouched' exposed brick work and form finished exposed R.C.C. The unique system for drainage should be developed for the terraced building form. The water collected through R.C.C. be brought down through RCC acqua ducts on walls.

Sky Library: A unique feature like the Sky Library can be located on the top most floor with Light-passing ceiling, open spaces provided for intermittent relaxation through reading books in fiction and discussion over a cup of coffee. The users can enjoy the Sky Library during exotic phases of day light, Twinkling stars, monsoon and warmth, and feel elated to be on top of the world. The terrace can be converted to a lush green extension of the building one could bring books away from the confines of the traditional Library stock and read on the refreshing grass, sun bathing on these winter foothills. The greens keep the latent temperature of the structures in check.

The furniture layout and design shall not be rigid. It will have flow, variety and flexibility. The students shall carve out their own preferred spaces to study, interact and create.

Traditional Libraries and Green Libraries are not opposed to each other the latter is an improved version of the former. Sometimes, a curious though emerges. Is it old wine in a New Bottle or vise versa? In a fast developing country like India going Green with International Standards could be difficult, if not impossible, the main bottle neck, being availability of required funds. One gets a curious thought whether such Green Libraries can really be built in rural districts such as Tumkur, Kolar, Chintamani etc, let alone the Bangalore Metropolitan. In European countries or USA a number of Non-Government projects are available to go Green. But in India such projects are rare. Man should have eco-centric thinking - with new horizon insight, leading the ways to a bright, bold future -

as 'Brave New World' of Aldous Huxley. It should have a forward shift, an insight into resource efficient Library buildings. These Green Libraries should serve as the Poet said : "Foot Prints on the Sands of Time".

6. Sustainable Green Architectural Features

The following sustainable building elements:

- Appropriate Orientation.
- Local Building materials.
- High thermal efficiency Glass on peripheral glazing.
- Ample natural dynamic day light through skylights of clear thermal, efficient glass.
- High end Air conditioning equipments.
- Toilet fixtures chosen to resulting in low water consumption.
- White tiles on terraces to bring down interior temperature.

7. Green Computing Initiative

Desktops, Laptops and hand held devices which touches all aspects of our lives 24/7 most devices never get powered off and because of impact that computers now play with respect our environment may green initiative have emerged.

- Power off devices when not in use.
- Power up energy intensive devices such as Laser printer.
- Use note books instead of desktop computers.

8. Conclusion

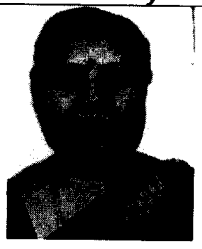
Ending on a Green Signal: Green signal for the Green Libraries in India should be given by the Government of India through its various agencies such as University Grants Commission, AICTE, Medical Council of India, Bar Council of India and also by private projects. Paucity of funds would stop the Green signal. Respective college should evolve their own fund generating system as well as seek the help of State Governments and Philanthropic Organisation.

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Evaluation of College Library Buildings in the Light of Five Laws of Library Science: *A Study of Medical College Libraries of Vijayapura, Karnataka*

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Abstract: The present work evaluates the buildings of medical college libraries in the light of Dr. S.R. Ranganathan's Five laws of library science using survey method of research to find out: to what extent these libraries satisfy the implications of five laws of library science with regard to library buildings. The study is based on a structured questionnaire distributed among the medical college students of Shri B. M. Patil Medical College Hospital & Research Centre and Al-Ameen Medical College, Vijayapura.

Key words: Medical libraries, Five laws of Library Science, Dr. S. R. Ranganathan, Library Building, Medical Council of India, User Survey.

1. Introduction

Dr. S.R. Ranganathan has contributed many new ideas to library and information science as a discipline. Dr. Ranganathan enunciated various laws, principles, canons, theories, etc., in Library and Information Science. His theories are based on scientific principles. They are accepted universally and are relevant even today. The five laws of library science enunciated by Ranganathan in the year 1928 and published in 1931 are the first fundamental laws in the field of library science. The Fives Laws of library science are:

1. Books are for use
2. Every reader his/her book
3. Every book its reader
4. Save the time of the reader
5. The library is a growing organism

The first law, "Books are for use" is a simple statement which is self evident. It has implications on library staff, library building, and location of a library, library hours, book selection, shelf arrangement, reference service and maintenance. The second law "Every reader his/her book" emphasises on the reader who is the primary factor. It has implications on library legislation, book selection, shelf arrangement cataloguing, maintenance, reference service, resource sharing, open access and responsibility of the users etc. The third law prescribes "Every book its reader" where the emphasis is on the book. It implies that there should be maximum use of books by their users. This law has implications on book selection, shelf arrangement, cataloguing, reference service, accessibility, open access and extension service. The fourth law says "save the time of the reader". Employing the best available technologies to provide quick access to materials or using an online catalogue also saves the time of the reader. This law has implications on shelf arrangement, cataloguing, centralized cataloguing and classification, library services, qualifications of librarian, accessibility, signage system, library guide, location of a library, special sequences of books, library publicity, use of information technology, and management of libraries. The fifth law "A library is a growing organism" recognises a library's growth in terms of documents, readers and staff. It has implications on extension of library building, storage and weeding, choice of a classification scheme, shelf arrangement, and physical form of a catalogue, choice of a catalogue code, reference service, user education, library orientation, and staff.

Thus five laws have many implications on libraries, library services, personnel, users and every other concept concerned with libraries. These five laws could be used very well to evaluate any category of libraries. The review of literature reveals that Venkatiah (1978) related the philosophy behind inter-library loans to each of five laws. Bhattacharyya (1979) discussed the relevance of networks of libraries and information centres in the light of five laws and stresses on its adoption by the libraries. Neelmeghan (Sept 1992) suggested that the design of library buildings should facilitate open access, browsing, quick reading and selection of documents, development of structure for absolute syntax in information processing and organization, providing analytical entries, and many other entries in catalogue, development of reference services, documentation service, information service, and computerbased information services, studies in librametrics, bibliometrics, informetrics are all the results of five laws. Cochrane (1992) interpreted that five laws can serve as useful guidelines and criteria for assessing the value of information technology. Viswanathan (1992) also examined the validity of fifth law in the context of advancements in modern technology and their impact on libraries. Itner (1995) opined that with very little revision, five laws retain their fundamental importance as building blocks of professional responsibility. Estes (1996) observed that applying five laws to technology can build a system to manage both externally and internally created information. Kuronen (1996) evaluated the potential of the electronic library (virtual library) to provide information for the public in light of five laws by rephrasing certain laws in the context of electronic information resources and points to opportunities to make additions to the laws in light of new services and the Internet. Kaur (2000) examined how five laws serve as guiding principles in assessing the usefulness of information technology in library and information services. Dasgupta (2007) discussed the implications of five laws on library staff's qualification and scholarship, professional training, status, their

responsibility, their attitude towards readers, staff and psychology, personal service, staff and social service. Shah (2007) in his editorial noted that these laws are still relevant today, they are to be applied suitably to meet the challenges and changing requirements by library and information profession. Ranganathan's five laws of library science are reconsidered by Nicholas (2010) in the context of the changing library environment and are used to demonstrate how libraries can remain relevant, by highlighting a benchmarking pilot project that is being considered by a group of librarians in the special libraries section of the Library and Information Association of Jamaica and how one special library has adopted appropriate measurement and evaluation techniques to define its value in the organization. Hence the present study has been undertaken.

2. Library Buildings

There are many standards available in the Indian context that have laid down standards and guidelines for the library buildings. Besides Dr Ranganathans five laws, the Bureu of Indian Standards, and apex bodies like ICMR and other such agencies have laid down guidelines.

- **Indian Standards:** The IS 1553-1960 Code of Practice Relating to Primary Elements in the Design of Library Buildings prescribes the average size of different types of libraries, the different kinds of rooms required; the basis and method of estimating the dimension of each kind of room, etc.
- **Medical Council of India (MCI):** The Medical Council of India (MCI) which is the apex body in India regulating medical education prescribes the following as the mandatory requirements for the library of a medical college as per Amendment Notification dated 8th July 2009 of Medical Council Act, 1956 (102 of 1956). There shall be an air-conditioned Central Library (2,400 Sq.m) with seating arrangement for at least 300 students for reading and having good lighting and ventilation and space for stacking and display of books and journals. There shall be minimum one room for 150 students inside and one room for 150 students outside.

There shall be provision for

a) Staff reading room for 30 persons; b) Rooms for librarian and other staff; c) Room for daftaries and book binders; d) Microfilm reading room; e) Journal room; f) Room for copying facilities; g) Video and Cassette room (desirable); and h) Air-conditioned Computer room with Medlar and Internet facility with minimum of 40 nodes. There shall be provision for e-library also. Further, MCI insists that there shall be a Departmental library-cum-seminar room (30sq.m. area) with at least 80-100 books. (Rathinasabapathy).

In the planning of library buildings, Ranganathan's five Laws of library science with their possible implicationsis used as basic principles. On the other hand Kaula has summarized the principles enunciated by different specialists as follows (Singh):

- Building should be designed on the functional basis;
- Physical design should be governed by the functions of the library;

- Interior details should be planned anterior to the exterior;
- Building should provide economy in administration and Operation;
- Main study areas should be close to the book shelves and stacks;
- Building should represent simplicity in character;
- Consideration should be given for expansion and anticipated development in the future;
- Physical conveniences should be in proportion to the number and nature of Clientele and library staff;
- Details of the library should be worked out, based on the existing data and the proportional future growth; and
- Plan of the building should be adaptable to the future growth and development.

3. Research Design

The primary objective of the study was to evaluate the medical college libraries of Vijayapura in the light of Dr.S.R.Ranganathan's Five Laws of Library Science. A survey method of research using structured questionnaires is been employed for the collection of data, to evaluate the medical libraries in the light of five laws of library science. The designed questionnaire was distributed to the users of two libraries of medical colleges in Vijayapura district namely Al-Ameen Medical College and Shri B M Patil Medical College Hospital & Research Centre. In total 130 questionnaires have been distributed among which 96 questionnaires have been replied with a response rate of 73.8%.

4. Data Analysis

Table 1-Location of Medical Library

Colleges	Frequency	Percentage
Beyond the zone of accessibility	2	2.1
Central place	44	45.8
Distance of few minutes' walk	50	52.1
Total	**96**	**100**

From Table 1 it is found that, 52.1% (N=50) of the respondents feel the location of a medical library is at a distance of few minutes' walk, 45.8% (N=44) of the respondents felt that the library is at the central place and only 2 (2.1%) respondents said the library is beyond the zone of accessibility. By this we can say that the medical libraries go with the implications of First Law of Library Science of situating the library building at a distance of few minutes of walk.

Table 2 - Status of Library Buildings

Library Building	Frequency	Percentage
Independent	96	100
Part of the main buildings	0	0
Total	**96**	**100**

When referred to the status of Library buildings all the respondents agree that they have an independent building of their library.

Table 3 - Suitability of library buildings

Suitability	Frequency	Percentage
Yes	96	100
No	0	0
Total	**96**	**100**

Also with reference to the suitability of their library building 100% of the respondents believe that their library building is suitable for their use, which satisfies the first law of library science.

Table 4 - Convenience of library buildings for use

Convenient to use	Frequency	Percentage
Yes	96	100
No	0	0
Total	**96**	**100**

After analysing the convenience of the library building for use, it is found from the above table that 100% (N=96) of the respondents feel that their library building is convenient for them to use.

Table 5 - Planned library buildings

Well planned	Frequency	Percentage
Yes	83	86.5
No	13	13.5
Total	**96**	**100**

With reference to the planned library buildings it is found that 86.5% (N=83) of the respondents feel that their library building is well planned and the remaining 13.5% (N=13) of them feel that the library buildings are not planned properly.

Table 6 -Description of library buildings

Description	Frequency	Percentage
Office staff room is convenient	16	16.7
Unfit room	0	0
Small rooms	0	0
Big hall	36	37.5
Quite spacious	44	45.8

Table 6 describes the different rooms of library buildings and it is found that 45.8% (N=44) of the respondents feel their library buildings to be quite spacious, 37.5% (N=36) of the respondents say that there are big halls in their library buildings, 16.7% (N=16) of them feel their office staff rooms to be convenient. None of the respondents say that they have small or unfit rooms, and this satisfies the implications of the Fifth Law of Library Science.

Table 7 - Internal Furniture's used in the Medical Libraries

Internal Furniture	Frequency	Percentage
Book shelves	70	72.9
Book display cases	42	43.8
Catalogue cabinet	42	43.8
Circulation desk	36	37.5
Pamphlet boxes	8	8.3
Cartographic boxes	2	2.1
Vertical files	2	2.1
Reading table	64	66.7
Notice board	58	60.4
Chairs	68	70.8
Dictionary stands	18	18.8
Book trolley	12	12.5

The internal furniture's used in Medical libraries are discussed in table 7. It is found that 72.9% (N=70) of the respondents use book shelves, 70.8% (N=68) of them use chairs available in the library, 66.7% (N=64) of them use reading tables, 60.4% (N=58) of them use the notice boards available, 43.8% (N=42) of them use book display cases and catalogue cabinets, 37.5% (N=36) of them use circulation desks, dictionary stands are used by 18.8% (N=18) of them, book trolleys are used by 12.5% (N=12), pamphlet boxes are used by 8.3% (N=8) of them and only 2.1% (N=2) of the respondents use cartographic boxes and vertical files for their reference.

Table-8: Good lighting facilities in medical libraries

Good lighting	Frequency	Percentage
Yes	96	100
No	0	0
Total	**96**	**100**

When analysed table 8 to know good lighting facilities in medical libraries it is found that 100% (N=96) of the respondents say that they have good lighting facilities in their libraries.

Table-9: Good ventilation facilities in medical libraries

Good ventilation	Frequency	Percentage
Yes	96	100
No	0	0
Total	**96**	**100**

Regarding good ventilation facilities in the medical libraries, it is found from table 9 that 100% (N=96) of them feel that their libraries possess good ventilation facilities.

Table-10: Availability of fans in medical libraries

Fans	Frequency	Percentage
Yes	96	100
No	0	0
Total	**96**	**100**

When investigated about availability of fans in medical libraries it is found that all 100% (N=96) of the respondents agree that they have fans available in their libraries.

Table 11 - Types of furniture's used in medical libraries

Type of Furniture	Frequency	Percentage
Wooden	82	85.4
Steel	4	4.2
Fiber	10	10.4
Total	**96**	**100**

Table 11 describes the types of furniture's used in medical libraries, it is found that 85.4% (N=82) of the libraries have wooden furniture's, 10.4% (N=10) of them say that their libraries have fibre furniture's and only 4.2% (N=4) of them say that they use steel furniture's in their libraries.

Table 12 - Comfortableness of Furniture's for long reading

Comfortableness	Frequency	Percentage
Yes	92	95.8
No	4	4.2
Total	**96**	**100**

When asked regarding comfortableness of the library furniture's for long reading it is found from table 12, that 95.8% (N=92) of them feel their library furniture's to be comfortable rest 4.2% (N=4) of them do not find the furniture's comfortable for long reading purpose.

5. Conclusion

The results indicate positive results. The Medical college libraries have their buildings which satisfy the implications of five laws of library science. These libraries are well established and both are around 30 years old. The buildings have been properly designed keeping in view the IMA guidelines Shri. B. M. Patil Medical College Hospital & Research Centre library being a university library has better facilities than the other library. The college authorities ensure a healthy working environment for its staff and extend career promotion. The authorities also ensure that the college library should get an independent and well planned library, which is attractive and easily accessible, suitable for library purposes, suffice for a longer duration and the buildings are functional for future expansion, with good lighting and ventilation, and comfortable furniture. The librarians follow the proper preservation methods to keep the books in good condition. User studies are conducted regularly and their implications have to be incorporated in CDP and other policies. The other libraries must also find alternative ways to meet space problems. The libraries must implement all such practice that is prescribed under the five laws of library science.

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Green Library: *A Conceptual Overview*

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Abstract: The "Green Library" is a emerging concept with the mission to save the global environment. Our challenge isn't so much to teach children about the natural world, but to find ways to nurture and sustain the instinctive connection they already carry. The objective of this paper is to provide the state of the art about the concept "Green Libraries". It is introductory paper which put light on the importance of green libraries; indentify the standards for green libraries; to identify the major green library initiative at international and national level. The paper concludes that librarians have to make the public aware about environmental issues and create the practices to exemplify the Green practices.

Keywords: Green library; Sustainable library; Green library standards; LEED; Environmental issues.

1. Introduction

The nature is the most beautiful gift to the mankind. Our survival and quality of life depends on a healthy natural environment. The impact of environment degradation is visible and we are well aware about the term Global Warming and its effect on our ecosystem. We are facing the sudden climate changes and its impact on the health of the human beings. It is the most concerned issue these days. And we should take it as wake up call to safeguard our living system; it is our social responsibility to play its role for the betterment of our environment. "The struggle to save the global environment is in one way much more difficult than the struggle to vanquish Hitler, for this time, the war is with ourselves, we are the enemy, just we have only ourselves as allies"--Al Gore. As library professional, what can we do for our society and especially for our ecosystem? Libraries are lifelong learning centers for people of all ages in local communities. Libraries are not only storehouse of knowledge, but are also important information resources for raising awareness about environmental issues through their collections, sustainable and environmental friendly facilities and public library programs. Among other things, green libraries maximize the effects of natural sun light and natural air flow; green libraries are thoughtfully designed while taking into account site selection to structural design, energy use, materials used and human health effects. Here comes the concept of Green Libraries, which is emerging area in the field of librarianship.

What is Green a library?

A Green library is also known as sustainable library, which is built with environmental concern in mind. Green libraries are a part of the larger green building movement. In the Oxford English Dictionary (1989), the term green is defined as pertaining to or supporting

environmentalism. The term sustainable relates to form of human economic activity and culture that do not lead to environmental degradation, especially avoiding the long term depletion of natural resources. Developing a green building is the practice of creating structures and using processes that are environmentally responsible and resource efficient throughout a building life-cycle from site selection to design, construction, operation, maintenance, renovation and deconstruction. It is important to recognize that the context for sustainability in this discussion extends beyond just developing green or sustainable services as part of the ongoing life cycle of library service. (Genovese&Albanse)

2. Objectives of building green libraries

- To control the pollution and green house gases in the environment.
- To play a proactive role in becoming the planet green.
- To work for the betterment of the mankind.
- To establish a new image of the library in the modern world.
- To bring the concept into mainstream and create awareness about safeguarding the environment.

3. Designing Green Library building

Incorporating "green" element successfully and cost effectively into any project is an art that requires a multi disciplinary, integrated approach for an efficient and successful design process with clear understanding of, not only the operational concerns, but also develop a long term strategic plan for the physical building. The set of design elements has been considered while designing green library building:

- **Site location**: The location of site plays an important role in building eco-friendly green library. The library building should be in east-west location so that proper fresh air ventilation and day sun light reach inside.
- **Water conservation**: Reduce potable water use by considering alternative on-site water sources (for example rainwater, storm water and air conditioner condensate) for custodial uses and toilet flushing, planting native and adaptable vegetation reduces the need for irrigation.
- **Energy conservation**: Energy efficiency is considered by many to be the most important category in becoming sustainable. In the LEED rating system, it is the heaviest weighed of all categories. On site renewable energy systems, including solar, wind and geothermal, provide an independent supply of energy. Natural day light conserves the energy and electricity in the library.
- **Building materials**: The primary responsibility in selecting materials which can be quickly renewable. And that can be made without causing too much damage to the natural environment.

- **Indoor air quality**: Along with energy inefficiency, poor air quality has been another side effect of the post air-conditioning building design. The most modern buildings are designed to be airtight. The air conditioners omit harmful toxins that can do serious damage to respiratory systems. Traditional buildings provide more fresh air outlets and ventilation. Now green buildings designed in a way in which air gets recycled. And it also saves electricity too. Windows opening at the eastern & southern direction ushers natural breeze& sunlight. Indoor plants should be installed in the library premises, it creates a lively environment. There is psychological factor both for the patrons and staff. Working in a building with natural light creates a better and more comfortable work and learning environment. All this results into efficiency and performance of task.
- **Vegetated Green Roof**: It makes convention cooling in the libraries and save electricity.

4. Standards for Green Libraries

- **Indian Green Building Council (IGBC):** Indian green building council established in the year 2001 to promote and rate Green Buildings in India. There are about 2190 registered buildings, 398 rated buildings and also 1082 IGBC aggregated professionals.
- **Leadership in Energy and Environmental Design (LEED-India):** LEED certification is the most widely accepted standard for environmentally friendly building design. Leadership in Energy and Environmental Design (LEED-India) green building rating system is a nationally and internationally accepted benchmark for the design, construction and operation of high performance green buildings. There are four certification levels (certified, silver, gold, platinum) awarded according to achievement as evaluated by points using LEED scorecard.

  LEED rate on 100 points and certify the buildings on the followings criteria:
  25-40 points as Certified
  41-50 points as Silver
  51-60 points as Gold
  61-80 points as Platinum

  LEED-India promotes a whole building approach to sustainability by recognizing performance in the following five key areas namely:
  1. Site location
  2. Water conservation
  3. Energy efficiency
  4. Materials
  5. Indoor air quality

  LEED also uses various categories to judge the buildings sustainability through Design Elements.
  In 2004 Fayetteville Public Library, CAR & Semiahm, Branch of Surrey Public library became two of the first LEED Certified library building in North America.

- **Building Research Establishment Environmental Assessment Method (BREAM)** based in the UK from 20 years. It has 5 levels.
- **Green Building Council of Australia (GBCA)** The Green Star System is the most commonly used certification system in Australia which is administered by Green Building Council of Australia. This system is holistic, national and voluntary. Buildings can achieve a maximum of 6 stars. The star system indicates:
    - 4 Star: Best practice in environmentally sustainable design and/ or construction.
    - 5 Star: Australian excellence in environmentally sustainable design
    - 6 Star: World leadership in environmentally sustainable design and/ or construction.

5. Associations working on Green Libraries

The Task Force on the Environment (TFOE) has been working on the greening ALA for almost 20 years. TFOE was established in 1989 in recognition of the 20th anniversary of Earth Day, and is a Social Responsibilities Round Table Task Force. Terry Link was the first TFOE coordinator and a driving force in the creation of the Task Force.

- To make librarians and others more aware of diverse environmental information sources.
- To recognize environmental concerns within libraries and seek solutions to them.

Since 1990, TFOE has hosted a variety of green library programs at ALA conferences. "How Green is Your Library: Environmentalists at work" (1990); "Environmentally and Socially Responsible Business: Finding the information to make the decision to buy or invest" (1996); "Earth day in the 21st Century: Environmental activism, with Denis Hays, Founder of the First Earth Day in 1970" (2001); The first green pre-conference tool place in 2000. ALA hosted a pre-conference titled Libraries Build Sustainable Communities. The program was funded through a grant from the U.S.Agency for International Development and Global Learning of New Jersey. The objective of the pre-conference was "to envision how local libraries as places for public discussion, and an information resource in community decision making. Attending librarians were trained to conduct a workshop that could be replicated at state or regional conferences (Raymer 2001) SLA: Knowledge to go green" initiative implemented at June 2008 Conference. At the SLA Conference sessions were presented on a variety of environmental issues such as renewable resources, sustainability and corporate accountability. In an effort to reduce waste, SLA purchased 3,000 reusable water bottles that were handed out to attendees. In addition, the conference tote bags were made from 65% recycled materials (Davis 2008) . The ACRL Green Conference Committee is committed to reducing the environmental impact of the 2009 National Conference in Seattle, Washington, Conference attendees will be asked to take the ACRL Green Pledge and commit to reducing the meeting's ecological footprint. To help librarians select a green hotel, ACRL created an official list of hotel eco-friendly practices.

- **Eco-friendly Libraries of India:** Traditional library buildings of India itself provide the salient features of Green Libraries. The architecture of antique buildings provides open space and outlets for sunlight.
- **Calcutta University Library**: Calcutta university library is a good example of traditional eco-friendly library. The building carries great heights, vast open areas, thick walls, windows all through the eastern wall are some green gestures. Use of open space and installation of pot plants creates a soothing and eco- friendly environment. The wood is mostly used as material for library furniture, which is bio-degradable and environment friendly.
- **Mumbai University Library**: Library provides vast area of open space for its reader. The heavy wooden furniture mostly with antique values mingles well with the environment. Natural light comes through the wide windows that run through the wall. The electric lights are also used to facilitate reading but not to cause glare.
- **Madras University Library**: There is ample scope for letting in natural air has been provided. Windows are large and too many accelerating both fresh air and sunlight. Enough amount of open space is provided. Sunshades are there outside the windows that prevent the direct sunlight but allow adequate natural lights.
- **Delhi University Library**: The building is naturally cool and pleasant with broad opening for natural light. Dessert coolers are brought used to prevent the excessive heat of the summers. The Khus Khus material is traditionally used as a curtain material that deters heat.

6. Green library initiative at International level

- **Seattle Central Library:** The Seattle Central Library designed by Rem Koolhaas opened in May 2004. It uses a number of innovative techniques to achieve the status of a green library. It is located in a dense urban area, accessible by public transportation. It has triple glazed glass, used to reduce heat buildup.
- **National library, Singapore:** The Singapore National Library has been known as the greenest building on the planet, designed by Ken Yeang. It opened in July 2005. It was designed using light shelves that allow the light to filter into library without any negative effects. During the moments that sun is either too bright or not bright enough, sensors are programmed to dim or brighten the lights and raise and lower the shades to maximize comfort and reduce costs.(Anisko& Willoughby,2006)
- **Minneapolis Public Library** : The central branch of the Minneapolis public library system was designed by Cesar Pelli, and it opened in May 2006. The green roof is planted with vegetation that does well in Minnesota harsh climate, and it reduces rainwater runoff, the building's heating and cooling load, the building's heat island effect and adds green space to the downtown cityscape.
- **Public library of Charlotte and Mecklenburg County:** The Joe and Joan Martin Centre is the first public building certified by the US Green Building Council, and was awarded LEED Certification at the Silver level.

- **Children's Museum of Pittsburgh:** The children's Museum of Pittsburg underwent extensive expansion and renovation in 2004 using sustainable techniques and guiding principles thereby earning silver LEED-Certification, one of largest museums in the country to receive the designation, and the first children's museum in America to do so.

7. Green Library Challenges

In the era of information and technology, the image of library comes in our mind is that of fully automated library, which depends on the computer technology for day to day functions; and another picture lies in our mind is of fully air-conditioned, wi fi enabled digital library. The challenge is to make choice between environment friendly libraries or fully air-conditioned automated library. The gases omitted through air condition are dangerous for our health. And the waste comes out of obsolesce of computers and other gadgets also put bad impact on the environment. We have to make use of eco-friendly technology gadgets. But we have to do something to safe guard our environment.

8. Conclusion

All the libraries have the mission, whether it is explicitly stated or not, to improve the condition of mankind. Librarians should act as role models for sustainability by providing suitable and relevant information related to environmental issues and concerns. A library that has successfully implemented green practices and/ or sustainable building design can create displays within the library that help to educate the public about the sustainable strategies employed and their positive impact on the environment. Books displays are also an excellent way of addressing the community on sustainability.

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Green Library: *An Overview*

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Abstract: This paper deals with the concept of Green Library, why Green Libraries are required, available certification programmes for Green Libraries across the globe and its benefits. The paper presents the basic overview about the Green Library.

Keywords: Green Library, Green Building, Sustainable Library, Sustainable Building.

1. Introduction

The Green Library or Sustainable Library is an emerging trend which defines the Library(s) of 21st century. It is the part of Green building movement. The concept of Green Library is design to reduce the harmful impact on the environment and it also improve the environment inside the Library building by means of choosing the appropriate site for constructing Library building, use of natural material and biodegradable products for construction, conservation of resources i.e. water, energy, paper etc. and responsible for recycling of waste materials.

2. Some Certification Programmes for Green Building across the globe

- **BREEAM:** BREEAM stands for Building Research Establishment's Environmental Assessment Method. It was developed in the United Kingdom in 1990.it is one of the earliest building environmental assessment methods. BREEAM covers a range of building types including - offices, homes, industrial units, retail units, and schools. In this certification building is assessed by awarding the points for various criterion and these points are added for a total score. On the bases of scores achieved by the building, overall performance is awarded a 'Pass', 'Good', 'Very Good' or 'Excellent' rating.

BREEAM major categories of criteria for Design and Procurement include the following:

- Management (commissioning period and process adopted, monitoring of commissioning, energy use in site activities, waste management, pollution minimization)
- Health and comfort (adequate ventilation, humidification, presence of controllable blinds, energy efficient lighting, thermal and visual comfort, low noise levels)
- Energy (sub-metering)
- Transport (modes of transport to and from site, alternative transport facilities)

- Water (consumption reduction, metering, leak detection)
- Materials (asbestos mitigation, storage facilities, reuse of structures, specifications of envelope, use of crushed aggregate and sustainable timber)
- Land use (previously used land, use of re mediated contaminated land)
- Ecology (land with low ecological value or minimal change in value, maintaining major ecological systems on the land, minimization of biodiversity impacts)
- Pollution (leak detection systems, on-site treatment, local or renewable energy sources, light pollution design, avoid use of ozone depleting and global warming substances)

- **CASBEE:** CASBEE stands for Comprehensive Assessment System for Building Environmental Efficiency. It was developed in Japan, in 2001. This assessment tools is based on the life cycle of the building and it includes pre-design, new construction, existing buildings, and renovation. CASBEE presents a new concept for assessment that distinguishes environmental load from environmental quality and building performance. Under CASBEE spaces are divided as internal space and external space, the basis of this division is hypothetical boundary, which is defined by the site boundary and other elements, with two factors related to the two spaces, in which the 'negative aspects of environmental impact and 'improving living amenity for the users' are considered side by side.

CASBEE major categories of criteria include

Building Environmental Quality and Performance

- Indoor environment (noise and acoustics, thermal and visual comfort, and indoor air quality)
- Quality of services (functionality and usability, amenities, durability and reliability, flexibility and adaptability)
- Outdoor environment on site (preservation and creation of biotope, townscape and landscape, local characteristic and outdoor amenities)

Building Environmental Loadings

- Energy (Building thermal load, utilization of natural energy, efficiency in building service systems, and efficient operations)
- Resources and materials (water conservation, materials of low environmental loads)
- Off-site environment (air pollution, noise and vibration, odour, sunlight obstruction, light pollution, heat island effect, and load on local infrastructure)

- **GB Tool:** GB Tool stands for Green Building Tool. It was developed by the International Framework Committee for the Green Building Challenge. This is an international project that has involved more than 25 countries since 1998. It

includes criteria in categories such as Site Selection, Project Planning and Development; Environmental Loadings; Energy and Resource Consumption; Indoor Environmental Quality; Functionality; Long-Term Performance; and Social and Economic Aspects. Criteria are assessed using scales that are based on local benchmarks of 'typical' practice. With this tool buildings can score –1 if below typical practice or from +1 to +5, representing good to very high performance.

GB Tool major categories of criteria include the following.

- Resource consumption is assessed through materials use (salvaged, recycled, bio-based and sustainably harvested, locally produced, designed for disassembly, re-use, or recycling) and water use for irrigation, building systems, and occupant use.
- Environmental loadings include GHG emissions, other atmospheric emissions, solid wastes, storm water, waste water, site impacts, and other local and regional impacts.
- Indoor environmental quality is assessed through indoor air quality, ventilation, temperature and relative humidity, daylight and illumination, and noise and acoustics.
- Energy consumption is assessed through total use of non-renewable energy (embodied and operational), electrical demand, usage of renewable energy, and commissioning.
- Other criteria include selection of appropriate site (in terms of land use, brown fields, access to transportation and amenities), project planning, urban design (density, mixed uses, compatibility, native species, and wildlife corridors), building controls, flexibility and adaptability, maintenance of operating performance, and a few social and economic measures.

- **LEED:** LEED stands for "Leadership in Energy and Environmental Design". It was developed and piloted in the United States in 1998 as a consensus-based building rating system based on the use of existing building technology. This rating system addresses specific environmental building related impacts using a whole building environmental performance approach. The following are key components of the LEED system.

    - Sustainable sites (construction related pollution prevention, site development impacts, transportation alternatives, storm water management, heat island effect, and light pollution)
    - Water efficiency (landscaping water use reduction, indoor water use reduction, and waste water management strategies)
    - Energy and atmosphere (commissioning, whole building energy performance optimization, refrigerant management, renewable energy use, and measurement and verification)

- Materials and resources (recycling collection locations, building reuse, construction waste management, and the purchase of regionally manufactured materials, materials with recycled content, rapidly renewable materials, salvaged materials, and FSC certified wood products)
- Indoor environmental quality (environmental tobacco smoke control, outdoor air delivery monitoring, increased ventilation, construction indoor air quality, use low emitting materials, source control, and controllability of thermal and lighting systems)
- Innovation and design process (LEED accredited professional, and innovative strategies for sustainable design)

There are four levels of LEED certification - the number of points a project earns determines the level of LEED certification that the project will receive. Typical certification thresholds are:

POINTS	RATING
40-49	Certified
50-59	Silver
60-69	Gold
80+	Platinum

LEED certification is widely recognized across the globe as the premier mark of achievement in green building. The Indian Green Building Council has adapted LEED system and has launched LEED India version for rating of new construction. In addition, Indian Green Building Council (IGBC) has launched several other products for rating of different typologies of buildings including homes, factories, among others.

- **HK-BEAM:** HK-BEAM stands for "The Hong Kong Building Environmental Assessment Method". (HK-BEAM) is a voluntary scheme first launched in December 1996. HK-BEAM is a performance based system that takes holistic view of building performance with emphasis on life cycle impacts. In HK-BEAM, the assessment for any building is finalized on the completion of the building ensuring that 'Green and Sustainable' practices are implemented through the entire project cycle and the project meets the desired goals and performance.

The 'New Building' certification system of HK-Beam is also well synchronized with its 'Existing Building' certification, for example, a new building certified under the HK-BEAM existing and suitably operated and maintained would attain a similar grade under HK-BEAM New some years later.

HK-BEAM integrates the assessment of many key aspects of building performance embracing

- Hygiene, health, comfort amenity
- Land use, site impacts and transport
- Use of materials, recycling and waste management
- Water quality, conservation and recycling
- Energy efficiency, conservation and management

- **GRIHA:** As most of the international building rating systems have been tailored to suit the building construction of the country where they were developed. In India TERI, is responsible for developing a tool called GRIHA (Green Rating for Integrated Habitat Assessment) for measuring and rating a building's environmental performance in the varied climate and building practices. This tool, by its qualitative and quantitative assessment criteria, would be able to 'rate' a building on the degree of its 'greenness'. The rating shall evaluate the environmental performance of a building holistically over its entire life cycle, thereby providing a definitive standard for what constitutes a 'green building'. The rating system, based on accepted energy and environmental principles, seeks to strike a balance between the established practices and emerging concepts, both national and international. The guidelines/criteria appraisal may be revised every three years to take into account the latest scientific developments during this period. On a broader scale, this system, along with the activities and processes that lead up to it, will benefit the community at large with the improvement in the environment by reducing GHG (greenhouse gas) emissions, improving energy security, and reducing the stress on natural resources.

The rating applies to new building stock – commercial, institutional, and residential – of varied functions. Endorsed by the Ministry of New and Renewable Energy, Government of India as of November 1 2007, GRIHA is a five star rating system for green buildings which emphasizes on passive solar techniques for optimizing indoor visual and thermal comfort. In order to address energy efficiency, GRIHA encourages optimization of building design to reduce conventional energy demand and further optimize energy performance of the building within specified comfort limits. A building is assessed on its predicted performance over its entire life cycle from inception through operation.

3. Green Libraries

Fayetteville (AR) Public Library: The Fayetteville Public Library was designed by Meyer, Scherer and Rockcastle, Ltd. in Minneapolis opened in October 2004. This library was the first building in Arkansas to register with the U.S. Green Building Council and achieved the silver LEED certification in 2006. To earn this certification the library employed many green-design techniques. The library was built on an empty lot a few blocks away from the city's bustling square, making it a textbook infill project. During construction, any trees removed were harvested and used for furniture or donated to local parks. Throughout the project, almost 99% of the construction waste was recycled or reused. More than 65% of

the materials used to build the library were made within 500 miles (800 km) of the city. By incorporating a green roof and using alternative roofing materials, the design team reduced air temperature as much as 20 degrees. Water collected on the roof is reused for

landscape irrigation. The library's green roof saves about $4,000 a year in energy savings. The building's reading spaces and circulation desks were situated to take advantage of the natural sunlight without over-working the building's air conditioners, reducing energy costs by 25% and the overall building's energy consumption by 30%. Sunlight streams through 75% of the building's public spaces.

Seattle Central Library: The Seattle Central Library designed by Rem Koolhaas opened in May 2004. It employs a number of innovative techniques to achieve the status of a green library. It is located in a dense urban area, accessible by public transportation. Rainwater runoff is stored in a 40,000 gallon tank, and used to irrigate the landscape. It has triple glazed glass, used to reduce heat buildup. Seventy-five percent of the demolition and construction waste was recycled.

National Library, Singapore: The Singapore National Library has been called the greenest building on the planet. Designed by Ken Yeang, it opened in July 2005. It is designed using light shelves that allow the light to filter into the library, without having any harsh effects. During the moments that the sun is either to bright or not bright enough, sensors are programmed to dim or brighten the lights, and raise and lower the shades to maximize comfort and reduce costs.

Children's Museum of Pittsburgh: The Children's Museum of Pittsburgh underwent extensive expansion and renovation in 2004 using sustainable techniques and guiding principles thereby earning silver LEED-certification, one of largest museums in the country to receive this designation, and the first children's museum in America to do so.

University of California, Merced Kolligian Library: Opened in August 2005, University of California Merced's Kolligian Library was awarded Gold Leeds Certification in 2007. The 180,000-square-foot (17,000 m^2) glass-and-concrete building uses 42% less water and 50% less energy than comparable buildings. The building's carpet contains 37% recycled content, while its acoustical ceiling tiles contain 66% recycled content that includes telephone books and newspapers. Nearly 30% of the materials used to construct the building were manufactured locally, resulting in significant transportation and energy savings.

Anna centenary library: Anna centenary library building is constructed as a state of art library building by Department of public libraries, Tamil Nadu State Government. The building is located in a well developed area in Kotturpuram. The building has been developed in 8 acres land with world class facilities with approximate built up area of 3.8 lakhs sft. The library building complex consists of Library building (G+8) and an

auditorium (G+1) to accommodate 1200 persons. To improve the thermal comfort of the occupants, the building has been provided with adequate air conditioning. This project achieved the prestigious LEED Gold rating given by Indian Green Building Council under New Construction rating. This is a unique achievement for the Tamil Nadu State Government and happens to be the first library building in the Asian region to get this in demand rating. This building would consume 30% less energy and 20% less potable water consumption without affecting the indoor condition and occupants comfort.

4. Benefits of Green Library building

4.1. Environmental benefits:

- Enhance and protect ecosystems and biodiversity
- Improve air and water quality
- Conserve natural resources
- Reuse and recycle water, paper etc.
- Optimize the use of natural light
- Roof water can restore (water harvesting) for further use i.e

4.2 Economic benefits:

- Reduce electricity costs by using natural lights and controlled temperature.
- Enhance profits in terms of electricity and water consumption charges
- Improve employee productivity and satisfaction as it is proven that work efficiency improves if you are working in good environment.
- Optimize life-cycle of Library building and other resources
- Waste water can be reuse for landscaping and other work after treatment.

4.3 Health and community benefits:

- Improve air, thermal, and acoustic environments
- Control the pollution and green house gases in environment
- Contribute to overall quality of life
- User's orientation programme for better environment

5. Conclusion

Libraries are established for the betterment of the society. It served the generations in the past, it serves the present generation and it will serve the generations of the future. Libraries have the responsibility to work for the society and set example for the users to contribute in making of better atmosphere and healthy environment.

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Greening the Libraries for *sustainable development: a case study of Technical University libraries in Odisha*

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Abstract: Green library refers to library that contributes towards maintaining the natural ecological balance in the environment, and preserving the planet and its natural systems and resources. They are built for environmental protection which is a practice of protecting the natural environment on individual, organizational or governmental levels, for the benefit of both the natural environment and humans. It also serves in the way libraries have always served as landmarks in their communities. The main objectives of this paper are to analyze the importance of green libraries; to identify the standards for green libraries in India; to identify the major green library initiatives at the international and national level; to explain various techniques and methods for greening the library; and to make suggestions for building green libraries for sustainable development in the technical university libraries of Odisha. The paper concludes that librarians have to be keen on updating themselves on sustainability trends in the field of librarianship and should provide awareness and create the space in the libraries to exemplify the Green practices.

Keywords: Green Library, Environmental protection, Environment Quality, Energy Efficiency, Sustainable Development

1. Introduction

The Online Dictionary of Library and Information Science (ODLIS) defines green/sustainable libraries as "A library designed to minimize negative impact on the natural environment and maximize indoor environmental quality by means of careful site selection, use of natural construction materials and biodegradable products, conservation of resources like water, energy, paper, and responsible waste disposal recycling, etc". Creating green libraries is approaching a tipping point and transforming into a library movement by building green library buildings, by greening existing library facilities, providing green library services, and embracing environmentally supportive and sustainable practices within the library.

The Green Library Movement emerged in the early 1990s and gained popularity in the library profession around 2003. It is comprised of a growing number of librarians, libraries, cities, towns, college and university campuses committed to greening libraries by reducing their environmental impact on the planet. This innovation is happening by building green library buildings, by greening existing library facilities, providing green library services, and embracing environmentally supportive and sustainable practices within the library. Green buildings are measured according to a rating system like the LEED (Leadership in Energy and Environmental Design) certification system, which was developed by the U.S. Green Building Council. It helps building owners and operators to measure operations,

improvements and maintenance on a constant scale, with the goal of maximizing operational efficiency while minimizing environmental impacts.

2. Reasons to Build Green Libraries

There are several reasons why libraries would want to build green or incorporate green features into their buildings.

- The cost of constructing green buildings has become affordable. It is now possible for libraries to build green buildings on conventional budgets.
- Most readily available energy resources are finite resources. It is vital to the health of the planet and our libraries' budgets that we use these energy sources prudently.
- It is important that we reduce the carbon footprint of our buildings. The term carbon footprint is defined as "the total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO2)".
- Renovating an existing library building is an option which could even lead to LEED certification under the LEED for Existing Buildings (LEED-EB) option.

3. Literature Review

According to Oxford English Dictionary the term "green" is defined as "pertaining to, or supporting environmentalism" (p. 811). The term "sustainable" relates to "forms of human economic activity and culture that do not lead to environmental degradation, esp. avoiding the long-term depletion of natural resources" ;**Oxford English(2008). James and Suzanne LeRue(1991)** wrote the lead article entitled "The Green Librarian" and explained in detail how to be environmentally supportive at home and in the library." Noise in the Library: Effects and Control" by **Ann Eagan (1991)** examined noise pollution in the library. **Steven Smith(1991)** discussed the spatial limits of the library and nature, and the role libraries need to play in preserving both. **Bill Brown(2003)** discussed the emerging trend of green libraries and proclaimed that libraries were on the cutting edge of green design. The article "Public Input Yields Greener Library Design" by **Louise Levy Schaper (2003)** described how the Fayetteville Public Library's Blair Library was the first building in Arkansas to be a registered LEED building. **Dorthy Waterfill Trotte (2008)** [12] in a paper entitled "Going for Green", discussed three environmentally friendly libraries and offered tips on how librarians could make their libraries greener. **Sahavirta (2012)** [9] in an article revealed that commitment to green values may increase environmental sustainability and help libraries to take a new and visible role in changing society. In a paper **Divya and Vijayakumar (2013)** rightly pointed out that this is the right time for librarians to support green library movement. **Aulisio (2013)** [2] in a paper argued that a green library is more than what the architecture entails by using example initiatives and providing recommendations for green library operations. In the article **Atton (1993)** describes the green librarianship activities in the US and warns librarians in the UK against embracing a business consumer model in the library. **Amy Cantú and Beth Andersen (2003)** focused

on a program series titled "Sustaining Ann Arbor: Think Globally, Act Locally." Some of the highlights from the program included alternative fuel vehicles, a wildlife ecology puppet show, a sustainable home tour and green journaling. The Library's position as a community center and its mission to serve as an educational resource "proved to be ideal for exploring the interconnected topic of sustainability".

4. Objectives

- To analyze the importance of green libraries in the Technical University libraries of Odisha.
- To ensure that all the collections become discoverable to all the users and researchers.
- To create a sustainable digitisation operation which is essential for the technical university libraries?
- To identify the major green library initiatives at the international and national level.
- To explain various techniques and methods for greening the library.
- To make suggestions for building green libraries for sustainable development.

5. Standards For Green Libraries:

Some of the standards of green libraries are:

5.1 Indian Green building Council (IGBC): Indian Green Buildings Council (IGBC) was set up in the year 2001.According to IGBC "A green building is one which uses less water, optimizes energy efficiency, conserves natural resources, generates less waste and provides healthier spaces for occupants, as compared to a conventional building."

5.2 Leadership in Energy and Environmental Design (LEED-India): LEED is considered a performance standard, which means it allows a building owner or planner to choose how to meet certain benchmark numbers without prescribing specific measures. Leadership in Energy and Environmental Design (LEED- India) green building rating system is a nationally and internationally accepted benchmark for the design, construction and operation of high performance green buildings. It is a point-based system in which projects earn LEED points for meeting green building criteria. The six credit categories for new building construction are sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation in design (U.S. Green, n.d.). There are currently six types of building certification under LEED including LEED for New Construction (LEED-NC), LEED for Commercial Interiors (LEED-CI), LEED for Core and Shell (LEED-CS), LEED for Existing Buildings (LEED-EB), LEED for Neighborhood Development (LEED-ND), and LEED for Homes (LEED-H) (Yudelson, 2007). There are four certification levels (Certified, Silver, Gold, Platinum) awarded according to achievement as evaluated by points using the LEED scorecard.

LEED-India promotes a whole building approach to sustainability by recognizing performance in the following five key areas

- **Site selection:** Before building a library, a site must be chosen. The selection of the site has a large impact on how ecologically friendly the library will be. What kinds of impact will construction have on the local environment, will there be erosion, what can be done with storm runoff, and is the site already green? Also, the library should be located in a densely populated area, near a number of other service related buildings.
- **Water conservation:** Reduce potable water use by considering alternative on-site water sources (eg. Rainwater, storm water and air conditioner condensate) for custodial uses and toilet flushing, planting native and adaptable vegetation reduces the need for irrigation.
- Energy conservation: Energy efficiency is considered by many to be the most important category in becoming sustainable. In the LEED rating system it is the heaviest weighted of all the categories. On site renewable energy systems, including solar, wind, and geothermal, provide an independent supply of energy.
- Building materials: The primary responsibility in selecting materials for the library is to contribute as little waste as possible. Another responsibility is to choose materials that can be produced without causing too much damage to the natural environment. Reusing and recycling are going to become increasingly necessary in the future. Another material option is using quickly renewable materials such as bamboo in place of wood whenever possible.
- Indoor air quality: Along with energy inefficiency, poor air quality has been another side-effect of the post air conditioning building design. Because most modern buildings are temperature controlled, they are designed to be airtight. The lack of ventilation can not only make buildings expensive to cool, it also traps harmful toxins that can do serious damage to people's respiratory systems. To improve air quality, materials can be bought that have a low VOC content, and CO2 monitors can be installed to ensure that CO2 levels remain at a safe level. The benefits cover a spectrum from physically cleaner air to direct beneficial effects on psychological health, task performance, illness reduction, productivity, lower stress and negative feelings, reduce noise and contribute to fulfilling at least 75% of Indoor Environmental Quality (IEQ) Criteria.

6. Green Library Initiatives in National And International Level

- **Situation in India:** TERI envisioned the need for development of an indigenous tool for rating of green buildings in India. This rating system - GRIHA – has been adapted by the government of India as the National rating system. Globally, green building rating systems have been instrumental in raising awareness and popularizing green building designs. Keeping in view of the Indian agro-climatic conditions and in particular the preponderance of non-AC buildings, GRIHA has

been developed as a rating system which is suitable for all kinds of buildings in different climatic zones of the country. TERI fulfills its mandate of sustainable development by advocating the concept of green buildings, which register minimal impact on the environment. TERI has constructed its buildings, in Gurgaon, Bangalore and Mukteshwar which includes resource- and energy-efficient, demonstrating the sustainable implementation of green practices.

In Kerala COSTFORD (Centre of Science and Technology for Rural Development) a nonprofit organization established in 1985 focus on improvement of housing and made significant gains in providing alternative philosophy and technologies for providing cost- effective , energy efficient and more appropriate housing for all groups. Similarly, Habitat Technology Group established in 1987 is a non-governmental organization is totally committed to the concept of green and human architecture. It has been accepted as a nodal agency to carry out green buildings in Kerala.

- **International situation:** Tang Gengsheng, the general secretary of Library Society of China (LSC), launched a new project named Energy Saving and Emission Reduction of Libraries (ESERL). The project convened some experts from Academic Professional Committee of LSC, Beijing Zhongguancun International Environmental Protection Industry Promotion Center Co., Ltd (ZIEPC), China Institute of Building Standard Design & Research, Beijing Institute of Architectural Design (BIAD), Virtelwise Technology Inc. and some libraries to research and practice how can become energy-conserving and environment-protective buildings.

The research also indicates high energy cost caused by air-conditioning systems, lighting systems, elevators, computers, servers, security, package of counter and fire monitoring. Therefore, solutions of solving higher energy cost will be suggested from research analysis in library: Firstly, high energy-consuming libraries should be reconstructed by energy management contract (EMC) thereby reducing large expense of energy. The Heilongjiang Provincial Library is a good example. Supply the water storage and automatic air-conditioning system will be rebuilt at the second phase, which is followed by a reconstruction of solar domestic hot water system. In addition, an energy-saving reconstruction plan of air conditioning system for Nanjing Library has been conducted by experts from ESERL. Secondly, other solutions also include choosing energy saving technology and products when construction of the new building.

7. Techniques Used For Greening the Library

In order to make the libraries green the following techniques are used:

7.1 Materials & Equipments

- Take advantage of windows: Strategically placed windows will provide natural light and may help with heating or cooling costs.

- Use eco-friendly light bulbs which will save money and electricity.
- Use of geothermal heater and solar tubes that capture daylight and deliver it inside to illuminate interior space saves money and energy
- Put soft pads on the feet of chairs to protect the floor and reduce noise.
- Purchase eco-friendly computers: When you need new computers, search for ecofriendly versions.
- Use laptops which use less electricity than desktop versions.
- Eco-friendly, safe computer cleaning materials can be used for cleaning the computers such as biodegradable dust cloths and old t-shirts.
- Improve areas with insufficient lighting; reposition light fixtures to improve lighting.
- Replacement of outdated appliances.
- Cut down on paper by moving card catalog onto computerized catalogue, instead of paper newsletters use e- versions, provide online services by making use of web-2.0 technologies, use e-receipts instead of paper receipts.
- Promote roof vegetation and start an organic garden: Grow a garden to spread awareness on sustainability and provide a healthy eating option for participating library patrons and workers.
- Use natural pesticides for preservation of books and keep the plants and flowers healthy without damaging the health or the environment.

7.2 Energy:

- Use Energy Star products for saving energy.
- Terminal energy control of Central air-conditioning can remotely set temperature, on-off function, and timing control online, so as to reduce management cost on the premise of comfort.
- Use of alternative energy sources such solar energy will save money.
- Automate power down. When procuring new PCs, buy those with intelVPro.
- Find efficient CPUs. Computer companies are producing far more energy efficient CPUs.
- Have a server strategy that guarantees power reduction.
- Reduce heat islands by eliminating or shading blacktop paving and dark roof surfaces.
- Motion and light sensors, timers and energy saving dimmers can be easily and inexpensively retrofit to existing buildings.
- The energy measurement and monitoring system efficiently monitors operation effect of the energy-saving methods in the building, thereby making a better combination of system energy-saving control and use.

- System monitors quality of environment in real-time and adjusts automatically to ensure human safety, healthy and comfort and to maintain a quiet reading environment.
- Combine with the building control systems such as group control of central air-conditioning host machine, frequency energy-saving control of pumps, intelligent control of fresh air, intelligent control of lighting; finally achieve the best result of energy-saving control.

There are three energy-saving measures in illuminating system:

- Energy-saving products minimize the energy consumption.
- Usage of lighting control system to cooperate with energy management system.
- Energy supply from the PV system supports garden and lawn light outside

7.3 Waste Management:

- Recycle computers: Safely recycle computers instead of harming the environment when you throw them away. Buy recycled ink cartridges and other supplies.
- Discard weeded books by selling it to used book dealers, exchange library materials with other participating libraries or donate to other libraries.
- Get rid of waste by composting and stop using plastic bags.
- Start a paper drive: Ask the members of the library to bring in old newspapers and other papers to recycle: they may even be turned into books one day.
- Books from the shelves and the books deliberately hidden by library users were recovered from the top of shelves were dusted carefully. Shelves and floor were washed and mopped. This result in clean, bright, refreshed collection with no dirt.

8. Suggestions

The final outcome of the Sustainable Development in the Technical University libraries is given below:

- Spread awareness about the library's green activities through social media or other methods regularly.
- Evaluate the library's cleaning and maintenance routine to identify and reduce the use of hazardous chemicals.
- Libraries can use a variety of tools to popularize the 'green concept' and educate their patrons about the features of their green buildings. These include in-library displays, publications, and library programs relevant on 'going green'.
- Libraries can arrange strategic thinking and planning sessions to ensure sustainability.

- Identify the librarians who are willing to promote green library techniques and encourage them.
- Librarians should focus on the chance to transform an adaptable building to a high level ecological-friendly library.
- Sustainability in library buildings should be taught to LIS students so that new generation librarians will adapt these ideas.
- Make better use of cloud computing services in order to avoid print materials.
- Government should take steps to promote green libraries through award and financial aid to maintain such libraries.
- Librarians have to be keen on updating themselves on sustainability trends in the field of librarianship.
- UGC should make it mandate for all colleges to get the approval to go for Green Libraries and also green buildings.
- Government/Universities should make all the efforts to transform Libraries into Green buildings/Libraries, wherever it is possible .
- Librarians should provide awareness and create the space in the libraries to exemplify the Green practices.
- All Librarians should suggest and help in creating landscape around the building.
- Library building architecture should be planned well with such environmental friendly material & build at low cost with recycled materials.
- Some sign boards should be reflected to make awareness on green buildings and Libraries maintenance.
- Electronic document management reduces paper consumption considerably.
- Locally available environmentally friendly material should be promoted for constructing Library buildings.
- Recycling concepts should be promoted and practiced & encouraged to implement the same practices by the unemployed youth.
- Green concepts should promoted, become examples in Libraries attached to Organizations, Universities and Industries

9. Conclusion

The current important issue of the world is environment issue that is to save earth & save life of the earth. Libraries can take good initiative to inspire people, individuals to work towards environment protection. The challenge for the future would be to find new services and activities that would create a foundation for sustainable development. Finding new indicators that evaluate the sustainability of libraries is also another challenge for the future. Librarians should act as role models for sustainability by providing suitable and

relevant information related to green issues and concerns. For the next generation, library professionals should move beyond environmental sustainability exemplified by various practices of "greening libraries" and focus on proactive steps to guarantee future sustainable development of libraries.

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Implementation of Kaizen in Library and Information Services Activities

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Abstract: Library is backbone of any kind of institute. A librarian has to provide book, document or information as per the requirement of user or institute. There is an information explosion due to new technology and digitization. Institutes are providing limited resources to libraries i.e. men, material and money. It is prime duty of a librarian to provide required services or right information at the right time by using limited resources. A small improvement for big achievement is the need of hour. Kaizen philosophy is based on small change from root level for the maximum use of available resources. In this paper a small effort is made for big achievements in the world of library and information services.

Keywords: Kaizen, LIS services, LIS activities.

1. Introduction

Due to the rapid growth in the number of learning institutions all over the country, the necessity and importance of libraries is also growing. Moreover, with the industrialization, economic and social growth role of traditional librarian has changed very fast from custodian of books to a facilitator who locates the right information and disseminates to the readers. A librarian hasto provide right information at the right time in the right way for the right use to fulfill the prime duty. The information explosion and information technology revolution has led to emergence of electronic information era. A rapid advance in information processing, storage and communication-technology hasrevolutionized the role of automated libraries in disseminating information services to their users.Today achieving of maximum knowledge of culture, evaluation and collection and even the information of purchase and sale is overflowing with a great speed. Digital computer and internet service is used today through new technique. On line collection is used in modern libraries. Digital Technology has enhanced the access to more and more information worldwide. The use of modern technology for services are affecting rapidly in the different areas of libraries such as circulation service, reference service, SDI services, bibliography and documentation service etc. The advent of computers has brought many benefits to library and information systems and services. The use of technological devices such computers, barcode scanners, smart card, etc. has become routine activities.

Good libraries are to be managed by minimum resources, minimum manpower and has to provide services quickly with accuracy and ease. The libraries resource sharing, interlibrary loan, union catalogue and document sharing etc. are the modern practices being adopted. User's demands are mainly focused on collection of printed resources,

storing of resources and their retrieval as and when required .Due to the information explosion and technological development the libraries has to be efficient through computerization, automation and digitization.

2. Objectives

- To study the organizational system of libraries.
- To reduce the problems and limitations that discourages the development of resources in modern era.
- To improve the organization and planning of efficient library services with available resources in Libraries.
- To evaluate the strengths and weaknesses of any kind of libraries.

3. What is Kaizen?

'Kaizen' is a Japanese term that means 'improvement'. 'Kai' means 'change' and 'Zen' means 'good' or 'for the better'. So Kaizen means "Change for the better". It also means 'continuing improvement in personal life, home life, social life and working life.(Imai 1986) This program establishes a culture focused on the continuous improvement of all processes and work places through the elimination of waste. Kaizen means "everyday improvement by every person, everywhere" (Imai 2010).

Kaizen is a small improvements and a change for better. It must be accompanied by change of method. The kaizen concept stimulates productivity improvement as an ongoing process in any organization. It is practice oriented strategy which leads to creation of culture of improvement. It is more a way of life or at least a cultural approach to quality improvement. The implementation of philosophy of Kaizen can be achieved through involvement of employees to effect improvement.

4. Why Kaizen in Library?

Kaizen can be implemented in the library by improving every aspects of activity process in a step by step approach, while gradually developing employee skill through training and increased involvement. The principles to be focused on are:

- Human resources,the most important asset.
- Process must evolve by gradual improvement rather than radical changes.
- Improvement must be based on evaluation of process performance.

By practicing Kaizen culture, librarians demonstrate commitment to quality services. Also, the professionals with adequate support from librarians become a major source of improvement.

Kaizen system is simple, but its application requiresconcentration. These can be in the area of Productivity, Quality services, Cost, Delivery (circulation), Safety & Moral of employees i.e.PQCDSM.

- Q for more accurate information.
- C forcheaper, lesser value.
- D for lesser cycle time or lead time, faster and more quantity.
- S for safer, easier and comfortable working.
- P is a derivative or a combination of any of the above QCDSM.

5. Advantages of implementing Kaizen

- All functions of library come under continuous introspection and improvement.
- The maximum use of resources i.e. men, material and money.
- Employees most familiar with a particular operation on a day-to-day basis are the ones evaluating it.
- It serves to increase employee morale and job satisfaction.
- Waste is eliminated throughout the library, reducing costs and increasing efficiency.
- Product or service quality is improved and is monitored on a continuous basis
- Customization of library services and resources.
- Feedback mechanism.
- Increase the level of satisfaction.

6. How Kaizen can be implemented in Libraries?

- **Develop an understanding of the processes**: According to Imai, there are three principal building-blocks, or keys to satisfying theuser, to be embraced under Kaizen:

  - A continually improving quality assurance system to meet user requirements.
  - A continually improving cost management system to provide the products or service at affordable price to users.
  - A continually improving delivery system to meet users timely requirements.

  These are known collectively as QCD- quality, cost and delivery.

Identify main objectives: The three most important elements to creating the spirit of Kaizen are 'top management commitment', 'top management commitment' and 'top management commitment'. "Without that, you had better forget the whole thing". (Imai). Kaizen is best introduced as a means of achieving targets. SWOT analysis has to be carried out. Existing systems and structures need to be assessed for their support for cross-functional goals and any necessary changes in terms of organization, planning and control and personnel practices should be planned. Targets should be set for the next five years and commitment should be agreed and shared.

7. Plan the Kaizen programme:

A well-planned programme of Kaizen has to be broken down into three segments i.e. management-oriented, group-oriented and individual-oriented.

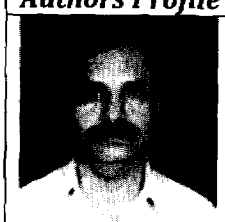
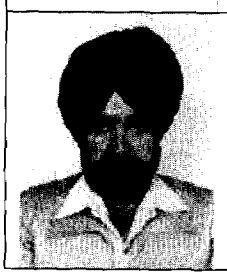
- **Management-oriented Kaizen**:focuses upon the most important strategic issues, processes and systems.
- **Group-oriented Kaizen** is based upon small-group activities that use statistical tools to solve problems.
- **Individual-oriented Kaizen** is based upon the assumption that each individual can work smarter and can contribute towards the improvement process.
- **Allocate resources**: Senior management must be prepared to allocate resources. One person needs to be appointed a director as overall in-charge of project and a person to implement the programme. Training will need to be introduced for all employees, and funding, as well as other resources, must be allocated to support this.
- **Develop a training plan**: Identify the training requirements of employees as well as users . An understanding of the continuous improvement process of cross-functional working and of problem-solving techniques is a minimum requirement. Work with training department or consultant to draw up a training plan.
- **Communicate with library professionals and users:** Bring representatives from all functions and from all levels in the library into the planning process. Kaizen is about cultural change and employee participation, and user is an essential part of accepting the change process. Arrange meetings, briefing sessions and newsletters to promote the objectives of Kaizen.
- **Set up a suggestive scheme**: Involving employees is an integral part of individual-oriented Kaizen. Invite suggestions and feedback and difficulties being faced in continuous process. A suggestion scheme is a good way of encouraging employee contribution as well as users. Be prepared to listen to all suggestions. Give recognition to employees' efforts and awards based on predetermined criteria.
- Review: Plan to review the development of the Kaizen progrmme. Assess the extent to which a process-oriented cultural change has been achieved. Recognize champions and consider further training as required.

8. Conclusion

The new technology if exploited and implemented effectively can bring sea change in library and information resources. Many problems of libraries such as quality of services,product, wastage and stagnation, mass failure of users will be solved. It helps to fulfill the five Laws of library & Information Science. In present scenario, Library &Information Professional should cultivate their field of knowledge in professional way. They should contribute to the field by research; innovative work updates themselves with the new technology.It is small step toward the demand of present era of explosion of information and getting rid of "Muda". Muda is Japanese term roughly translated as "waste" or "something that does not add value to your life".

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Libraries and Space Management : an overview

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Abstract: The Change is eternal. The libraries since their inception have witnessed the change. From Clay tablets to digital documents the journey of change has passed through many dimensions. The Growth in library collection and changing role of libraries in society from learning centres to the place of contemplation and comfort has created the problem of space as challenge to the library community to relook into the internal planning of the library building so as to fulfil the pressing expectations of the users from a modern library building. The paper highlights the problem of shrinking library space and its possible solutions given by Library Scientists.

"When everything is online why do come to library at all?". It is an important question being asked by the people. The question also raises the doubts on the existence of libraries in the future. To answer the questions it is said that the library that is sustained by the community will be the library that sustain the community.

The academic and special libraries are always attached to an institution except the public libraries. Therefore the location of the public libraries is the busiest place of the town or city because of its accessibility to the public. In case of academic libraries they are the central point of any university or college. The academic libraries are considered to the most important learning centre of the institution – both symbolically and in terms of its physical placement. The present era is the Information Age, the information is the key ingredient for the development and prosperity of any nation. The Information turns into knowledge and evaluated and assimilated knowledge turns into wisdom. This transformation from information to wisdom takes place in the library. From very ancient times systems and space for conservation and dissemination knowledge exist though they were not named as library or archive. The Men used to illustrate his experiences on the walls and other safe places to be utilised by future generations. Media for recording knowledge witnessed change from cave wall to stone, clay tablets, metal sheet, palm leaf, paper to digital media and real to virtual. Similarly, the library space also evolved with facilities and systems to manage these changes from prehistoric to the modern age digital collection. The Earliest civilizations started in Mesopotamia and Indus thus the libraries of that time were managed by the scholars. The Medieval period witnessed the learning and scholarly work and the documents collection thus well designed and impressive library buildings were built at Nalanda, Taxila and other seats of learning in India.

The renaissance led to the invention of printing and the wide distribution of knowledge and ideas. The spread of education led to the establishment of numerous educational institutions like Oxford University and Cambridge University etc. and libraries were developed as their central hub to acquire and manage documents that support their activities as well as to manage and conserve the knowledge generated there. The magnificent beautifully designed buildings, best in their campuses, housed those libraries. The invention of printing press also led to the explosion of printed material which flooded

in the libraries, causing the problem of storage space. During the last century libraries, regardless of size have to double their stack at least in every decade. In addition to the printed books and documents the other formats like audio – video tapes, gramophone records, microfilms, CDs and digital documents also got their presence in the libraries. The developments in ICT have now brought in new digital media. These documents in the other media format also need space if the facility is to be provided to the users. All these have reduced the working space in the libraries and the diminishing exercise is going on uninterrupted because of rapid growth of digital or non book material in addition to the printed documents. The libraries are neither purely having traditional printed documents nor they are fully digital or paperless. Thus in the hybrid libraries the problem of space management is emerging rapidly and the top priority to be given for its solution.

In earlier days the libraries were expected to provide the library services to the users. In this context the library Services means the traditional services of Reference, Circulation, Reading Room and Reprographic services to the users. The advent of ICT in libraries has changed the concept of services provided to the users. Instead of manual traditional services of Circulation, Reference and reading room the users expect many more services in the libraries. Though these services may not be called as library services but the matter of the fact is that they are the need of every library to hold its importance in the academic world. These services are: - General computer lab(s); Snack bar or cafe; Conference/meeting rooms; Auditorium; Tutoring centre; Archives; Bookstore; Photocopy/Xerox; Art gallery or museum space ; Exhibition area; Video watching room; Audio room; CD/DVD library; multimedia centre; News watching facility; Writer's cabin; Incubator (Thinking Cell); meditation/assimilation room. In other words it may said that the library should have Space for Discussion among friends, Open Space for Refreshing after long deep study, Room for Presentation through IT for students, Seminar Room for librarian, Multimedia Room for screening films and presentations by library staff, Cafteria, Toilets, Drinking Water and cozy interior with natural light and proper Ventilation of air, Silence Zone for Reading with air conditioning and IT resource centre.

Thus on the basis of the above stated facilities the library is considered to be place for many activities. It is a meeting place with the friends. The library also serves as a significant social role. It is a place where people come together on levels and in ways they might not in the hostles, class room or off campus location. The students on entering in the library want to be the part of the richness of tradition of scholarship as well as its expectation to the future. Thus library is a place for community and contemplation. In addition to it, the library also serves as a place of reading and relaxing in safety and in quite. It is also used for day dreaming, thinking experiences of intimate moments in students life.

The problem of space in the libraries has been addressed by many library scientists and even Dr. S R Ranganathan in his basic five laws of Library Science visualised this problem. His Fifth Law of Library Science " Library is a Growing Organism" is primarily addressing the problem of space management in the libraries. While interpreting the above law, the growth of the library have manifold dimensions – i.e. growth in the collection, in the technologies, in the form of services, in the needed skills to the librarian etc.. The growth in the collection directly affects the needed physical space of the library. As stated above, even

in the digital era the book publishing is on healthy trend and the libraries will continue to struggle with space problem, the statistics of information generation and acquisition of information resources in the libraries reflects this phenomena, through- out the world. Even the presence of e-resources does not stop or reduce the acquisition of new printed material and the rapid pace of acquisition of printed material is being still maintained in the libraries. The fifth law has got a specific implication to see into the library space planning to accommodate all new documents, technologies, services etc., keeping in view the user's future needs, dealing with un-certainty and new environment to come. Growth or expansion is natural and it needs more space to accommodate those changes, the effective planning and proper utilisation of space is the only solution. Ranganathan's Fifth law is a call for the proper planning of the library space so as to fit into changing needs of the users.

The Indian Standards Institute now known as Bureau of Indian Standards, appointed Dr. S. R. Ranganatahan as the chairman of its first Documentation Sectional Committee, which fixed accorded priority to the areas of Library buildings, furniture and fittings. The committee finalised its draft for standards regarding Buildings, Furniture's and Fittings and as a result IS: 1553 – 1960 Code of practice relating to Primary elements in the design of library building came into existence that gives information on the following things:-

I The average size of different types of libraries in terms of the number of books bound volumes of periodicals, number of current periodicals for display, the number of seats for readers and strength of staff;
II The different kinds of rooms required for different libraries; and
III The basis and method of estimating the dimension of each kind of room etc.

Ranganathan has touched and envisaged minute details of all the areas to be adhered to while constructing the libraries. If the guidelines given by Dr. S R Ranganathan, are followed, the library would be capable of accommodating all the future needs.

Since 1960 the following more Standards have been developed by the Indian Standards Institution for interior planning of the libraries. They are as follows:

1. IS: 2672 – 1966- Code of Practice for Library Lighting
2. IS: 1892 (Part I) – 1978- Specifications for Library Furniture's Fittings, Part I Timber (1st Revision).
3. IS: 1892 (Part2) – 1977 – specifications for Library Furniture's Fittings, Part 2: Steel.
4. IS: 1233 – 1969 – Recommendation of Modular Coordination of Dimensions in the Building Industry (1st Revision).
5. IS: 1172 – 1971 – Code of Basic requirements for Water Supply, Drainage and Sanitation (2nd Revision).
6. IS: 1883 – 1975 – Metal Shelving Racks (Adjustable Type) (2nd Revision)
7. IS: 8338- 1976 – Recommendations relating to Primary Elements in Design of School Library Buildings.

8. IS: 3312 – 1974 – Steel Shelving Cabinets (Adjustable Type)(1st Revision).
9. IS: 4116 – 1976 – Wooden Shelving Cabinets (Adjustable Type) (1st Revision).

The above stated specifications are indicative only, otherwise the architecture may plan better design of the library buildings.

In Japan, the solution of space problem is believed to under the philosophy of **KAIZEN.** The formula of **5S** i.e. **sort, straighten, shine, standardize** and **sustain. KAI** means change and **ZEN** means good. It means that change to good. 5S is the abbreviation of Japanese terms with five initials of S. These are 1.**Seiri**, 2. **Seiton**, 3. **Seiso**, 4. **Seiketsu**, and 5, **Shitsuke**. 5S and KAIZEN are two basic methods of the Total Quality Management. 5S engages people through the use of standards and discipline to manage the organisation. The 5S methodology is a very good philosophy that goes beyond just making the workplace clean. According to 5S Sort (Seiri) means **sort** out the needed and not needed in the area. Anything that is not needed at the work place is removed to be stored, disposed or destroyed. **Straighten** (Seiton) means arrange items in order that area needed so that they are ready and easy to use. Clearly identify the location for all items so that anyone find them and return them once the task is over. **Shine** (Seiso) means Clean the workplace and equipment on regular basis in order to maintain standards and identify defects. It also sets the standards that should be there in the *Gemba* daily. **Standardise** (Seiketsu) means repeat the first three steps of 5 S on a frequent basis and conform the condition of the *Gemba* using standard procedures. **Sustain** (Shitsuke) means rules have to be maintained and continue to improve every day. Audits are done by the employee with standard rules. 5S is a simple way of installing discipline in the workforce at the same time motivating employees to creatively solve the problems at the workplace. Kaizen is recognised worldwide as an important pillar if an organisation long term competitive strategy.

The practice of KAIZEN is based on the following principles:-

1. Good processes bring good results.
2. Manage by facts and collect data.
3. Analyse the current situation and grasp matter.
4. Action should be taken to correct the root causes of problems.
5. Work as team.
6. Kaizen is everyday business.

The central feature of Kaizen is that the big results are achieved by making small accumulated changes over a period of time. The 5S procedure is followed in the library context to solve the space problem. This is in this way that **Sort** out the needed and not needed in the library, mainly the withdrawn and weed out books are removed away to create a space in the library to keep other things. Straightening the item like file and registers made us to provide place for each and every thing by giving numbers to each one. The main gain that is achieved during the exercise is help to get things from the general work place. It makes cost benefit and also arranges for some more space for the particular section of the library. Training should be given to all the workers to drive 5S initiative can be done within a short time. Inter personal relationship and communication developed

rapidly due to the frequent training programs. Team spirit is achieved when workers are involved in any joint activity. The Librarian should select and prepare a small team for 5S program before it can start. 5S programme in totality makes the environment of organisation neat and tidy along with customer satisfaction.

According to Harry Faulkner - Brown, although internal arrangements and user services vary from place to place and from one type of library building to another, modern buildings of all sizes have several common factors, which have been crystallised into the following desirable qualities, otherwise known as 10 commandments. It is like this. A library should be:-

Flexible - with a layout, structure and services which are easy to adapt;

Compact – For ease of movement of readers, staff and books;

Accessible – from the exterior into the building and from the entrance to all parts of the building, with an easy comprehensible plan needed minimum supplementary directions.

Extendible – to permit future growth with minimum disruption.

Varied – in its provision of book accommodation and of reader services to give wide freedom of choice.

Organised – to impose appropriate confrontation between books and readers;

Comfortable – to promote efficiency of use;

Constant in environment – for the preservation of library materials;

Secure – to control user behaviour and loss of books;

Economic – to be built and maintained with minimum resources both in finance and staff.

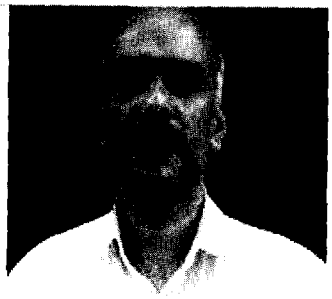
Libraries remain amongst the most socially - inclusive, enduring and well used places in modern society and creating good buildings is critical not only to the future of our universities, but also to the intellectual capital of our countries. The society is witnessing unprecedented and dynamic change in higher education, technologies and management. These trends, and the considerable challenges they present to planners are likely to continue at an ever - increasing pace. Tomorrow's libraries will look and feel very different places from yesterday's buildings. Even though demonstrating the impact of good library design on learning, teaching and research remains an elusive challenge. It is reassuring for all those involved in the planning process that successful new libraries continue to encourage even greater use of both traditional and virtual services, often stimulating a two or three fold increase in demand.

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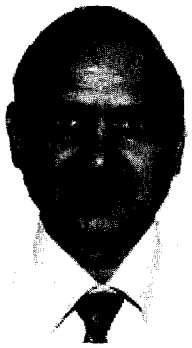
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Redesigning Libraries to Handle the Environmental Challenges of the Future: *Green Libraries*

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Abstract: Libraries are the trusted information centres for the community. They are not only repositories of knowledge, but also important information centres for raising awareness about environmental concerns. Green libraries, also known as sustainable libraries, are the libraries built with environmental concerns in mind. They educate the public about environmental issues through their collections, sustainability, environmental friendly facilities, and library programs. The technology used to design green library, should be LEED certified, which means that it must be long-lasting, ecological, energy-water saving, and sustainable. Concept of green libraries is an emerging trend in library buildings, and librarians are becoming more and more interested in making their buildings environment friendly. This paper is an attempt to trace out the importance of green libraries, its features, aim, challenges, benefits and of course bird's-eye view of some green libraries across the world.

Keywords: Sustainability, green buildings, natural resources, environmental issues, renewable energy, LEED (Leadership in Energy & Environmental Design).

1. Introduction

Winston Churchill has rightly said "We shape our buildings and thereafter they shape us". Green libraries are a part of the larger green building movement. They are shaped (designed) in such a way that they minimize the use of energy and water by maximizing the use of natural and renewable resources. Now days, along with Library 2.0, green design is an emerging trend as it provides the ground for sustainable communities. Word "sustainability" reciprocities the word 'green'. Sustainably designed libraries are built in such a way that they are, flexible to respond to changing demands of users and provide an environment which is inspiring and safe. So, green libraries are required to promote green concept within the library, curtail energy cost of the library and provide more comfortable reading environment to the users within the library.

2. Green Libraries: Conceptual Framework

There is no clear cut definition of a green library. But there are central themes that run hand in hand with them, minimizing the negative and maximizing the positive effects of the building on the environment. When we talk about green libraries what usually comes in mind are green library buildings. The **Oxford English Dictionary** defines the term "green" as "pertaining to, or supporting environmentalism". According to **Indian Green Building Council (IGBC)** "A green building is one which uses less water, optimizes energy efficiency, conserves natural resources, generates less waste and provides healthier spaces for occupants, as compared to a conventional building." According to **US Green Building Council's LEED performance system**, a green building is one having sustainable site

selection and development, water conservation, energy efficiency, local resources, material conservation, indoor environmental quality and innovative in design. **The California Integrated Waste Management Board** defines a green or sustainable building as "a structure that is designed, built, renovated, operated, or reused in an ecological and resource efficient manner" (California Integrated, 2008). In 1999-2000, American Library Association President **Sarah Ann Long**, initiated a project, entitled "**Libraries build sustainable communities**". According to her, the definition of "**sustainable**" is the use and stewardship of resources today that preserves them for tomorrow, and a sustainable community is one that is healthy and prosperous over the long term.

3. Aim of Green Libraries

Now a day's libraries are undergoing major changes. These changes are, in concept of working, providing information, and identity transformation. Libraries are not only fulfilling their role as information providers but are also becoming sustainable institutions (institutions that are inevitable part of the community of twenty-first century). So, its green design will further help in its growth in the following ways:

- A green and sustainable building gives a clear expression that the library is investing in the future of the community.
- Green and sustainable buildings are smartly designed, aesthetically pleasing, and are powered by state-of-the-art technology. So it will change the concept and mind of public who considered libraries as stereotyped.
- As more and more people are becoming environment friendly, so a green library can improve the image and increase the clients of the library.
- Green libraries can actively educate the community about environmental concerns through their collection development and public programs.
- Green libraries can help in building sustainable communities through economy, ecology, and equity. So they must be thoughtfully designed while taking into consideration structural design, energy use, and human health effects.

4. Need for green libraries

All buildings use resources such as land, water, energy, and materials to fulfill the functional needs of a space. As such, there can be no buildings without environmental impact. A building is green when it is resource-efficient and fulfills the functional requirement of the space with minimum negative impact on the environment over the longest possible time. Since libraries are public buildings meant for the betterment of all, so they have the responsibility to reduce stress on the environment, by creating healthier and resource-efficient buildings. There are several other reasons why libraries want to incorporate green features in their buildings:

- **Affordable cost**: Cost of constructing green buildings have become affordable. It is now possible for libraries to build green buildings on conventional budgets.

- **Conservation of energy**: Most of the readily available energy resources are finite resources. They are indispensable for the health of the planet so it is our moral duty to use these energy sources carefully and reasonably.
- **Reduction of carbon footprints**: The carbon footprint is an important aspect to understand the impact of personal behavior on global warming. So it is important that we reduce the carbon footprint of our buildings.
- **Economic and Environmental factors**: Economic inconsistency, energy evacuation, and planetary decadence are transforming societies and libraries too. So it is right time for librarians to step up and help communities become green and sustainable. The role of the library is to serve its community. So it is the time right time, for librarians to build green and sustainable libraries and support "Green Library Movement".

5. Features of green library

The main aim of the green and sustainable library is to create a building that supports environment and is flexible in its nature. Green library buildings can provide libraries, an opportunity to educate their clients and public regarding clean and green environment. So now a day's trend of green libraries is emerging rapidly. Given below are some of the features of green libraries.

- **Environmentally Sustainable Design:** Green buildings should have environmentally sustainable design (ESD), which means:
  - Reducing energy consumption and its cost
  - Providing a natural environment like natural lighting for users.
  - Passive and active ventilation, heating and cooling.
  - Reduction in water usage

Typically green library buildings use 26% less energy, and emit 33% less greenhouse gases than traditional buildings.

- **Saving of finances and funds:** Libraries are constantly in need of funds and finances, for their development and future existence. Sustainable design can offer libraries a way to reduce maintenance and energy costs, so that they can use these funds in improving their services and collections.
- **Renewable Energy:** Energy (power) can be generated by solar, wind and hydro (water) sources. These renewable efficient energy systems can help in:
  - Cost effectiveness
  - Reducing greenhouse emissions,
  - Decreasing demand on conventional energy resources.

So, a sustainable design having properly designed ventilation systems, climate and temperature controlling systems, energy efficient light fittings and passive heating and cooling can save lots of energy.

6. Challenges of Green libraries

A green and sustainable library comprises of not only redesigning and regeneration of library buildings, but it is also improving day to day functions and procedures of the library. While green buildings are related to the overall green building movement, green libraries have specific needs that raise some extra challenges, which are the following:

- **Environmental preservation of books and other collections**: Books must be kept away from sunlight, moisture and temperature change for their preservation. But some users find sunlight, the most pleasant light for reading. Sunlight also plays a major role in green design, because it is a natural light and can reduce artificial lighting. New developments in glass technology over the past ten years have given librarians much more flexibility to keep their collections of books, journals, magazines protected from direct ultra-violet rays of the sun
- **Books weight**: Another challenge the library faces is the weight of the books. A common strategy in green design is to raise the floors to increase circulation, but the weight of the stacks can be an obstruction in this strategy. To deal with this challenge, many designers have started zoning the library into designated areas; so that some strategies can be enacted in particular areas and alternatives can be used in other areas.
- **Flexibility**: Libraries must be built flexibly, in order to keep pace with expansions in size, for future use. Library buildings are long term investments made to benefit the community, so while designing library buildings architects must keep in mind, the future needs and growth of the library. The special needs of the library must be taken into consideration from the beginning of the construction, so that the effective use of building can be made.

7. Importance of Green and Sustainable Libraries:

Green and sustainable practices are being implemented throughout society. Libraries are also not exempted from these trends, because they are service oriented institutions. Green libraries are gaining attention because of its following benefits:

- Libraries are essential to the communities as librarians have a mandate to ensure access to economical library services.
- Libraries that demonstrate good stewardship of the resources can build their base (support) in the communities that leads to sustainable funding.
- Scientific community has clearly communicated that current trends in climate change are of great concern to all human beings. So both, the staff and users of library deserve a healthy environment.
- An eco-friendly building saves a substantial amount of money in electric bills.
- Green libraries also improve the productivity of the workforce. Libraries providing more natural light, cleaner air, less-toxic or non-toxic materials, and sustainable

cleaning practices have fewer workers getting sick, which increases reputation and workability of library.

8. Benefits of Green and Sustainable Libraries:

Green libraries are the buildings where user's needs are not only met but fulfilled in such a way that sustains the environment. So its main benefit is to *provide a unique and green environment for reading.* Other benefits of green and sustainable libraries include the following:

- It creates environment-friendly ecological architectural space.
- It upgrades the quality of reading spaces and furniture.
- It increases the number of library users, visitors and their visits.
- It maximizes the effects of natural sun light and natural air flow.
- It attracts experts and scholars from all over the world.
- It increases the visibility of the library and changes the concept of stereotype of library in public's mind.
- It embodies the principles of ecological education so it has become a multi-faceted learning center.

8. Role of libraries in educating public regarding Green environment

- Libraries are associated with reading, learning and discovery process so they can help public to know and share the practices of preserving and sustaining environment. Libraries can use a variety of methods to educate the people about responsible environmental practices. Some of these methods are:
- **Library Programmes:** In order to educate the community about sustainability, libraries can plan and execute programs of inviting guest speakers on various topics like recycling, energy efficiency etc.
- **In-Library Displays & display window:** A library that has successfully implemented green practices and sustainable building design can create displays within the library. These displays will help people to know and understand the sustainable practices employed and their favorable impact on the environment.
- **Book displays:** Organized and attractive book displays are also an excellent way of educating people on sustainability. It is an efficient way to communicate with clients.Creative, inspiring displays of collection like building green homes, water and energy saving, and recycling can inculcate interest and awareness about environmental issues.

9. Examples of Green Libraries

In the last ten years, focus of libraries has shifted to green and sustainable libraries. Many green libraries have been designed and many others were renovated to become green and sustainable buildings. Mentioned below are some green libraries (with birds-eyeview):

- BIBLIO-Centrum: A Green-Roofed Solar-Powered Library for Helsinki's City Center
- Golden Gate Valley Library of San Francisco
- Canada Water Library
- The LEED Gold Anna Centenary Library

10. Panjab University Library is one of the Best example of Green Library in India

It has two readings halls and one Outer Reading Hall for studying personal books. These reading halls mainly rely on day lighting as one wall in these halls, is totally made of glass. This provides natural light and panoramic view of the natural surroundings in these reading halls. Building is centrally air-conditioned and equipped with computer and communication network. Water used in air conditioning of the building is reused in fountains, to keep the surroundings cool and pleasant. A spiral staircase connects all the floors together. Natural light comes to this staircase through the wide windows that run across the wall. The great height, vast open areas, thick walls, wide glass windows, all these are some green gestures that are in built in the building structure of A.C Joshi library. Project of rainwater harvesting has already been started in Panjab University. In future rain water will be preserved and waste water will be reused in gardens and in toilets of Panjab University buildings. Library proposes to use 'green power' or use of solar energy (photovoltaic system) to cover the total energy requirement of the library in future.

11. Conclusion

The concept of "green building" has developed over time. A green library, or sustainable design, is the practice of increasing the efficiency with which buildings use energy, water, and reduce building impacts on human health and the environment. Libraries by their nature are "green" because their resources are shared by the larger community. They (libraries) serve as symbols of the attitudes and values of their creators and also extend those attitudes and values to future generations. Communities with the opportunity to build a new library or update an existing library must inculcate sustainable design measures. Sustainability has many meanings, including preservation of natural resources for the future, living in a carbon-neutral way, and meeting the needs of the community in such a way that the needs of future generations are met accordingly. Librarians should act as role models for sustainability by providing suitable and relevant information related to green issues and concerns. Sustainable strategies should be integrated into library collections, buildings, digitalization, equipments, and library networking services. To remain relevant to the community, and to assure organizational sustainability, librarians must understand, listen to, and develop services that create a better life for their clients.

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Author Profile



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What Children Expect from Tomorrow's Urban Libraries of Karnataka State: *A Case Study of City Central Library, Vijayapura*

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Abstract: Reports the results of a study conducted in different localities of Vijayapura city where branch libraries of City Central Library are located to know the expectations of children (actual visitors and non-visitors) about the services and facilities. Finds that there is a disconnection between the needs and expectations of the children and the facilities and services provided in the branch libraries and that children are enthusiastic but are unable to make it to the library premises. They know library as a place to read but many of them are in confusion about the role expected of public libraries. Provides suggestions to attract the children to the library premises.

Key words: Children library use, urban libraries, user study

1. Introduction

Public libraries have been considered over centuries as important entities for community development and empowerment process and trusted information resources at the heart of communities. However, in the beginning, many early public libraries had denied women and children right to use libraries. Children in some places were not allowed inside libraries at all. Currently, in the contemporary public library environment, the situation has changed. Today children have become the primary focus of any services, programs or activities and as such public libraries are designing programs to attract children. This is because children have always been enthusiastic and devoted users of public libraries.

A number of studies have been reported to identify the expectations of different user groups in different public library settings. Thanuskodi's assessment of the efficacy of library services of DCLs in Tamil Nadu has revealed weak user base among children. Kunhambu and Mudhol have noticed that rural libraries are becoming more visible as an essential institution for children. Parvathamma and Reddy' s survey of use of information resources and services in branch libraries Bidar district and Gulbarga district libraries revealed that a significant number of children above the age of 11 visit the libraries mainly to read newspapers and magazines. Sujatha's study of Bantwal public library Dakshina Kannada district also found that children mainly students visit the library. Children were a non-significant group as user population in the studies reported by Kala , Asundi and Heritzman , Tyagi and Chopra and Banerjee . No specific studies on children's use of public

libraries were reported. Hence an effort is made in this paper to map the expectations of children about next generation urban libraries based on a case study of children's expectations of City Central Library, Vijayapura. Vijayapura is the headquarters of Vijayapura district (Formerly Bijapur) located in the northern part of Karnataka. The City Central Library Vijayapura (Herein after referred as CCLV) established in 1981 has 14 branch libraries (Vivek nagar, Ashram, Zenda Katti, Shastri nagar, Maruti colony, Treasury colony, Kalyan nagar, Nehru Market, Adarsh nagar, Jorapur pet, KHB colony, Pawad Basaweshwar colony, Gandhi chowk and Central Jail) and 1 children library (Bal bhavan) located at different parts of the city. At present the main library has a collection of 192,706 books and has a registered membership of 4024. The branch libraries together have a membership of 11167. The Children's library was established in 2006 has 1025 books, few toys and facilities for indoor games like Carrom and Chess. The branch libraries work in shifts from 8.30 am to 12.30 pm and again from 4.30 pm to 8.00 pm. The branch libraries are basically print dominated and provide reading facilities and circulation services. They are managed by non-professionals. Interviews were conducted between 15th December 2014 and 31st January 2015 with 36 children who had actually visited the branch libraries on the particular day of visit to the concerned branch library. On the same occasion interviews were also conducted with 126 children of the localities purposely selected for the study who were outside the branch library premises (either playing with friends or simply moving on the street) to map the expectations of children.

2. Results and Discussion

2.1 Influencing Factors: From Table -1 it can be found that just more than one fifth of children actually visited the branch libraries while more than three fourth have not visited the branch libraries. It is also found that children aged below 9 years (32.72%), between 9 and 11 (33.95%) and aged 12 and above (33.33%) constitute the study population. A majority of children (44.45%) aged between 9 and 11 visit the branch libraries while 19.44% children aged below 9 have made visits to the branch libraries.

Table 1 - Age wise distribution of children

Age	Actual visitors	Non-visitors	Total
Below 9 years	7 (19.44%)	46 (36.51%)	53 (32.72%)
9-11 years	16 (44.45%)	39 (30.95%)	55 (33.95%)
12 and above	13 (36.11%)	41 (32.54%)	54 (33.33%)
Total	36 (22.22%)	126 (77.78%)	162 (100.%)

From Table 2 it can be found that boys account for 56.17% of the study population while girls account for 43.83% of the study population. Further it can also be analyzed that girls hardly make use of branch libraries as only 19.44% of them did visit. More than eighty percent of boys actually visited the branch libraries. Among the non-visitors, there are 50.79% of girls.

Table 2 - Gender wise distribution of children

Gender	Actual visitors	Non visitors	Total
Boys	29 (80.56%)	62 (49.21%)	91 (56.17%)
Girls	7 (19.44%)	67 (50.79%)	71 (43.83%)
Total	36 (22.22%)	126 (77.78%)	162 (100.%)

Table 3 reveals that only 8.64% of the study population comprises of children studying in Government schools while a greater majority of 91.36% of children study in private schools. One of the surprising results of the study is that none of the actual visitors among the children were studying in Government schools. Among the non-visitors only 11.11% of children were studying in private schools.

Table 3 - School wise distribution of children

School	Actual visitors	Non visitors	Total
Government	00 (00%)	14 (11.11%)	14 (8.64%)
Private	36 (100%)	112 (88.89%)	148 (91.36%)
Total	36 (22.22%)	126 (77.78%)	162 (100.%)

From Table 4 it can be found that either of the parent of more than two third of children is a graduate. While both of the parents of only 4.32% of children are non-graduates and both of them are graduates for 28.4% of children. Further it can also be interpreted that either of the parent is a graduate among more than three fourth of children who actually visited the branch libraries. Not a single child whose' both the parents are non-graduates visited the branch libraries. Either of the parent of nearly two third of children who are non-visitors is a graduate. It is also surprising to note that 30.15% of parents of children who are non-visitors were graduates.

Table 4 - Educational qualification of parents

Parents education	Actual visitors	Non visitors	Total
Both non-graduates	00	7 (5.56%)	7 (4.32%)
Either of them graduate	28(77.78%)	81 (64.29%)	109 (67.28%)
Both of them graduates	8 (22.22%)	38 (30.15%)	46 (28.40%)
Total	36 (22.22%)	126 (77.78%)	162 (100.%)

A question was asked to the children under study to explain what words or images appeared in their mind first when they heard the word "library". It is found from the table 5 that slightly more than one third of children (33.95%) felt it a place to read while 27.16% of children opined that library is a place for recreational reading while another 29.63% of children remarked that it is a place where books are kept. A small percentage of children

also have their own images. 4.32% have developed an image that library is a place for highly educated people for study while 3.09% treated it as a sacred place and another 1.85% were of firm opinion that library is a place not meant for children. More than one fourth of actual visitors considered library as place to read while one third consider it as a place for recreational reading. A majority of actual users considered it as a place where books were kept. A majority of non-visitors (35.71%) considered it as a place to read while a quarter of them felt that it is a place for recreational reading and 26.98% also felt it as a place where books are kept.

Table 5 - First feeling of children when they have heard the word Library

First feeling	Actual visitors	Non visitors	Total
Place to read	10 (27.78%)	45 (35.71%)	55 (33.95%)
Place for highly educated people for study	00 (00%)	7 (5.56%)	7 (4.32%)
Place for recreational reading	12 (33.33%)	32 (25.4%	44 (27.16%)
Place where books are kept	14 (38.89%)	34 (26.98%)	48 (29.63%)
Place not meant for children	00 (00%)	3 (2.38%)	3 (1.85%)
A sacred place	00 (00%)	5 (3.97%)	5 (3.09%)
Total	36 (22.22%)	126 (77.78%)	162 (100%)

Children under study were asked to indicate why they have visited the branch library. It is found from Table 6 that a majority (30.15%) had come to the library just like that. For some of them there was no purpose, for few mother will not say anything if they were in the library. One fourth of children had come to the library to read newspapers while 5.56% had visited to return the borrowed books. 8.33% had come to the library to read magazines while another 8.33% had entered the library with rather serious purpose – to prepare for their project work.

Table 6 - Reasons for Children's visit to library (N=36)

Reasons	Number	Percentage
To read newspapers	9	25.00%
To read magazine	3	8.33%
To read comics	8	22.22%
To return borrowed books	2	5.56%
To prepare for project work	3	8.33%
Just like that	11	30.56%
Total	**36**	**100.00%**

Children were asked how frequently they visit the branch libraries. It can be found from Table 7 that no child visits the library every day. A majority of children visits library once or twice a week while 41.67% do visit occasionally. It can be interpreted that library visit is considered as a hobby among children.

Table 7: Frequency of Children's visit to library

Reasons	Number	Percentage
Once or twice a week	21	58.33
Occasionally	15	41.67%
Total	36	100.00%

Children were asked to give their opinion on how friendly the library environment is. From the opinion elicited from them it can be interpreted that library environment is user friendly as 75% of the children have opined that the environment is friendly. On the other hand 25% felt that library environment is unfriendly as they felt that the staff is strict.

Table 8: User friendliness in the branch libraries

User friendliness	Number	Percentage
Friendly	**27**	**75.00**
Unfriendly	**9**	**25.00**
Total	**36**	

Children who actually visited the branch libraries at the time of survey were asked to rate their satisfaction on a 5-point Likert scale from highly unsatisfied (value 1) to highly satisfied (value 5) on fifteen various aspects of branch libraries. The calculated mean value ranges between 1.00 and 3.78. The mean value for staff helpfulness (mean: 3.78) and seating arrangement (mean: 3.69) indicates that the children are satisfied with helpfulness of staff and seating arrangement in the branch libraries. The mean value for cleaning (mean: 3.44), newspaper collection (mean: 3.25), collection of magazines (mean: 3.08), knowledge of staff (mean: 3.00), reading room (mean: 2.89), library services (mean: 2.83) and arrangement of books (mean: 2.64) indicate that children are not in a position to decide their satisfaction or non-satisfaction. This rating is due to the fact that very few had used newspaper and magazine collection and also availed library services and reading room facility and utilized the knowledge of library staff. The mean value for lighting (mean: 1.75), working hours of library (mean: 1.58) and ventilation (mean: 1.56) indicates that children are not satisfied with lighting, ventilation and working hours of the branch libraries. Children are highly unsatisfied with children's collection (mean: 1.25), drinking water (mean: 1.00) and toilet (mean: 1.00) facilities.

Table 9: Children's opinion on library facilities and services (N=36)

No	Opinion on	Highly satisfied	Satisfied	Can't say	Unsatisfied	Highly unsatisfied	Mean
1	Staff helpfulness	3	1	00	29	3	3.78
2	Staff knowledge	00	00	36	00	00	3.00
3	Working hours	15	21	00	00	00	1.58
4	Seating arrangement	3	1	00	32	00	3.69

5	Reading room	10	7	00	15	4	2.89
6	Lighting	13	21	00	2	00	1.75
7	Ventilation	18	16	2	00	00	1.56
8	Library services	7	3	15	11	00	2.83
9	Cleaning	00	10	00	26	00	3.44
10	Drinking water	36	00	00	00	00	1.00
11	Toilet	36	00	00	00	00	1.00
12	Newspaper	00	00	27	9	00	3.25
13	Magazines	00	00	33	3	00	3.08
14	Children's Collection	29	5	2	00	00	1.25
15	Arrangement of books	00	7	29	00	00	2.64

Children were asked whether there are any reasons for their disliking the branch library that they have visited on a 5-point Likert scale from strongly disagree (Value 1) to strongly agree (Value 5). Their opinion was tabulated in Table 10. It can be observed from the mean value that the children under study strongly with the statement "There aren't computers and Internet" (mean: 5.00). Children agree with the statements "Very shabby look" (Mean: 4.44) and "There are too many rules" (mean: 3.89). Children are undecided about the statements "I never find anything interesting there" (Mean: 2.5) and "I don't need public libraries" (mean: 2.67).

Table 10: Reasons for Children's disliking of libraries (N= 36)

Reasons	Strongly disagree	Disagree	Can't say	Agree	Strongly agree	Mean
I never find anything interesting there	6	9	18	3	00	2.5
There are too many rules	00	00	5	30	1	3.89
There aren't computers and Internet	00	00	00	00	36	5.00
Very shabby look	00	00	7	6	23	4.44
I don't need the public library	6	5	20	5	00	2.67

Table 11: Reasons for not visiting libraries (N=126)

Reasons	Number	Percentage
Do not have time	67	53.17
Library working hours are not convenient	29	23.03
Parents do not allow	12	9.52
Nothing is available	2	1.59
Newspapers and magazines are subscribed at home	8	6.34
No Internet facility	7	5.56
I don't need a library	1	0.79
Total	**126**	**100.00**

Children who were outside the library premises at the time of interview (non-visitors) were asked why they have not visited the public libraries. Their answers were tabulated (Table 11). From table 11 it is found that more than half of children have not visited libraries as they do not have time to visit (53.17%). Nearly one fourth of children have expressed their opinion to the effect that library working hours are not convenient (23.03%). Nearly one tenth of children have put the blame on their parents saying that their parents won't allow them to go to library (9.52%). 6.34% of children have said that they are not visiting libraries as the newspapers and magazines are being subscribed at home. Non-availability of Internet is a cause for 5.56% of children for not visiting public libraries. A very small percentage of children have said that nothing is available in the library and hence they are not visiting. One child under study said that " I don't need library".

Table 12: Importance of public libraries (N=162)

Reasons	Not at all convincing	Not very convincing	Can't say	Somewhat convincing	Very convincing	Mean
Librarians help all kinds of users find information, from all sources -printed and electronic	19	17	60	29	37	2.68
Libraries: Places for education, self-help, and offer free access to all.	3	6	00	145	8	3.92
Libraries: Place of lifelong learning.	00	00	162	00	00	3.00
Library technology: Information from around the world is available through the internet.	00	00	67	60	35	3.8
In a typical library, children can be listening to a storyteller, first-time computer users can be learning to navigate the internet, users can get a wide range of books and students get information to help their	00	00	75	65	22	3.67

studies.						
Librarians are trained experts in finding the right information, wherever it is – in books, or on the internet.	00	00	162	00	00	3.00
Libraries can help all kinds of people in many ways. You can get help with job applications, find delicious recipes, find government information or help with homework. The library does all these things.	00	00	162	00	00	3.00
Libraries play an essential role in our democracy and are needed more now than ever.	00	00	00	145	17	4.14
The library is a safe and welcoming community space where everyone feels welcome. People see their friends and neighbors there.	00	00	162	00	00	3.00

Children irrespective of whether they were using the library or they were outside the premises were asked to rate the importance of librarians and libraries for few statements (made in Kannada and English) on a 5-point Likert scale from not at all convincing (value 1) to very convincing (value 5). The calculated mean value ranges between 2.68 and 4.14. A mean value of 2.68 for the statement "Librarians help all kinds of users find information, from all sources -printed and electronic sources such as books including the internet" indicates that the children could not say anything and that they do not have any clear idea. The same analogy holds good for the following statements "Libraries are a place of lifelong learning" (mean: 3.00), "Librarians are trained experts in finding the right information, wherever it is – in books, or on the internet" (mean: 3.00), "Libraries can help all kinds of people in many ways. You can get help with job applications, find delicious recipes, find government information or help with homework. The library does all these things" (mean: 3.00), and "The library is a safe and welcoming community space where everyone feels welcome. People see their friends and neighbors there" (mean: 3.00). It indicates that children are not aware of what library is and how it can help them. A mean value of 4.14 for the statement "Libraries play an essential role in our democracy and are needed more now than ever" indicates that children understand the role of libraries in democracy. Children are somewhat convincing with the statements "Libraries are places for education, for self-help, and offer free access to all" (mean: 3.92), "Today's library technology means that information from around the world is available through the internet (mean: 3.8) and "Libraries are changing and dynamic places. In a typical library, children can be listening to a storyteller, first-time computer users can be learning to navigate the internet, users can get a wide range of books and students get information to help their studies" (mean: 3.67).

Children under study irrespective of whether they were using the library or found outside the library, were asked to list five expectations from the library in the order of preference. The preferences were tabulated and mean was calculated by assigning values to the preferences (5 to I preference, 4 to II preference, 3 to III preference, 2 to IV preference and 1 to V preference). From table 13 it can be observed that Internet is first preferred expectation for 30.2% of children. For 23.5% of children having educational materials relevant to their courses in the library is a second preferred expectation and also fourth preferred expectation (20.4%), while books on general knowledge were preferred by 17.9% of children as third preferred expectation. Xerox facility was the fifth preferred one by 22.2% of children. From the table it can be interpreted that Internet with a mean value of 2.96 is the first preferred expectation of children, while developing educational materials relevant to their courses and also developing books on general knowledge are the second and third preferred expectations. Developing e-resources, building reference books like dictionaries and encyclopedia, developing comics and video games collection, and setting up of Xerox facility were fourth, fifth, sixth and seventh preferred expectations. Indoor game facilities were the eighth preferred expectation. It is surprising that no child preferred radio or TV in the library.

Table 13: Children's expectations of libraries (N=162)

Expectations	I preference	II preference	III preference	IV preference	V preference	Mean (Rank)
Internet	49 (30.2%)	29 (17.9%)	26 (16%)	20 (12.3%)	00	2.96 (I)
E-resources	16 (9.9%)	23 (14.2%)	26 (16%)	23 (14.2%)	19 (11.7%)	1.92 (IV)
Books on general knowledge	36 (22.2%)	20 (12.3%)	29 (17.9%)	17 (10.5%)	16 (9.9%)	2.2 (III)
Educational materials relevant to their courses	17 (10.5%)	38 (23.5%)	28 (17.3%)	33 (20.4%)	21 (13%)	2.58 (II)
Comics and video games	17 (10.5%)	19 (11.7%)	18 (11.1%)	19 (11.7%)	27 (16.7%)	1.73 (VI)
Reference books like dictionaries and encyclopedia	17 (10.5%)	17 (10.5%)	21 (13%)	28 (17.3%)	29 (17.9%)	1.86 (V)
Xerox	9 (5.6%)	13 (8.0%)	11 (6.8%)	11 (6.8%)	36 (22.2%)	1.16 (VII)
Radio	00	00	00	00	00	00
TV	00	00	00	00	00	00
Indoor game facilities	1 (0.6%)	3 (1.9%)	3 (1.9%)	11 (6.8%)	14 (8.6%)	0.38 (VIII)

3. Conclusion

The study has revealed many facts about children. Children's usage is distinct enough to warrant special attention from the authorities. The results help the authorities and

planners understand better what children expect and what strategic approaches help in this scenario. There is a disconnection between the needs and expectations of the children and the facilities and services provided in the branch libraries. Books on general knowledge, educational materials relevant to their courses, reference books like dictionaries and encyclopedia, collection of comics and video games can be made conveniently accessible to children.

A better reading environment for children be created by filling the gaps in the provision of book collection for children. To satisfy the information needs of children, the branch libraries of City Central Library, Vijayapura must be ready to provide various library services. It is expected that collection in different languages and formats should be provided to the children to help them in their academic activities. Internet the most demanding expectation by children needs to be introduced in the branch libraries. Xerox facility is another one expected by children. Personal visits to all the branch libraries and interaction with children shows that library services in the branch libraries are largely inadequate to meet the needs of children. The authorities should be more committed to developing effective library services in order to increase the visibility of the library among the user community and consequently attract the attention of the children. It is high time that children must be given a warm welcome in the library. Children irrespective of age, gender, type of schooling must be encouraged to explore the resources of public libraries.

The public library authorities must go for organizing mass awareness programs to attract the children. Children are enthusiastic but are unable to make it to the library premises. They know library as a place to read but many of them are in confusion about the role expected of public libraries. They are unaware of the latest developments taking place in libraries. They have specific expectations from the public libraries. They want Internet, e-resources, in the library premises. If public libraries are developed with relevant materials required by the children, children tomorrows citizens will use it.

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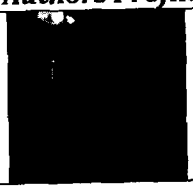
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Adoption of Web 2.0 Technologies by Punjab University Library Chandigarh: *A Study*

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Abstract: The purpose of this paper is to provide a reconnaissance of Punjab University Library Chandigarh that has embraced Web 2.0 tools for enhancing library services. The study shows that a lot of user friendly tools have been adopted by Punjab University Library Chandigarh to effectively cater to information needs of its users. The authors have also suggested a *roadmap* towards a revitalized future for providing various information opportunities to techno-savvy users.

Keywords: Web 2.0; Library 2.0; Social media; Blogs; Wikis; RSS.

1. Introduction

'*e*' (electronic) and 'I'(Internet) have become the buzz letters in every sphere of our life. In fact, it has penetrated and swept over the different activities of day-to-day routines related to Health, Governance, Banking, Commerce, Industry and Education with libraries not lagging behind. They have turned around the concept of knowledge and information. Libraries have become the fast and active hubs and harbingers of Knowledge and Information. The revolution in ICT has unleashed new vistas in Information services with the Internet becoming the most dependable media of communication. At the same time, coping with the technological breakthrough and pressing financial constraints, lack of tech-savvy manpower are posing great challenges in this domain. These issues make it necessary to adopt Web 2.0 in accessing and disseminating information. The latest innovations and refinements in Internet-based services mean that the Web has scaled new heights in terms of innovative tools and services, such as providing a collaborative, information sharing and user-centred environment. This facilitates seamless browsing, searching, emailing, and chatting (Singh & Singh, 2013)[1].

- **Dynamic Web**

The Internet is not restricted to static web pages only. New and emerging technologies have made it an expeditious mode of sharing and communication. Application Programming Interface, Social Networking, AJAX, M-Paper Technology, R/W Web have brought sea changes in the layout and usability of Websites. Social Networking Sites have

become the most preferred via media for sharing the information. Web 2.0 refers to the social software tools such as educational blogging, broadcasting, photo and video sharing, collaborative authority etc. The term Web 2.0, initially coined by O'Reilly in 2005, refers to a broader term embracing several new Web tools and technologies and its foundation upholds a number of Web based services. Web2.0 refers to the development of online services that encourage collaboration, communication and information sharing. It represents a shift from the passive experience of static –read only web pages to the participatory experience of dynamic and interactive web pages. In other words, Web 2.0 reflects changes in how we use the web rather than describing any technical or structural change (Jotwani, 2010)[2]. Some of the tools of Web 2.0 which enhance the innovations and applicability include:

- **Blogs**

A Web Log is the broad term for the online variant of a personal diary. It allows people to communicate with each other over the Internet at any time. Writing a Blog is an easy job which does not require any training. People who want to share their views and experiences switch over to the Blogging Bandwagon, making it a powerful Social Networking Tool. The word Blog gives the impression that the account is textual in nature, probably due to the association with the diary. But on the Net, it is commonplace to see blogs with pictures called Photo Blogs. Video Blogs are a step further from Photo blogs. Audio Blogs incorporate audio clips. Moblogging is the latest trend which involves reading and posting to blogs via a mobile phone.

- **RSS Feed**

RSS is Rich Site Summary which offers a way for the creator of an article to distribute it to a larger audience. It allows us to stay easily informed by retrieving latest contents from the sites. People desirous of being informed need to subscribe to the RSS Feed which can be read using specialised applications called feed readers.

- **Podcasting**

It is the Blog where the post is an audio file that can be listened to. The Internet based technologies have continued to improve and enhance our ability to communicate with each other globally, podcasting is a simple means of distributing audio content over the the Internet, taking advantage of power of RSS. The end user can subscribe to a feed of producer's audio content and receive automatic downloads of a due content as it is made available online.

- **Wiki**

In an age, when libraries must provide the users with up to the minute information, Wikis are a powerful tool for collaboration and communication. Wiki's are at the forefront of ways in which libraries are communicating with staff, patterns and other libraries. It is a piece of server software that allows users to freely create and edit web page content using any web browser. Wiki websites make use of various levels of access and privacy, allowing one person, group of people or everyone to contribute or edit an organisation's website

without needing to know HTML or how to ftp to the website server. This is the versatile and valuable tool for the libraries which operates under a different set of circumstances and with varying financial and technical resources.

2. Web 2.0 For Libraries

Libraries provide manifold channels of Information access to its e-users. The rapid expansion of tools, formats, services and technologies has presented many options to unfold Library Collection. Incorporating Web 2.0 in Libraries is gaining momentum, though cautiously. Web 2.0 has been widely used by the libraries to promote functional services like access to catalogue or for external activities like information or photographs of library events.

- Web 2.0 allows the users to remain the member of the Library family and instils a feeling of being apart.
- On social sites students experiences at the academic institutions can be expressed.
- The powerful tools of Web 2.0 like podcasts, video casts, widgets, tweets and RSS Feeds are complementing the Library OPAC for reaching out to readers anytime and anywhere.
- Web 2.0 has been a very helpful tool for the librarians to launch and share their ideas on various tech-savvy platforms be it a site or public announcements to its users.
- The information regarding the use and users of a specific service can be evaluated through this technique.

Though very useful and powerful, Web 2.0 throws open many challenges for the libraries and the librarians. Convincing the users on the ingenuity of sources encouraging them to use these resources frequently and at the same time making those coming to the library are some tasks which must be tackled head on. Although freely available and less cumbersome to implement, Web 2.0 loses its importance if operational cost, orientation of staff and users, duplication of efforts and time lost in dealing with user complaints and inactive user participation out ways its benefits. These hurdles must be anticipated and dealt with at the nascent stage.

3. Review of Literature

Study was undertaken by Majumdar (2012)[3] which is a Web Survey of library web pages of different universities as well as Institutes of National importance. Sajjad and Shehzad Ahmad (2012)[4] in their Study have surveyed the LIS students of University of Peshawar. They have adjudged the acceptability of the students towards the The Internet and its applications. Seena and Pillai Sudhier (2014)[5] conducted a study on the impact of Web 2.0 technology applications in Kerala University Library and found out that Web 2.0 generated interest amongst the Library Professionals and they were keen in its implementation. O'Dell (2010)[6] in her Study also analysed the acceptance of emerging software amongst librarians. Daher and Lazarevic (2014)[7] also provided insight into the various facets of web based technologies. The study revealed that the use of Web 2.0 is the major determinants

of the instructor's preferences towards different groups of Web 2.0. Madaan (2012)[8] in her paper also putforth the compelling circumstances which enable the Library professionals to adopt the latest technologies. A number of Studies has been conducted on Web 2.0 and other Web based services in various academic Institutes in India. The authors have focused exclusively on Library of Panjab University; Chandigarh which is already disseminating Web based services and is on its way to implementing upcoming technologies overcoming the barriers of time and place.

4. About the Study

With the augmentation of ICT, users are facing the challenges of abundance and proliferation of information resources in myriad formats. Users feel lost in ocean of information where finding pertinent information seems impossible (Vasishta, Kaur & Navjyoti, 2012)[9]. The time is to utilize ICT and web 2.0 technologies for analyzing, assessing, filtering, organizing, and presenting information based on users' requirement. The success of a modern library is increasingly dependent on the most effective utilization and strategic management of new technologies in libraries. Library services need to reach the user desktops with the help of technology. This paper explores how A. C. Joshi Library, Panjab University is leveraging and managing web 2.0 technologies to cope with the challenge of disseminating information by implementing these tools in its operations and services.

- **Panjab University Library**

The Panjab University is one of the large academic researches University of India. The University offers Bachelor's, Master's, and Doctoral degrees in a wide variety of majors, with strong programs across disciplines. The main aim of the Panjab University Library is offer appropriate services and tools to meet the Libraries' diverse user population's needs. The Panjab University Library (PUL) subscribes to about 660 current print periodicals. Library subscribes to many databases which includes, MathSciNet online comprising of current Mathematical publications, IEEE Xplore Digital Library, J-Gate Engineering and Technology, J-Gate Social and Management Sciences, Journal of Visualized Experiments (JoVE) so on. PUL has access to approximately 5000 online full text journals, is available through UGC- INFONET and has access to 225 online full text journals as part of print journals subscription.

5. Web 2.0 Services @ Panjab University Library

- **Web Page:** Web page necessitates to staging the facilities and services library has to offer electronically that allows users to know. In the role of academic libraries, a library Web site presented as a delivery mechanism for databases, electronic texts and journals, and often for the library catalog. Panjab University library has its own webpage within the website of Panjab University. It provides introduction to library as well as staff information of the library. This webpage provides information about library rules and library membership form. This web page provides the links to web OPAC as well as to Digital resources subscribed by the library. Panjab University

Library maintaining its webpage since 2003. The link of library webpage is http://library.puchd.ac.in/

- **Web OPAC:** Web OPAC is a systematic application connected by Uniform Resource Locator (URL) which can be search by user anytime during the day and from anywhere in the world by multiple search options. Panjab University Library provides the facility of Web OPAC to its users. It is possible to search it independently by Author, Keyword, Title or Year under the different material categories like books, Reference books, Thesis, Bound volumes and so on. It supports to search the books on Hindi and Punjabi Languages. Users can also request for the reservation of books as well as one time automatic reissue of book. The link of library web OPAC is http://webopac.puchd.ac.in/
- **E-resources:** Web pages are an excellent place to make users aware about new or important electronic resources. The Panjab University library webpage provides both a informative and functional element with regard to electronic resources. Under the link of Digital Library it informs users about the organized list of databases and electronic resources subscribed by the library. It provides links to E-resources available in Panjab University on LAN and Wi-fi, which are further categorized in resources subscribed by library, UGC-Infonet Consortia resources and resources available in Public Domain.
- **Online reference service:** Panjab University Library provides through e-mail. Library provides CAS by sending the list of new arrival of books to faculty through e-mail. Through e-mail different types of queries were solved by the staff. Overdue books reminders to the users were also sent through e-mails.
- **Digital signage:** Digital signage is the display of information in electronic form, usually on a video display (LCD or plasma) or through a projector aimed at a screen or blank wall. Content can take the form of still images, animation, Web pages, or video. Panjab University Library Started this service for its users in the year 2013. Through this users were informed regarding placement of books, different sections of the library, library rules, new arrivals of the books and information about different countries. Theme display and upcoming displays were also done to inform users.
- **Facebook Page:** Libraries use social networking services such as Facebook as an alternate channel of communication. Panjab University Library has a user account in Facebook that displays new arrivals of books, information regarding upcoming events, share photographs of events held in library and messages posted by both librarians and users. PUL started facebook page in the year 2014.
- **SMS alert service:** The SMS alert facility can be used as a medium for the communication to provide quick and easy access to library services. Now a days, a mobile phone will be carried by the owner all the time and hence the viability of SMS technology in libraries is permissible. Panjab University Library started this service in the year 2014 to inform users instantly about issues and returning of books in their concerned membership accounts.

6. Futuristic Trends Ahead

Change is the only stable variable in all human practices. Technology has touched the unimagined dimensions in a very short span of time and will continue to develop. New innovations are taking place at every juncture. Technology is playing a vital role in generation and dissemination of information. The aim is to 'Think Ahead' and lead the future trend of providing access to library material irrespective of time and location constraints. A roadmap for adopting few of the future trends is given below:

- **Library Blog:** PUL is in planning to develop a library blog, which can be used to disseminate information about new materials acquired, new services started or new database added to the collection of the library. Such blog would act as a brilliant tool to make a tech savvy user aware of the mission and services of the library in digital environment.
- **Online Information Literacy Instructions:** New generation users are privileged with liberated access of information, so some vital skills and competencies are required for effective use of information. Information competence is the fusing or the integration of library literacy, computer literacy, media literacy, technological literacy, ethics, critical thinking, and communication skills (Shapiro and Huges, 1996)[10]. Due to complexities involved availability of information in various formats through diverse interfaces via different software, there is an immense need of formal training in the form of instructions for assessing e-journals from sites of various publishers, guidance in locating documents using OPAC, searching online and CD-ROM databases using Boolean truncation and other search techniques. Library professionals need to develop online Information Literacy Modules for the benefit of users.
- **Providing RSS feeds on website:** Library must develop internal portal environments to allow individuals to view information and e-resources that are specific to their own personal needs. It would also allow customizing their view of information, and in some instances selecting the content most useful or interesting to them. Library users should be made aware of provisions of RSS feeds.
- **E-brochure:** Electronic brochures are multimedia replacement for direct mail paper as these consist of a highly interactive program using still images, graphics, animation, sound, text and data. Motion pictures, video is seldom used due to storage and performance limitations. For Punjab University Library, e-brochures would play a very positive role in online communications.
- **Web-Casting**: A web-cast is a live media file distributed over the Internet using **streaming** media technology. Essentially, web casting is broadcasting over the Internet. More generally, it is referred to as "transmission of linear audio or video content over the Internet". With the help of a web cast, Panjab University Library may use streaming media technology to take a single content source and distribute it to many simultaneous listeners/viewers.
- **Virtual Exhibitions**: Virtual exhibitions are the innovative ways to publicize the services of the library. It is sort of networked exhibition portal for connecting to the

users by providing online events like seminars and conferences. Virtual exhibitions use 3D graphics, audio and video to replicate the feeling of attending the physical events without time and place restrictions. Panjab University Library might create these exhibition-like experiences which would act as an extension of a physical exhibition.

- **Virtual Library Tours:** Library tour is very essential to make the users familiar not only with the physical layout of the building but also associate them with the information resources and services available in the library. A web-based interactive, pictorial and self-guided tour of the library can provide effective orientation in the institution where there are a large number of users making it impossible to make live tours to the library. Such a virtual tour, if developed for Panjab University Library would help users to explore the whole library while sitting at their desks.
- **Social OPAC (SOPAC):** Due to the hold of social networking sites on the mindsets of users, SOPAC is emerging as a one of the user friendly feature of library services. A library catalog that allows tagging, rating and reviewing of materials and shared lists is being called a social OPAC, or SOPAC. It adds value to existing record data, ability to save searches and has ability to customize the user experience. It would be beneficial for users if SOPAC be added to the library services of Panjab University Library.

7. Conclusion

In today's world, if a library wants to vigorously market its information products & services and wishes to be omnipresent, then their appearance on the Internet is must. A significant paradigm is seen in the aspects of providing library services with the help of ICT and various web 2.0 tools. The web 2.0 environment has made libraries more transparent, user-centred to help the users confront the challenges of new millennium. The need of the hour is that the libraries must do everything possible to understand their users who are not only tech-savvy but also very demanding. To deliver the expected goals very possible mechanism in form of web 2.0 technologies must be adopted with an aim to make the information to reach their users across the globe.

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An Overview of Cloud Computing Services in Libraries

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Abstract: Cloud computing is a new technology which many organizations are adopting. "Cloud Computing "refers to the use of computing resources on the internet. Libraries are not left behind to take an advantage of this new technology. The paper discusses usage of cloud services for libraries, as cloud computing has emerged as one of the most popular virtual technology for libraries to deliver services in an effective manner. The technology is offering great advantages for libraries to connect their services not only promptly but also in new formats. Libraries are using cloud computing services for enhancing its services by resource sharing on the cloud, building digital libraries corporate cataloguing, acquisition, storage and sharing on virtual environment on the cloud. The paper also bring forth some forefront considerations about ownership and control of data, data security and privacy of library's huge data that is being maintained by the cloud service.

Keywords: cloud computing, IaaS, PaaS SaaS, digital libraries, cloud services , security

1. Introduction

Cloud computing is providing facility to share IT resources such as applications, processes, storage of databases with flexibility that includes scalability according to user's demand, resources which are available on the cloud are accessible through the internet. And the biggest advantage is that it allows users of the cloud to pay for the services when needed and used along with cost and storage benefits.

2. Cloud Based solutions for libraries

Discovery services: The main focus of libraries moving into the cloud is to disclose their vast collections on the web. OCLC WorldCat is the first example which is forty years old. In the library environment OCLC has functioned as cloud computing vendor providing cataloguing tools over the internet which allow partner institutions to draw and contribute to the data store. Fox (2009).OCLC offers library services like circulation, cataloguing, acquisition and other related services on cloud platform through web share management system. It is offering collaborative platform in which each library can share their resources, ideas, services and problems. Libraries are using software as a service (SaaS) and some popular examples of discovery tool include ExLibris Primo, EBSCO EBSCO Discovery service (EBSCO n.d.) and aggregated subject gateways or e-resource management suite like serials solutions Summon (serial solutions resources n.d.) Nowadays these cloud based services are saving libraries from investing in hardware and incurring huge maintenance costs by providing software updates, backup and so on.

Google Drive has been used by libraries for information Literacy assessment because of its collaborative nature, since it helps to share findings with faculty to address weak areas of information Literacy. (Hsieh & Dawson, 2010). Google Drive helps to create or import spreadsheets from variety of formats. It can be used to share instruction statistics or schedule an event, even allowing students to sign up for library tours.

DropBox (www.dropBox.com/) is one of the most widely used cloud computing services. Through this service users access and store photos , documents, videos making it easier to share it electronically with anyone. Dropbox as an application is available for iPhone, iPad, Kindle Fire, Android & BlackBerry. These services virtually share the data and provide access anytime and anywhere without ant need of special hardware or software. Oher services like LOCKSS(Lots of copies keeps stuff safe) , CLOCKSS (Controlled LOCKSS) are used by libraries for the purpose of digital preservation.

Google Forms another online survey creation tool can be used for gathering library instruction related feedback, including instruction education other popular web based survey software are Zoomerang(www.zoomerang.com/) polldaddy (http://polldaddy.com/) and survey monkey (www.survey monkey.com/) are the web-based survey software that turns everyone into a researcher.

SaaS software as a services refers to applications via hosting service, without access to underlying software. An example is subscription to electronic journal management system such as Thomas Reuter's scholar One. Two softwares widely used by libraries to build dilital libraries are Dspace and Fedora Common .DuraCloud provides software solutions for building digital repositories with standard interfaces and open source codes for both the softwares but Dspace an open source software platform which supports more than 1000 digital libraries all around the world is most widely used. By creating a free account in delicious.com, it is possible to put together the resources like Facebook, useful websites, web-quests, library links. Even a library catalogue can be included as a tag in delicious.com. Acc. to Macgregor and Mcculloch (2006) tagging can be effective method for organizing resources to support faculty in teaching and in the process it can replace subject guides. Another example of IaaS service is **Amazon's Elastic Computing Cloud (EC2) service,** which offers IT infrastructure with differently sized servers using a choice of operating system, and it provides service to use server's storage space to host library's website and other computing needs like maintaining backup of integrated library management system and digital repository. It is a service for hosting websites outside the library's servers and giving access to multiple editors from varied locations. Platform as a service (PaaS) refers to a platform supporting a specific application where particular organization hosts a platform on which pre-confined tools run offering space and various computing resources. the web platform as a service (PaaS) as in the use of **GoogleApp Engine.**

For searching scholarly content **Knimbus** is a collaborative platform for researchers which facilitates access to million of journal articles, patents and e-books. For users tagging, sharing and discussion of contents with their peers. Recently INFLIBNET has added Knimbus as a cloud service into its UGC-INFONET Digital Library Consortium in order to search and retrieve scholarly content.

3. Challenges with Cloud service

Where uncontrolled or unauthorized enterprise system exist, so do the potential risks of information security problems, data integrity issues and compromises to the integrity of business processes. (Livingstone, 2011)

- Lesser control over data once it is handed over to cloud services, it could lead to providers mining the data to sell to other companies. Another concern is malware that could infect both client and server machines in cloud services.
- To avoid loss of knowledge assets in the cloud, it demands the institutionalization of standardized protocols for storage and access.
- As we all know cloud computing is not full proof and the way one has to face problems with all forms of outsourcing, cloud raises security concerns related to data that is provided to cloud service providers.
- Switching to cloud also requires that the amount saved by the library by opting for cloud based services should in turn be utilised in improving internet connectivity and bandwidth along with expansion in server security and backup services.
- An in-depth analysis should be done by the library before deciding payment methods for hiring cloud services, whether to opt for "Pay-as-you-go" or ""subscription" method., it will depend by taking into account the number of users in the library.
- Risks and cost associated with cloud implementation should be clearly understood by the library while negotiating with a vendor for a contract term, understanding own institution's requirements and its users are important.
- Standards for verifying the integrity of files obtained in the cloud should be used for this PGP (pretty good privacy) is a software that uses asymmetric keys to encrypt, decrypt and digitally sign message or files. OpenPGP is a non-proprietary protocol that defines standard formats for implementing the encryption and signing technology.
- Therefore it is time for the libraries think seriously before aggregating services with cloud based technologies and provide reliable and rapidservices to their users.

4. Conclusion

The shift of library core applications to cloud-based services will reduce or eliminate cost of managing server hardware and operating system underlying different applications. Although libraries are switching to cloud based services for building digital libraries, information literacy programmes , social networking and information communication with manifold flexibilities but certain issues and concerns related to security, privacy and service level agreements need to be solved .Cloud computing tools can also enhance engagement among students educators and researchers in a cost-effective manner.

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Application of Technology in to Library Services in changing Scenario: *Issues and Challenges*

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Abstract: The difficulties and ramifications of technological change are many. The technology innovation and worldwide expansion in enterprises, especially in information technology has gradually triggered a rapid growth of emerging and cutting technologies in the digital age. The rise and use of social media tools, the ubiquitous nature of global search using Google, search engines make access to global news, business and decision influencing content easily available. The rise application of technology systems, understanding of the changes brought by technologies help us understand these trends and develop strategies to use to advance our role within our organizations.

Keywords: Technology, ICT, Emerging technology, Technological factors, Issues

1. Introduction

The technological innovation system is a concept developed within the scientific field of innovation studies which serves to explain the nature and rate of technological change. Rapid advances in ICT and its applications are dramatically affecting economic and social activities, as well as the acquisition, dissemination and use of knowledge. The use of ICT is reducing transaction costs and lowering the barriers of time and space, allowing the mass production of customized goods and services. With ICT use becoming all-pervasive and its impacts transformational, it has become an essential backbone of the knowledge society. The information infrastructure in a country consists of telecommunication networks and strategic information systems. Recent advances in information technology have provided new ways of dealing with information in academic libraries. Such systems may be designed by providing information seekers with alternative interface mechanisms for displaying and manipulating multiple levels of representation for information objects.

2. Acquiring New Technology and Capabilities

Significant amounts of our time and energy are devoted to creating, managing, and avoiding information. Computers and telecommunications technology have extended our regard for information and are driving changes in how we learn, work, and play. One result of these developments is that skills and strategies for storing and retrieving information have become more essential and more pervasive in our culture. Information seeker to choose what strategy to apply according to their immediate needs. Such systems may be designed by providing information seekers with alternative interface mechanisms for

displaying and manipulating multiple levels of representation for information objects The system components of a Technological Innovation System are called structures. These represent the static aspect of the system, as they are relatively stable over time. Three basic categories are distinguished:

- **Actors:** Actors involve organizations contributing to a technology, as a developer or adopter, or indirectly as a regulator, financier, etc. It is the actors of a Technological Innovation System that, through choices and actions, actually generate, diffuse and utilize technologies. The potential variety of relevant actors is enormous, ranging from private actors to public actors, and from technology developers to technology adopters. The development of a Technological Innovation System will depend on the interrelations between all these actors.
- **Institutions:** Institutional structures are at the core of the innovation system concept It is common to consider institutions as 'the rules of the game in a society, or, more formally, the humanly devised constraints that shape human interaction'. A distinction can be made between formal institutions and informal institutions, with formal institutions being the rules that are codified and enforced by some authority, and informal institutions being more tacit and organically shaped by the collective interaction of actors. Informal institutions can be normative or cognitive. The normative rules are social norms and values with moral significance, whereas cognitive rules can be regarded as collective mind frames, or social paradigms. Examples of formal institutions are government laws and policy decisions; firm directives or contracts also belong to this category. An example of a normative rule is the responsibility felt by a company to prevent or clean up waste. Examples of cognitive rules are search heuristics or problem-solving routines. They also involve dominant visions and expectations held by the actors.
- **Technological factors:** Technological structures consist of artifacts and the technological infrastructures in which they are integrated. They also involve the techno-economic workings of such artifacts, including costs, safety, reliability. These features are crucial for understanding the feedback mechanisms between technological change and institutional change. For example, if R&D subsidy schemes supporting technology development should result in improvements with regard to the safety and reliability of applications, this would pave the way for more elaborate support schemes, including practical demonstrations. These may, in turn, benefit technological improvements even more.

2. The Role of the World Wide Web in Changing Culture

The World Wide Web and electronic mail before it have changed the way that academics communicate, access, and disseminate information. Electronic mail started out primarily in the scientific community as a means to keep scientists in touch with each other. Humanists were much slower to make use of e-mail (they are not collaborators), and have been equally slow to use the WWW for their research and teaching (information is often not old

enough or not available online). Humanities materials have not easily lent themselves to electronic dissemination. Humanists like to see the original document or artifact, the original artwork or musical score, and have not trusted electronic media to do an adequate job of making information available. As electronic information access technologies improve it is possible that humanists will slowly become more willing to learn these technologies and disseminate their work in digital formats. Until that time there will remain a large informational and cultural gap between scientists and humanists.

3. Five Things Are Changing in Emerging Technologies

The new paradigm thinking in science reaffirms the constant change occurring in our view of nature and our understanding of the process of the acquisition of knowledge in man. The ways and the speed with which the components of the environment change and are interrelated are tremendous. Considered at the national and global levels, groups and individuals will communicated directly and do business with each other in a decentralized and wired society, transcending national borders. These changes will be reflected in the anatomy of organization. They are:

- Books
- Behavior
- Search
- Access
- Mobile

4. Changes in the technological Infrastructure

As computers become more affordable and more and more users their own, what impact does this have on library use? What impact do wireless access and the growing number of student-owned laptops have on library use? Students clearly prefer desktop delivery of information and if they have a personal networked computer, in their eyes they may have no need to come to the library - hence the decline in gate counts and reduced circulation of traditional library materials.

- **Environmental Factors:** In the absence of environmental contextual data, traditional measures are difficult to interpret and explanations of why library use is changing are destined to be speculative. The larger context surrounding libraries must be examined to identify environmental factors that may be influencing the changes occurring in libraries and confounding interpretation of library trend data.
- **Mobile:** New advances in hardware and software are making mobile "smart phones" indispensible tools. Just as cell phones have leapfrogged fixed line technology in the telecommunications industry, it is likely that mobile devices with internet access and computing capabilities will soon overtake personal computers as the information appliance of choice in the classroom.

- **Ubiquitous learning:** With the emergence of increasingly robust connectivity infrastructure and cheaper computers, school systems around the world are developing the ability to provide learning opportunities to students "anytime, anywhere". This trend requires a rethinking of the traditional 40 minute lesson. In addition to hardware and Internet access, it requires the availability of virtual mentors or teachers, and/or opportunities for peer to peer and self-paced, deeper learning.
- **Behavior: Theories of Information Seeking and Use:** An excellent example of academic cultural differences is in the field of information seeking and use. Information-seeking research looks at how individuals go about finding the materials that they need in order to satisfy informational needs both professional and recreational. In the ethnographic experience of an unfamiliar worship service, an individual might gather clues about standing-sitting-kneeling through watching others, through listening for directions from an authority, or through written materials available somewhere in the place of worship. In the university, academics usually follow the patterns established by their peers, relying upon mentors in their fields to guide them in graduate school and early professional development. Differences of style come from both the individual—his or her own personal traits, predispositions, and biases, and from the training that he or she has received in a particular discipline. Thus, culture, including the ways individuals seek information, is passed on through apprenticeship and practice.
- **Search:** Many users of online and other automated information systems want to take advantage of the speed and power of automated retrieval, while still controlling and directing the steps of the search themselves. They do not want the system to take over and carry out the search entirely for them. Yet the objective of much of current theory and experimentation in information retrieval systems and interfaces is to design systems in which the user has either no or only reactive involvement with the search process. It is argued here that the advanced information retrieval research community is missing an opportunity to design systems that are in better harmony with the actual preferences of many users—sophisticated systems that provide an optimal combination of searcher control and system retrieval power. In today's information society, the internet and the WWW have become the most important in which to access and located information. If you need information, many people will recommend you to Google, it. If you search for information regarding 'information society' on the web, for example, a list of 11, 50,000 related search results will be generated by the Google web search engine within 0.29 seconds. If you try the same search on yahoo.com, list of 7, 10.000 search results will be available within 0.26 seconds, and if your apply the same search on MSN.com, a list of 2, 40,000 search results will be available. Moreover I believe these lists of search results will become longer and longer as more and more emerging technologies are developed in the coming years.
- **Information Search in an Electronic Environment:** Cognitive research into information need focuses both on recognition of need by individuals and on how differences in individual style can affect patterns of information need, seeking, and

use. Taylor suggests, nonetheless, that there are four more or less distinct steps in the cognitive process concerned with information need and seeking that are common to most information-gathering situations. At first, need for information is at a visceral, almost subconscious level. Individuals move from a visceral sense to a conscious need for information in the second step. Third, information seekers formalize their need for information, verbalizing the specific sorts of information products that would ideally answer their need. Finally, the individual seeking information finds himself in a state of compromise between the ideal information product and actual information products available to him. This compromise can be necessitated because of informational constraints (the information does not exist), because of the nature of the information need (non perfect information is sufficient to answer the need), or because of time constraints (the information exists but the searcher is unwilling to expend more resources—time and/or money—in locating it). In this last case the penalty for non-use of potential information is not great enough to warrant further expenditure of resources. This compromise position, otherwise termed "satisfying" pits potential availability against potential accessibility and the transaction costs necessary to create access. A humanist might stop collecting resources when there are enough to satisfy a particular information need, even if there might be more diaries, or military records available if one only searched long or hard enough. Information-seeking and use patterns vary between the sciences and the humanities. It is worth noting for the discussion that follows that the bulk of research done into these differences was conducted pre World Wide Web. This paper ends with a discussion of how the web might change future patterns of cross-disciplinary communication.

5. Library Information Provider in the Developing Countries

Librarians in these countries must be involved in the collection of baseline data, their processing and eventual storage as authentic information about their countries. In research institutions, librarians should not wait to receive the end product of the researchers in form of books, periodicals or conference proceedings. They should be part of the research process. They must adopt an integrated approach to identifying, evaluating, retrieving storing and sharing institutional and national knowledge assets in the forms of intellectual databases, policies, documents and statistical databases.

Developing countries information resources are predominantly in gray form. Conventional publishers do not publish them formally. The first problem therefore is becoming aware of their existence; the second is on how to collect them. National information resource husbandry is a major role for developing countries' librarians. An information resource that is not known to exist cannot in any way become part of a nation's knowledge heritage. Librarians in critical subject areas and institutions such as health, agriculture, the judiciary, education, science and technology owe their organizations the professional duty of ensuring a comprehensive documentation of all information resources emanating from their institutions.

6. Trends and Issues in Information in an Electronic Environment

The issues and trends in information in an electronic environment can be grouped into technological, economic, human (user and staff), socio-political, organizational, and legal as well as relating to the structure of the information environment itself.

- **Socio-political and Legal Issues:** There are a number of socio-political issues that affect information- seeking behavior. Some governments limit Web access to specific groups within the population. Other governments filter out unwanted sites because of ethical issues. Individuals have personal preferences about the contents and interfaces of sites. Some use only one search engine. Because of the ease of downloading and copying, Intellectual Property Rights of authors are sometimes disregarded. The laws of copyright and the Fair Use Principle apply not only to print resources but also to digital resources.

- **Library Service and Organizational Changes:** Library services have been greatly affected by the shift from print to digital resources. The acquisitions section had to develop new policies about acquiring materials. The reference service had to purchase and make available electronic databases of abstracts and indexes as well as full- text journals, encyclopedias and other reference materials. Even the delivery of information to the user has changed. Digital information can be sent directly to the user's desktop. Librarians have to learn how to use ICT to be able to provide adequate service. Digitization of information materials and their indexes is also being done in-house.

- **Controlled vs. Natural language Indexing:** Controlled indexing makes use of descriptors that have been assigned by human indexers. These descriptors are listed in a thesaurus or in a subject headings list. In producing the concept map for the document, the thesaurus and the subject headings list are consulted for possible descriptors. The controlled vocabulary is advantageous to use because all documents fall into a predefined set of descriptors. Synonyms can be replaced by just one term that will always be used to describe a particular concept. Retrieval is fast and the index is not cluttered with unwanted terms. It is disadvantageous in that sometimes new terms are already in use but the thesaurus or subject headings list have not been updated. It is also expensive to index documents using a list of controlled terms and it can be difficult in practice to do this challenging task accurately and consistently from document to document, and indexer to indexer. In natural language indexing, keywords found in the document are used to describe the document. This kind of indexing can be done by a computer. It is fast but it produces a lot of unwanted, meaningless terms. It is advantageous because it uses words naturally occurring in the document and currently in use. It also provides many more search terms than a small number of controlled indexing terms.

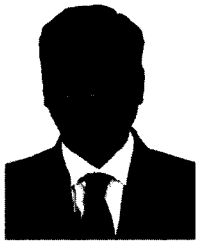
7. Conclusion

Change is inevitable in every field and library is not exception from other. In library new techniques was apprehensive in the beginning of the 20th century. Now we are living the age of Information explosion. In recent years the importance of librarian has been considerably strengthened both at national and international level. Today, Librarian is functioning in a dynamic and changing complex environment. The challenges for the Librarian are to continuously upgrade their knowledge and are to capture the new services time to time. In modern era the Librarian have to change them as the information profession is being changed. It is, therefore, necessary to develop professional skills as well as basic IT operating skills. IT skills are obtained mainly through prolonged experience in use. Therefore, it is part of the social science institutions and associations make a strategy that the social science educational system be so arranged that researchers and students become accustomed to regarding Internet as a tool to be used in the learning process.

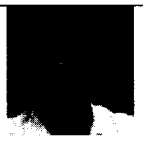
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Applications of Cloud Computing Libraries and Information Centers

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Abstract: Information and communication technology is used widely in libraries and information centers due to its benefits and new ways of approach it is up-coming of in the area of LIC. The libraries have been automated, networked and now moving towards paperless and virtual libraries. To meet the challenges in the profession librarians also apply different platforms in LIC's for attaining economy in information and haw cloud computing. The use of cloud computing in libraries and how cloud computing actually works.

Keywords: Cloud computing, Library and information center

1. Introduction

Libraries and Information Centers are facing many challenges in the profession due to applications of ICT. New concepts are being added to make practices easy in the society, and libraries and information centers also accepting many new technologies in the profession as they suit the users instantly the libraries have become automated. The emergence of e-resources e-publication, digital libraries, internet usage, Web tools applications for libraries, consortium practices lead to the further developments in LIS profession. The latest technology trend in LIC is use of cloud computing for various purposes and for achieving economy in library function.

2. Cloud computing

Cloud computing is the technology of computing, which is based on internet media. Using internet technology many servers share resources in terms of offering common platform for use of software applications. Different resources including information network computer and devices which are attached on request with the control of electricity grid. It can also be called as service architecture complete cloud computing system is service oriented and costumer focused. The main concept behind cloud computing is based on the cloud that is specifically designed for the processing each related device located in cloud of network. Cloud computing is invisible to the user. The users of the service provider using clouds needs to pay for their resources and rendered used in cloud computing environment.

Finally cloud computing means-

- Customers do not own network resources like hardware software systems etc.
- Network resources are provided through remote data centers on a commercial and subscription bases.
- Network resources are delivered as service over the web.

It has many advantages and recently proved as a resource sharing faculty in the information society.

3. Cloud Networking

Cloud networking is one of the networking based technology that is responsible for facilitating the computer networks with the required resources. Cloud networking provides the resource when computer networks ask for the resource. They work exactly in the same way as other service providers company by the cloud networking to its users is in the simplest form so that its reader can understand them easily. The service providers facilitating its users with the abstract internet services is known as cloud.

4. Advantages of cloud computing

- Cloud computing enables user to frequently use the technological resource at inexpensive price.
- it is accessible and reliable interface for its user API technology make it more interesting for the users to interact with the human being.
- These computing techniques greatly reduce the total cost and capital expenses that come in arranging the infrastructure. Integrated resources are valuable at almost no cost to the third party users.
- Cloud computing is completely geographically independent. It is users can access the web browsers anywhere in the world at any time.
- Multi and large application pool is available for users.
- Reliability improved design versions of many redundant website have efficiently increase the performance and suitability of cloud computing more useful.
- Security: Security is at one level above as compared to the other network because of the centralization of data and increased security feature of every individual component.
- Cloud computing systems are flexible and easy to maintain because components can be added of deleted from the infrastructure.

4.1. Characteristics of cloud computing

Genes (2008) while defining cloud computing and computing and cloud services pointed out some characteristics of cloud computing which states, agility, application program interface, cost, device, reliability, scalability, performance, security, maintenance and sustainability etc. These characteristics are useful for the service provision through cloud.

5. Cloud computing in Libraries and information centers

Cloud computing offers many interesting possibilities for libraries that may help to reduce technology costs and increase capacity rehabilitee, and performance for some type of automation activities. Cloud computing has made strong inroads in to other commercial

sectors and is now beginning to find more applications in LIC. The cloud computing pushes hardware to more abstract levels. Most of us are acquainted with fast computing power being delivered from systems that we can see and touch.

6. Role of cloud computing in libraries

Cloud computing is a completely new ICT based technology and is known as 3rd Revolution after PC and internet. Cloud computing is an enhancement of distributed databases. Computing, parallel computing, grid computing and distributed databases. Among these, grid and utility computing are known as a predecessor of cloud computing. Cloud computing has large potential for libraries. Libraries may put more and more content in to the cloud. Using cloud computing user would be able to browse a physical shelf of books. CDs of DVDs or choose to take out an item or scan a bar code in to his mobile device. All historical and rare documents would be scanned into a comprehensive, easily searchable database and would be accessible to any researcher. Many libraries already have online catalogue and share bibliographic data with OCLC. More frequent online catalogues are linked to consortium that share resources.

7. Advantages of cloud computing in libraries

Cost saving: In an era of shrinking budgets, it gets harder with each passing year to justify the purchase and maintenance of servers that aren't in use almost all the time. Cloud computing offers price saving due to economics of scale and the fact that you are only paying for the resources you actually use.

Flexibility and innovation: Libraries don't have to decide between devoting their limited server resources to POAC overflow traffic and a new mobile web application that one of your colleagues wants to develop. If they are both hosted in cloud the resources devoted to each will shrink and expand as traffic rises and drops.

Broad, General IT Skills: Cloud computing increases the pressure on IT professional to become well rounded employees with highly -developed managerial skills. Knowing how the configure and network a server isn't enough. Systems librarians have to manage complex projects and evaluate competing vendors on a variety of criteria. Holding vendors accountable is especially important a significant when they manage a significant chunk of your online data and IT infrastructure.

8. Conclusion

Cloud computing is the next big wave in computing. It stands to change information Technology services for many environments. IT has many benefits one of which is betterment of hardware management, since all the computers are the same and run the same hardware. It also provides better and easier management of data security. Since all the data is located on a central server. Today cloud computing is the bingeing of **network based computing** over internet in force. It is the technology of the decade. There are innumerable benefits of cloud computing in library and other organization. Libraries in the future may have the objectives to transfer manual effort in to valuable activity. For this

purpose, use of web as primary technology would be a better option and professionals should be trained for all.

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Resource Sharing through Cloud Computing in the Libraries

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Abstract: In this digital age the services are also being given electronically with the help of the software, hardware, network and electronic or digital resources. The management of shared services of huge data, software, hardware, and network is also a challenging task. Therefore, the concept of cloud computing come into existence for the management and use of the resources offered quickly and easily on internet. The concept of cloud computing can be helpful in the efforts of libraries by providing their infrastructure based services to the member libraries. The concept of resource sharing is already exist in the libraries and for redefining and refreshing this service according to the modern concept is very much essential. In this term cloud provides opportunity to fulfil the objectives of resource sharing in true sense.

Keywords: Resource Sharing, Cloud computing, library co operation, virtualization, programming techniques.

1. Introduction

Resource sharing may be defined as mode of operation, functions which are shared in common by a number of participants having the same objective or goal in mind [1]. In this modern era, the resource sharing term may be used for sharing of the services of software, hardware, network and electronic or digital resources, etc. among the participants or member institutions or organizations. This concept only can be possible by adopting the concept of cloud computing.

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[2].

Cloud Computing can be divided into various divisions on the basis of the services being offered by the various companies. The divisions are as follows:

- IaaS or infrastructure as a service
- PaaS or platform as a service
- SaaS or software as a service.
- STaaS or Storage as a service
- SECaaS or Security as a service
- DaaS or Data as a service
- TEaaS or Test environment as a service
- Desktop virtualization
- APIaaS API as a service
- BaaS or Backend as a service

2. Resource sharing

Resource sharing term is commonly used in the Library and Information Science field which is essential to adopt by the libraries for providing better and expanded services to their users in the limited resources of the institutions. The objective of the resource sharing is as follows:

- Assist member libraries in selection of materials.
- Assist in acquiring, and processing of library materials.
- Cooperative collection development
- Cooperative preservation and sharing of materials
- Achieving economies in the use of resources [3].

The objectives of the resource sharing can be fulfilled by adopting the concept of cloud computing. Cloud gives opportunity to collaborate the member libraries with each other in terms of pooling the data for cooperative collection building, cooperative preservation or digitization and cooperative sharing of e-resources, etc.

3. Services of Cloud Computing

The Cloud Service Providers basically provides their services according to the following three fundamental models:

3.1. IaaS or Infrastructure as a service

In this service, provider offer the services of virtual machines and file based storage, firewalls, load balancers, IP addresses, virtual local area networks (VLANs), and software bundles. The cost of this service will be based on the amount of resources allocated and consumed. The Storage as a service will also come under the IaaS which manages all the storage services in cloud computing. The providers have to take care of security issues also such as data integrity, confidentiality, reliability, etc. The example of the IaaS are Amazon

Cloud Formation and underlying services such as Amason EC2, Rackspace Cloud, Terremark, Windows Azure Virtual machines, Google Compute Engine and Joyent.

3.2. PaaS or Platform as a service

In this service model providers deliver the operating system, programming language execution environment, database, and web server. The Application developers can develop and run their software solutions on cloud platform without the cost and complexity of buying and managing the hardware and software layers. The examples of PaaS are Amazon Elastic Beanstalk, Cloud Foundry, Heroku, Force.com, Engine Yard, Mendix, Google App Engine, Windows Azure Compute and OrangeScape.

3.3. SaaS or Software as a service

Cloud providers install and operate application software in the cloud and cloud users access the software from cloud clients. The cloud users do not manage the cloud infrastructure and platform on which the application is running. Here, users need not to install and run the application on the cloud users' own computers and it simplify the process of maintenance and support which makes a cloud application different from other applications. This service can also accommodate more than one cloud user organizations. The examples of SaaS include Google Apps, Microsoft Office 365, and Onlive [4].

4. Resource sharing and cloud computing

The libraries can make collaborative efforts in order to reduce the risk of budget crisis or improper availability of resources in terms of computers, networks, data, and softwares by adopting the technology of cloud computing. The cloud computing service providers can assist in the efforts of libraries by providing their infrastructure based services to the member libraries. The cloud computing services are of three types: Public cloud, Private cloud, and Hybrid cloud. The public clouds services are more prominent in order to imply the concept of resource sharing because in this service, the third party is owning and operating the clouds and infrastructure costs are spread among users. It provides an attractive low-cost **"Pay-as-you-go"** model. Here all customers share the same infrastructure pool and they work on the basis of the limited configuration, security protections because these things are managed by the cloud service providers.

5. Role of Cloud computing services in Resource Sharing

The benefits of cloud computing technology help in resource sharing in a true manner which can be understood in the following points.

- Any library may share their computing resources, among all the member libraries with the help of cloud service providers.
- The services of the cloud computing can be purchased jointly and used simultaneously in the cloud technology.

- Infrastructure as a service model provides the services of data storage also and thus sharing of data for creating union catalogues and preparing the list of current issues or publications, etc. is possible in this virtual environment.
- Cooperative digitization and preservation is also possible in this technology.
- Cloud applications can be multi tenant for accommodating a large number of cloud users.
- The cloud computing services are divided in three layers where sharing start with a single company via a private cloud service which further include the trusted number of companies and then move to the unlimited and anonymous public crowd.
- Memory sharing technology is forthcoming which will be deployed in the cloud.

6. Conclusion

The cloud computing technology is a modern technology and it is different from the traditional computing methods and helps in consuming the information technology resources in an economical manner. It has a feature of increased storage and flexibility also. The libraries may think to adopt this technology after reviewing the limitations of this technology such as data protection, data recovery and availability, management capabilities, regulatory and compliance restrictions.

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Cloud Computing and its Application in Libraries

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Abstract: Cloud computing, an altogether new and emerging internet technology offering innovative model is showing infrastructural IT resources "as a service" on demand by users without bothering for the hassles of storage and management problems. Library acts as a knowledge resource centre in the present era of knowledge society. Cloud computing technology came up as a boon for libraries and is offering various opportunities for libraries to connect their services with cloud. The paper presents an overview of cloud computing and its possible applications that can be combined with library services on the web based environment. This study may be helpful in identifying and generating cloud based services for libraries. It highlights the concept of Cloud computing, Models of Cloud Computing, Types of cloud computing, Applications of Cloud computing in Libraries, Role of cloud computing in libraries.

Keywords: Cloud computing, Cloud computing and libraries, Problems associate with cloud.

1. Introduction

In present scenario, web enabled technologies developed on virtual platforms and generating large opportunities and virtual paths to use their services for the various purposes. Nowadays, cloud computing has emerged as one of the most popular virtual technology for libraries to deliver the services in an effective manner. Cloud computing is a computing paradigm, where a large pool of systems are connected in a private or public networks, to provide dynamically scalable infrastructure for application, data and file storage. Cloud computing contains features of different technologies including utility computing, grid computing, unified computing, web 2.0, service oriented architecture and so on. Cloud computing technology is offering great advantages for libraries to connect their services not only promptly but also in new formats with the flexibilities such as pay as you use model, access any where any time and so on.

2. Risks in using clouds

- **Shared access**: One of the key tenets of public cloud computing is multitenancy, which means that multiple, usually unrelated customers share the same computing resources: CPU, Storage, memory, namespace, and physical building.
- **Vulnerability testing reports:** cloud service providers are hesitant to furnish vulnerability testing reports and often refuse to allow scanning for the fear of compromising their infrastructure.
- **Excessive dependency on internet:** basic drawback of cloud computing is its dependency on the internet for accessing cloud and because of this dependency service interruptions and outages at any time always remains there to count for.

- **Virtual exploits:** Every large cloud provider is a huge user of virtualization. However, it holds every risk posed by physical machines, plus its own unique threats, including exploits that target the virtual server hosts and the guests.
- **Cloud visibility**: Even when the cloud computing risks are known, they're difficult to calculate with real accuracy.
- **Difficulty in developing hybrid system:** It's difficult to create hybrid systems of cloud computing. Big organizations holding sensitive information normally have their inbuilt IT services and don't like to share it offsite despite the benefits of efficiency and performance.
- **Security and integrity of data:** security and integrity of data hosted in-house remain at risk when we put it off site to take the services of cloud computing.
- **Sustainability:** the emerging problem with the use of cloud computing is phenomenal increase in the use of electricity and it is propelling us to the polluting energy sources instead of clean energy abundantly available today.
- **Over-concentration on a single service provider:** "cloud computing is undergoing a seismic shift and is fundamentally shifting the economics of IT, of business and of delivery of governance, however the biggest hindrance that is stopping us from adopting cloud is the fear of losing control," said Bhaskar Pramanik, chairman, National Committee on IT, ITeS & e-commerce, CII and Chairman, Microsoft India Corp. Pvt. Ltd. Innumerable users relying on a single service provider and subsequent overconcentration may cause failure in service resulting in catastrophe.
- **Infrastructural and Logistic concern**: For a healthy and secure growth of cloud computing environment it is imperative for cloud service providers to follow all relevant organizational information technology policies and possess capabilities essential for implementation and managing it. To name with, demand management, relationship management, data security management, application life cycle management risk and compliance management are those capabilities.

3. Purpose of Cloud Computing in Libraries

Cloud computing is the alternative to the traditional computing and in cloud computing, hardware, software and operating systems are rented through Internet. In the cloud computing, the user need not bother about infrastructure, installation, maintenance, security and so on, which are looked after by the cloud service provider. Libraries are witnessing tremendous changes from the very beginning of traditional form. In the beginning, libraries have used floppy disks followed by CD-ROMs (Compact Disk –Read Only Memory) to procure or to provide information service to the users. Now the trend is changed with storage of information on Internet, Digital Library, Library Consortia, Institutional Repositories, etc. Most of the people in near future may not work with their PC-based computers; instead, they will work with web-based online environment, where all the software will be loaded in the domain. Now, the latest stage in which libraries rely is

on cloud computing, which is latest developments and provides more benefits to the libraries. Through the cloud, libraries can be connected for sharing of information, which is easier. In this computing, the library can pay for what it has used. Since the libraries are moving towards paperless society, librarians have to depend on cloud based computing services, where spending huge amount for hardware, software, networks and services can be minimized. It is also predicted that with short period of time, most of the libraries in India have a chance to join in the cloud computing, there by all the collections, services and systems will be available through cloud.

4. Role of Cloud Computing in Libraries

Cloud computing is a completely new ICT based technology and it is known as 3rd revolution after PC and internet. Cloud computing has large potential for libraries. Libraries may put more and more content into the cloud. Many libraries already have online catalogues and share bibliographic data. More frequent online catalogues are linked to consortium that share resources. In the library, storing of the data is the major task, which needs data server, technology, data backup, maintenance and technical manpower to look after all the network related activities. Whereas libraries are service oriented centres have the major role in procuring the information, organizing and disseminating the same to the users in the right time. Data storage could be a main function of e-libraries, particularly those with digital collections storing large digital files can stress local server infrastructures. The files need to be backed up, maintained, and reproduced for patrons. However, with faster retrieval times for requests and local server space it could improve storage solutions for libraries. Cloud computing or IT increased capacity and less need for updates and maintenance, and has gained wider acceptance among librarians. Libraries are very much interested to provide cloud based computing services to the users, but in the real sense, initial budget, identifying the good service companies and technical skill of the library professional in use of advanced technology were the constraints for any library. OCLC is one of the best example for cloud computing. Web share management system, provides collaborative platform, through which the libraries can share their resources, services and problems with the library community through clouds. But, it is reality that some of the services like digital libraries, open sources, library websites, usage of web 2.0, social networks already running in a successful mode. Some of the services like Dura cloud for developing digital libraries/institutional repositories OCLC, Google are also in the cloud computing service.

5. Applications of Cloud Computing in Libraries

Libraries are shifting their services with the attachment of cloud and networking with the facilities to access these services anywhere and anytime. In the libraries, the following possible areas were identified where cloud computing services and applications may be applied:

Building Digital Library/Repositories: Today every library needs a digital library to make their resources, information and services at an efficient level to ensure access via the network. Dura space is having two softwares namely Dspace and Fedora Commons but

Dspace is widely used for building digital libraries/ repositories relative to Fedora Commons. Dura cloud provides complete solutions for developing digital libraries/ repositories with standard interfaces and open source codes for the both software.

Searching Library Data: OCLC is one of the best examples for making use of cloud computing for sharing libraries data for years together. For instance, OCLC World Cat service is one of the popular service for searching library data now is available on the cloud. OCLC is offering various services pertain to circulation, cataloguing, acquisition and other library related services on cloud platform through the web share management system.

Website Hosting: Website hosting is one of the earliest adoptions of cloud computing as many organizations including libraries preferred to host their websites on third party service providers rather than hosting and maintaining their own servers. Google Sites serves as an example of a service for hosting websites outside of the library's servers and allowing for multiple editors to access the site from varied locations.

Searching Scholarly Content: Knimbus is cloud based research platform facilitates to discover and share the scholarly content. Knimbus stands for Knowledge Cloud which is dedicated to knowledge discovery and collaborative space for researchers and scholars to find and access millions of journal articles, patents and ebooks, for the users tagging, sharing and discussing of these contents with their peers Currently, Information and Library Network (INFLIBNET) Centre (http://www. inflibnet.ac.in) has been incorporated Knimbus cloud service into its UGC INFONET Digital Library Consortium in order to search and retrieve scholarly contents attached therein.

File Storage: To access any files on the internet, cloud computing present number of services such as Flicker, Dropbox, Jungle Disk, Google Doc, Sky Drive and so on. These services virtually share the files on the web and provide access to anywhere and anytime without any special software and hardware i.e. LOCKSS (Lots of Copies Keeps Stuff Safe), CLOCKSS (Controlled LOCKSS) and Portico tools are extensively used for digital preservation purpose by libraries and other organizations.

Building Community Power: Cloud computing technology offers great opportunities for libraries to build networks among the library and information science professionals as well as other interested people including information seekers by using social networking tools. The most famous social networking services viz. Twitter and Face book etc. This cooperative effort of libraries will create time saving, efficiency and wider recognition, cooperative intelligence for better decision making and provides the platform for innovation and sharing the intellectual conversations, ideas and knowledge.

6. Types of Cloud Services for Libraries

Infrastructure as service: In this method, the service providers will provide the hardware components to the libraries. Servers with available capacity, communication technology and OS for utilising the services will be provided by the vendor and it is the library's part to enter the service level agreement with the third party for hardware requirements. In this way, the libraries need not worry about the capacity of server, platforms, and communication technologies to be purchased for providing the service. The cost will be

charged by the company what the libraries has used. The librarians' job is just uploading the information over the web from any part of the world, and can access the information. In India, companies such as Infosys, Bangalore, TCS, and Wipro are some of the companies providing infrastructure as service

Platform as service In this method: The service provider will give software and programming languages to the users. For instance, .NET, JAVA, UNIX environment will be provided by the vendor. In libraries, operating system required for library operations will be provided by the vendor is a platform as a service. Some of the service providers are Windows Azure, Google AppEngine.

Software as service: Software as service is another service, which will be extended by the vendor on demand. The librarians need not worry about the installation and maintenance of the software, which is major issues for most of the librarians to use the new software. In this method, the librarians can work with software from any part of the world if they have Internet connection.

Examples of Cloud Libraries:

1. OCLC
2. Library of Congress (LC)
3. Exlibris
4. Polaris
5. Scribd
6. Discovery Service
7. Google Docs / Google Scholar
8. Worldcat
9. Encore

7. Service Providers of Cloud Computing for Libraries

Ex Libris: Ex Libris is a well known cloud service provider based in USA. They are providing cloud solution in the field of library with all the software and hardware support needed to provide services to the users. Ex Libris is built on various standard and contains number of features like compatibility with Unicode font, flexibility, migration of data, customization etc.

Polaris Library systems: Polaris is one of the cloud based library automation system available in the market. The company also provides standard acquisition and processing system. Also, with the Polaris ILS Clint license, the library can integrate various PC and print management systems at not extra cost. The system uses number of well known standards like MARC 21 for bibliographic data, XML, Z39.50 for information retrieval, Unicode etc.

Dura Cloud: Dura cloud is providing cloud solution for digital library services .It is a sister concern of the Dura space which is a collaboration of the Dspace digital library software and Fedora Commons. It is a framework for digital repository. It offers complete solution

for digital library with standard software and hardware solutions. Dora cloud also provides open source code and the code needs to be installed on your machine.

OCLC's Web scale: OCLC has set an example for making use of cloud computing for libraries. Years together OCLC has been functioning as a cloud computing vendor because they provide cataloguing tools over the internet and allow member institutions to draw on their centralized data store.

OSS Labs: OSS labs from India is using Amazon's elastic cloud computing plat form owing to the various capabilities of Amazon such as high durability of data, storage information security based on ISO standards , capability and flexibility

8. Limitations of Cloud Computing in Library services

Any technology will have its own limitations. Below mentioned are some of the limitations in Cloud Computing.

- Security: Library deals with information and has large volume of information. In order to have cloud computing the data has to be uploaded to the cloud machine. Hence, there should be strict service level agreement before entering into the process.
- Reliability: reliability is the big question in cloud computing. Once entered in to cloud computing, if the companies satisfy as per the service agreements, it will be good. Otherwise there is a chance of having discomfort.
- Data backup, intellectual property rights are the other problems which have to be taken care before.

9. Cloud Computing Solutions for the Library:

- The library community can apply the concept of cloud computing to amplify the power of cooperation and to build the significant, unified presence on the web. This approach to computing can help libraries save time and money while simplifying workflows.
- Most library computer systems are built on pre-web technology System distributed across the Net using Pre-Web technology is harder and more costly to integrate
- Library store and maintain much of the same data hundreds and thousands of times.
- With library data scatter across distributed systems the library's Web presence is weakened.
- With libraries running independent systems collaboration between is made difficult and expensive
- Information seekers work in common Web environments and distributed systems make it difficult to get the library into their work flow

- Many systems are only used to 10% of their capacity. Combining systems into a cloud environment reduces the carbon footprints, making libraries greener.

10. Conclusion

Cloud computing builds on decades of research in virtualization, distributed computing, utility computing, more recently networking, and web software services. It implies a service oriented architecture, reduced information technology overhead forth end-user, great flexibility, reduced total cost of ownership, on demand services and many other things. Libraries have the opportunity to improve their services and relevance in today's information society. Cloud computing is one avenue for this move into the future. Cloud computing is increasing profitability by improving resource utilization. Costs are driven down by delivering appropriate resources only for the time those resources are needed. Cloud computing has enabled teams and organizations to streamline lengthy procurement processes. So in the new era, library should improve itself constantly by adopting many new IT technologies.

Although study of Cloud Computing is still in the initial stage now, impacts brought by Cloud Computing are obvious. With the introduction of Cloud Computing to university library, services of libraries will have a new leap in the near future. Services provided by libraries will become more user-centric, more professional and more effective, etc. We all believe that libraries will create more knowledge benefits for our country with the help of Cloud Computing. Cloud environment is a highly developed network environment; it appears to the users of high-quality service and high security. It can bring several benefits for libraries and give them a different future No doubt, libraries are moving towards cloud computing technology in present time and taking advantages of cloud based services especially in building digital libraries, social networking and information communication with manifold flexibilities but some issues related to security, privacy, trustworthiness and legal issues were still not fully resolved. Therefore it is time for libraries to think seriously about cloud based technologies and provide reliable and rapid services to their users.

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Cloud Computing Applications for Future Library Services

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Abstract: Cloud computing technology came up as a boon for libraries and is offering various opportunities for libraries to connect their services with clouds. Cloud computing is a new breed of service offered over the internet, which has completely changed the way one can use the power of computers irrespective of geographic location. This paper attempts to address a short historic view of cloud computing, the advantages for using cloud computing with libraries, cloud computing activities in the libraries in particular in Digital library in particular. The libraries can deploy this technology for providing services to the end users.

Keywords: cloud computing, library services

1. Introduction

This scenario is slowly changing owing to the emergence of new breed of Internet services popularly known as Web 2.0, through which now one can use the power of computers at a completely different location, what it is popularly called as 'in the cloud' or 'cloud computing'. There are many synonyms for cloud computing such as, 'on-demand computing', 'software as a service', 'information utilities', 'the internet as a platform', and others1. Cloud computing refers to use of web for computing needs which could include using software applications, storing data, accessing computing power, or using a platform to build applications. From e-mail, to word processing or photo sharing or video sharing one can use products that live in the cloud, which are secure, backed-up and accessible from any Internet connection. The best live example of this is Gmail, which is increasingly used by organizations and individuals to run their e-mail services. Google Apps being free for educational institutions is widely used for running different applications, especially the email services, which was earlier run using their own computer servers. This has saved cost for the organizations as they pay peruse for applications and services and time for the computer staff, which they can invest on running other services and need not worry about upgrading, backup, compatibility, and maintenance of servers, which is taken care of by Google. 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. Even though there are some 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. (Nagalingam,2014)

2. Cloud Computing Advantages

Some of the advantages are;

- Openness: The 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: The platform can easily accommodate the addition of new services and applications, developed either by service provider or by members of the community.
- Data richness: Library can interact with and expose a wide variety of information about purchased, licensed, and digital content through this platform.
- Collaboration: Libraries can harness the collective power of the community of libraries to innovate and share solutions like SMS, e-mail, chat.
- Knowledge and integration: Deeper knowledge of cloud computing is essential as working of the service is totally dependent on the service provider. Similarly, integration is an issue as it will be difficult to integrate equipment used in data centers to host data with that of peripheral equipments in the organization such as printers, USB drives, etc.
- Network connectivity and bandwidth: Since the cloud computing is offered over the Internet, if the connection goes down due to any reason then the organisations 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(Nagalingam,2014)

3. Characteristics of Cloud Computing

The Characteristics of Cloud computing are self-healing, multi-tenancy, scalable, virtualized, flexible, etc., as state below;

- **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. This is done by vitalizing the servers on the available machine pool and then allotting the servers to multiple users.
- **Scalable:** Cloud computing services are linearly scalable. The system is able to break down the workloads into pieces and service it across the infrastructure.

- **Service-oriented:** Cloud computing systems are all service oriented - i.e. the systems are such that they are created out of other discrete services.
- **Virtualized:** The applications in cloud computing are fully decoupled from the underlying hardware. The cloud computing environment is a fully virtualized environment.
- **Flexible:** Another 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.
- **Cost-effectiveness**, User-friendly Resource Optimization and Infrastructure and service-level agreements (SLAs) (Singh, 2012)

4. Development Models

4.1. **Private Cloud:** This kind of deployment model solely developed and managed by a single organization or a third party regardless whether it is located in premise or off premise. There are several reasons behind the development of private cloud for an organization some key reasons include optimize utilization of existing in-house resources, security concerns including data privacy and trust also make private cloud an option for many firms, data transfer cost from local IT infrastructure to a Public Cloud is still rather considerable organizations always require full control over mission critical activities that reside behind their firewalls and for research and teaching purposes.

4.2. **Community Cloud:** It is a joint venture of several organizations come together to build a cloud infrastructure as well as policies through which cloud services will be rendered. This type of cloud deploy model helpful in developing of economic scalability and democratic equilibrium. In the community cloud model, cloud infrastructure may be hosted by a third party vendor or within one of the organizations in the community.

4.3. **Public Cloud:** Public cloud is meant for general public use and open to all. This kind of deployment model of cloud computing is developed by any cloud computing agency and having own policy, value, and profit, costing, and charging model. Some popular public cloud services include Amazon EC2, S3,Google App Engine and Force.com.

4.4. **Hybrid Cloud:** This type of cloud made from more than one cloud deployment models that may be public, private, community and other models also, bound together with by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting for load-balancing between clouds). The Hybrid cloud model is widely used by institutions and organizations because this model provides more facilities and flexibilities in making optimum use of their resources and accomplishing the tasks.(Kaushik,2013)

5. Cloud Computing Initiatives

The followings are the Cloud Computing initiatives;

5.1. **Amazon Web Services (AWS):** Amazon is perceived as one of the major players in the business, offering a wide range of prominent cloud computing services such as elastic compute cloud (EC2), simple storage service (S3), simple DB and simple queuing service (SQS). It provides a reliable, scalable,low-cost infrastructure platform in the cloud that powers hundreds of thousands of businesses in countries around the world7. Some of the solutions offered by Amazon through cloud computing include application hosting, web hosting, backup and storage, enterprise IT, content delivery, and databases

5.2. **Google Apps:** Google Apps cloud services, a multi-tenant, internet scale 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 technologies8. Google Apps is available free for individuals and organisations (limited up to 10 user accounts), educational institutions and US non-profitable organisations and for a price to businesses and organisations. Google apps offer Gmail, Google Docs, Google Sites, Google video and other services on the cloud. Google Apps helps organisations to move their e-mail services, web services and office applications on the cloud. (Bansode,2012)

5.3. **Microsoft Windows Azure:** Windows Azure is a cloud platform from Microsoft Corporation that empowers organisations to develop and run applications with unbounded scalability and ease-ofuse. With this flexible platform one can easily scale up or down to meet the demands of business. With the pay-foruse business model, i.e., one is paying for the services which are actually used while one is not paying for the services which are not used. Windows Azure allows developers to develop and run applications quickly, while leveraging current skills to develop applications with .NET, PHP, or Java9.

5.4. **Rackspace Cloud:** The Rackspace cloud is a cloud computing platform that offers three types of services for organisations and businesses viz. cloud servers, cloud files and load balancers. Cloud servers are available to organisations in different sizes and are measured by the amount of physical memory reserved for an instance and range from 256 MB up to 30 GB on Operating system of their choice to run various web services. (Bansode,2012)

6. Role of Cloud Computing in Libraries

- Cloud computing is a completely new in technology and it is known as 3rd revolution after PC and Internet. Cloud computing is an enhancement of distributed computing, parallel computing, grid computing and distributed

databases. Among these, grid and utility computing are known as predecessors of cloud computing.

- Cloud computing has large potential for libraries. Libraries may put more and more content into the loud. Using cloud computing user would be able to browse a physical shelf of books, CDs or DVDs or choose to take out an item or scan a bar code into his mobile device. All historical and rare documents would be scanned into a comprehensive, easily searchable database and would be accessible to any researcher. Many libraries already have online catalogues and share bibliographic data with OCLC. More frequent online catalogues are linked to consortium that share resources.

Data storage cloud be a main function of libraries, particularly those with digital collections storing large digital files can stress local server infrastructures. The files need to be backed up, maintained, and reproduced for patrons. This can strain the data integrity as well as hog bandwidth. Moving data to the cloud may be a leap of faith for some library professionals. It's a new technology and on the surface it is believed that library would have some control over this data or collections. However, with faster retrieval times for patern requests and local server space it could improve storage solutions for libraries. Cloud computing or IT infrastructure that exists remotely , often gives users increased capacity and less need for updates and maintenance , and has gained wider acceptance among librarians (Gosavi,2012)

7. Advantages of Cloud computing in libraries:

- Cost saving
- Flexibility and innovation
- User centric
- Openness
- Transparency
- interoperability
- Representation
- Availability anytime anywhere
- Connect and Converse
- Create and collaborate

8. Application of cloud computing in Libraries

Libraries are using cloud computing in number of areas starting from federated search, website hosting, digital libraries, library Automation, Digital Library Services, Office Applications, Storage, Search Services and Website Hosting etc. Some of the libraries had initiatives of Cloud Computing undertaken by giants, there is sizable number of initiatives relevant to libraries initiated by organizations and business houses, which are in the business of integrated library software, digital libraries, search engines, etc. Few major ones are;

- **OCLC's Web scale :**OCLC has set an example for making use of cloud computing for libraries. Years together OCLC has been functioning as a cloud computing vendor because they provide cataloguing tools over the internet and allow member institutions to draw on their centralized data store.
- **Ex-Libris Cloud:** Ex-Libris a leading library software vendor from USA, who initially developed most of the current products as locally implemented solutions and at a later stage, adapted them to a hosted environment.
- **Dura space's DuraCloud:** Dura space provides open source repository solutions by undertaking turnkey projects for organizations and libraries to enable them to share scholarly literature using D Space and Fedora Commons.
- **OSS Labs:** OSS labs from India is using Amazon's elastic cloud computing platform owing to the various capabilities of Amazon such as high durability of data, strong information security based on ISO standards, capability, and flexibility. (Nagalingam,2014)
- **Library Automation:** For library automation purpose, Polaris provides variant cloud based services such as acquisitions, cataloguing, process system, digital contents and provision for inclusion of cutting edge technologies used in libraries and also supports various standards such as MARC21, XML, Z39.50,Unicode and so on which directly related to library and information science area.
- **Sharing of E-resources using Clouds:** 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.

The three typical kinds of cloud computing services are processing clouds, storage clouds and application clouds. Processing Clouds that provide scalable 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. The 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.

9. Conclusion

Cloud computing is a new baby in the computer systems technology emerged owing to the developments in internet and associated technologies. It is in the evolving stage, requires some amount of careful considerations before organizations think about hosting some of

their services. However, this technology has certain advantages, which definitely help organizations such as libraries in managing their services, which will relieve library staff from managing the servers. The cloud computing may help libraries to undertake modern ICT activities without worrying about technical side of it, except adding content of resources.

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Copy right laws of India and USA: *an LIS perspective*

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Abstract: The authors have tried to explore Indian copyright law especially the 2012 amendment, US copyright law and Digital Millennium Copyright Act (DMCA) in a Library and Information Science point of view. The authors have also tried to examine whether the copyright acts are threat to library and information science. It was inferred that, copyright acts of India and USA are not an hindrance to library and information service.

Keywords: Copyright, Indian Copyright Act, Copyright Act of USA, DMCA

1. Introduction

Copyright is one of the intellectual properties. Intellectual property is the property which is generated by human intellect, the intellectual property is ownership of something intangible (Raju, C.B 2006 and Satakar, S.D 2003). The intellectual properties are divided into two main categories. They are 1. Industrial properties and 2. Copyright. The former consists of patents, trademarks, industrial designs, trade secrets, geographical indications, technology transfer etc. and the latter protects the authors of original works of literary outputs, music and film. Each country has their own laws regarding the protection of intellectual properties.

World Intellectual Property Organization is the international body for protection of intellectual properties. The origins of WIPO go back to 1883 and 1886 when the Paris Convention for the Protection of Industrial Property and the Berne Convention for the Protection of Literary and Artistic Works, respectively, were concluded. Both Conventions provided for the establishment of an "International Bureau". The two bureaus were united in 1893 and, in 1970, were replaced by the World Intellectual Property Organization, by virtue of the WIPO Convention (www.wipo.int).

2. Copyright

Copyrights are a set of exclusive rights granted by law to the creators or producers of forms of creative expressions such as literary, musical, artistic and cinematographic works. The rights are protections to the copyright owner. These rights provide the copyright owner the control over the use of his/ her works like their reproduction and distribution for a limited period of time. The creator of a work can prohibit or authorize its reproduction in various forms, including printing, recording, broadcasting, public performance translation or adaptation.

The world's first copyright law, the Statute of Anne, was enacted in England in 1710. Exercising its power under the newly adopted Constitution to secure the rights of authors and inventors, Congress passed an act almost identical to the Statute of Anne as the first American copyright law in 1790. Presently each country has their own copy right laws, such as Indian copy right law for India, US copyright law for America and UK copyright law for Britain (www.historyofcopyright.org).

2.1 Theories behind copyright

There are two theories behind copyright (Hombal,S.G and Prasad, K.N 2012), economic protection theory and moral argument theory. The economic protection theory says that, creativity in society is a good thing. In order to encourage creativity, the creator needs incentives. Such incentive includes providing limited monopolies with an economic value, such that the author can sell or dispose of his creation for monitory benefit. The moral rights theory argues that, there is an intangible relation between a creator and creation and this relationship remains even after the sale of creation.

3. Copyright Act of India

In India, copyright act was passed in 1914 (www.copyright.gov.in). It was an imitation of the British copyright act 1911, which was suitably modified in the context of British India. The present copyright act was passed in 1957. The Copyright Act, 1957 came into effect from January 1958. This Act has been amended six times since then, i.e., in 1983, 1984, 1992, 1994, 1999 and 2012. The Copyright (Amendment) Act, 2012 is the most significant one especially in this digital era. Indian Copyright office functions under the Department of Higher Education, Ministry of Human Resource Development.

3. US copyright Act

The U.S. Copyright law is handled by Copyright Office; it is a separate department of the Library of Congress, which was established in 1897. Presently copyright registration is centralized in Library of Congress and formerly it was concentrated on district courts. The present Copy right law in USA is called "The Copyright Act of 1976". Before the Copyright Act of 1976, federal copyright was the American copyright law. Many amendments have been attached to the Copyright Act, including the Digital Millennium Copyright Act of 1998, Protect IP Act (PIPA) of 2011 and Stop Online Piracy Act (SOPA) of 2011. According to US Act, the duration of copyright is for a term consisting of the life of the author and 70 years after the author's death for single authored work and the copyright endures for a term consisting of the life of the last surviving author and 70 years after such last surviving author's death for a joint authored work (http://copyright.gov).

5. Academic issues in each Acts.

Indian copyright Act and US copyright Act have handled the issues of academic community very clearly.

5.1 Indian Copyright Act: Section 52 of the Indian copyright Act is exclusive for academic issues. Section 52. says that, "Certain acts not to be infringement of copyright. -(1) The following acts shall not constitute an infringement of copyright, namely: (a) a fair dealing with a literary, dramatic, musical or artistic work (not being a computer programme) for the purposes of- (i) private use, including research; (ii) criticism or review, whether of that work or of any other work".

5.2 US Copyright Act: Section 107 of the US Act, is exclusively for academic related issues. According to this section "the fair use of a copyrighted work, including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright. In determining the fare use, the act further says the following criteria are to be checked. They are-

- the purpose and character of the use, including whether such use is of a
- commercial nature or is for nonprofit educational purposes;
- the nature of the copyrighted work;
- the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
- the effect of the use upon the potential market for or value of the copyrighted work".

5.3 Analysis and interpretations

It can be interpreted by analyzing the Section 52 of the Indian copyright Act and Section 107 of the US Act , that copyright law in not at al an obstacle to the academic community. The word 'Fair deal' has been used in Indian copyright act, where as in the US Act the word 'fair use' has been used in this regard. Moreover, it encourages personal, study, research, critical and review. Reproduction is allowed for these purposes without the prior sanction from the authority or copyright owner and it will not be considered as copyright infringement. The same inference was pointed out by Reena Hobbs (2010) and Sabuj Kumar, C (2012) in their studies.

6. Library related issues.

There are positive clauses for libraries in both of these acts.

6.1 Indian copyright Act: Section 52 clause (1)(O)- says that, "the making of not more than three copies of a book (including a pamphlet, sheet of music, map, chart or plan) by or under the direction of the person in charge of a public library for the use of the library if such book is not available for sale in India.

6.2 US Copyright Act: Section 108 of the US Copyright Act is exclusively for library related issues. Some of the major points in this section have been quoted below. "108 (a) it is not an infringement of copyright for a library or archives, or any of its employees acting within the scope of their employment, to reproduce no more than one copy or phonorecord of a

work, except as provided in subsections (b) and (c), or to distribute such copy or phonorecord, under the conditions specified by this section if—

- the reproduction or distribution is made without any purpose of direct or indirect commercial advantage;
- the collections of the library or archives are (i) open to the public, or (ii) available not only to researchers affiliated with the library.

108(b) The rights of reproduction and distribution under this section apply to three copies or phonorecords of an unpublished work duplicated solely for purposes of preservation and security or for deposit for research use in another library. 108(c) The right of reproduction under this section applies to three copies or phonorecords of a published work duplicated solely for the purpose of replacement of a copy or phonorecord that is damaged, deteriorating, lost, or stolen, or if the existing format in which the work is stored has become obsolete. 108(e) The rights of reproduction and distribution under this section apply to the entire work, or to a substantial part of it, made from the collection of a library or archives where the user makes his or her request or from that of another library or archives, if the library or archives has first determined, on the basis of a reasonable investigation, that a copy or phonorecord of the copyrighted work cannot be obtained at a fair price".

6.3 Analysis and interpretations.

As per the section 52 clause (1)(O) of Indian Copyright Act, maximum three copies of a document can be taken for public library. In the explanation of public library as per Section 2 (fa), it is given that, "Nonprofit library or no-profit educational institution means a library or educational institution which receives grant from the Government or exception from payment of Income Tax under the Income Tax Act 1961". Taking this, university libraries and government special libraries can also be included in this category. The US Act also allows libraries and archives to take copies for preservation, use, interlibrary loan etc. But the relaxation is given under a strict condition that the library should be accessible to public and no financial benefit is done by using this. The act also allows taking the copies of even the unpublished work for the above mentioned purpose.

7. Digital library related issues

Digital revolution is treated as the greatest revolution in the history of mankind. This revolution wiped out the problems of time and space (Fareed Ahmed and Iftikar Hussain, 2013). Here any person can access and transmit information any time to anywhere. Digital libraries became more popular in this technological era because of easy accessibility, round the clock accessibility and anywhere accessibility.

7.1 Indian Copyright Act

Section 52 clause (1)(n) says that- "the storing of a work in any medium by electronic means by a non· commercial public library, for preservation if the library already possesses a non-digital copy of the work".

Section 52 clause (1) (zb) says that " the adaptation, reproduction, issue of copies or communication to the public of any work in any accessible format, by- (i) any person to facilitate persons with disability to access to works including sharing with any person with disability of such accessible format for private or personal use, educational purpose or research."

7.2 US Copyright Act

Digital Millennium Copyright Act (DMCA) is an amendment to the US copyright Act. Section 404 of the DMCA amends section 108 of the Copyright Act to accommodate digital technologies and evolving preservation practices. Before the amendment of the DMCA, "section 108 permitted such libraries and archives to make a single facsimile (i.e., not digital) copy of a work for purposes of preservation or interlibrary loan. As amended, section 108 permits up to three copies, which may be digital, provided that digital copies are not made available to the public outside the library premises".

7.3 Analysis and interpretations

In India, as per 52 clause (1)(n), libraries can digitize the work which they possess the hard copy. But it very clearly mentioned that the purpose is for 'preservation'. As far as libraries are concerned, they procure information resources, organize, and preserve for dissemination to its clients. Storing the information and not allowing for usage is against the first law of library science, ie 'books are for use' (information resources are for use). In America, after the amendment in DCMA the problem of digitization has been removed. As per this amendment, library can digitize any document in the library collection for library purpose and not for any financial benefit. Here there is a clause, that it should not be made available to the public out side the library. So it means that, remote accessibility of the digitized resources is prohibited. So libraries can make digital libraries with accessibility inside the library so as to avoid the misuse. An appendix that can also be added to this point is that, according to Webster's third New International Dictionary 'Preservation' means, "to keep up and reserve for personal or special use".(page No 1794). More over libraries are non profit service organizations. So it can be inferred that in this digital and technological era, libraries can digitize their collection by controlling the access for the benefit of academic community. Ayush sharma ((2009) and Ujwala Uppaluri (2012) have had the same inference in this issues.

8. Conclusion

Both Indian and US copyright laws are capable to cope up with academic community, library services and digital libraries. Both acts strictly demand to avoid the economic exploitation of copyrighted materials. Both acts have their own clauses regarding the

copyright infringements to prevent the so called misuses and to protect their rights. In short the copyright acts are not a threat to academic and library community and it is a safe guard of misusing special privilege of copyright holders.

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Digital Archival: *Principals and Management*

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Abstract: The archiving in digital environment may be wrongly projected or attributed, due to the technological morphing, which attract the criminal breach of trust, and affect the intellectual property rights, based on three important factors. i.e. **Firstly:** In the digital preservation, and to access archival materials, rises legal concerns like 'loss of integrity and protection to digital content' and sometimes deliberate tampering of the digital content and material. **Secondly**, the digital archives focus and help on retaining of evidence (through archives) in time and over a time, through digital presentations. **Thirdly**, the libraries engaged in the creation of information and its ultimate disposition to the user. In this context, the researcher thoroughly discussed the need and importance of basic principles of Arching, which are important for the digital libraries in general, as well for the Digital archiving. The basic principles of Archival and knowledge management, which attract the Digital Environment, under the: i) The Sanctity of Evidence; ii) Respect des Fonds and iii) the Life Cycle of Records was discussed briefly.

Keywords: Digital archive, Archive management, Digital preservation

1. Introduction

The basic factors influences the Archival and knowledge management in the Digital information Environment are briefly explained in this paper. The principles of archival perspectives, viz., i) The Sanctity of Evidence; ii) Respect des Fonds - Provenance and Original Order; and iii) The Library Cycle of Records was discussed, how to organize the Archives under the Digital Environment is the main theme of this presentation.

The Technological advancements in the knowledge management, influences the Archival, age-old practices and procedures, into digital environment to ease out the old practices, for the management of the current and active Archival materials, land weeding techniques applied on in-active and on obsolete records.

In this context, the impact of Information and Communication Technologies on the principles of **'Sanctity of Evidence'**, **'Respect des Fonds** - Provenance and Original order; and **'Life Cycle of Records'**,and how these principles are translated into digital environment was discussed briefly to know about the techniques and process of Digital Archival Management Systems.

2. Objectives of the study

- Whether the Digital Archival System protects and provides the logical, historical and Archeological evidence?
- To study the strength and weakness of the archiving and in comparing to the Digital Archival System

- Whether the implementation of **Respect des Fonds** and the **Life Cycle of Records** support the Knowledge Management under Digital Environment

3. Methodology

The topic of this paper completely based on the descriptive analysis and the review of related literature of Archival Systems in general and Digital Archiving its nature and scope of its changes occurred in Digital Environment subject which attributed in the review of the literature. The facts and principles exhibited under the Digital Archiving was studied and analyzed the relationship and importance of these perspectives under the three basic principles, i.e. **Sanctity of Evidence, Respect des Fonds and the Life Cycles of Records** on the basis of reviews. The researcher reviewed number of articles and textual materials both from primary and secondary sources to present this paper on the descriptive form. The scope of the quantitative and statistical analysis was limited in this subject area.

4. Analysis

As stated above, the descriptive analysis of basic principles of Digital Archiving was present under three components, to meet the requirements, to initiate the Digital Archiving to move forward in the information age.

4.1. The Sanctity of Evidence

The archives sense of evidence can be attributed the ability of document and objects to provide insight into the processes and an event that gives clue to create the authority of logical, legitimate, historical and archaeological events of past. The concerns for evidence demands high bench marks for information systems and services, with reference to archival description and presentation. The evidential value of archival materials have been re-emphasized on two counts; i.e. A) Due to the challenges posed by Electronic Records but also, b) the practices of information preservation of archives by the library professionals. The integrity of the evidential value of archival materials is ensured by documentary with un-broken chain of custody after the receipt of the materials from the creator. The primary values of archival records are related to the creation of legal base, fiscal and administrative needs. But the secondary value mostly in the contest of subsequent research or researchers. The archival concern of evidence involves a rich understanding of the "Implicit and Explicit" values of materials at the time of creation and over a time.

Particularly in the context of evidential values of digital archrivals, the question of: i) Reformatting and ii) Preservation should be considered as two key areas to maintain the integrity and sanctity of the materials. While digital reformatting by the information professionals they need to protect the intrinsic characteristics of the document. At the same time, they should take necessary technological precautions to protect the originality of the content from the problems of tampering or morphing of the material or the pictures. Such digitized copies may have high or low resolution, color or black and white, and to use these materials, it may be provided with appropriate infrastructure to handle the material with care and to have maintainability. The information professional must be decided what type of materials that requires digitalization and the kind of metadata will be used to

enable the user to utilize the information objects. Digital preservation is the second important aspect to protect the evidential value. The preservation technologies are meant for the longevity of digital media storage and preservation and the current digital technologies integrated to next generation or new software and followed by the supporting latest hardware. In the process the intrinsic characteristics of the information objects can be disappeared, and data structures can be modified and preservation of the information object on a computer screen can be altered.

4.2. Respected des Fonds

During 1839 the French Minister of public instruction enunciated the principle of **Respect des Fonds** insists, that the records should according to the type and nature of institution; while and the principles did not included the practice of, strictly to maintain original order. But in 1881 the provisions of state archives announced more preserve regulations on the arrangement and regulation of materials i.e. the principle of providence.

The principle of providence has two components i.e. 1) Records of the similar provisions should not be mixed with other provisions and 2) the architect should strictly maintain the original sources and order in which the need were and kept by meet connecting the classification and cataloguing assigning of access points etc. According to these principles and practices and adhering to less source interval way in maintaining the archives.

In recent years more complex and bureaucratic structures have evolved and digital systems have been under for record keeping. The archivists have had difficulty in establish through the principle of pounce, where multi-institutional collections with multifunctional data laws distributed information system. In an archival approach more respected conception of province have been digitalized as 'Functional producer and 'Multi province for Electronic laws' today we can observe and accepting the digital approaches according to type and coverage elements that have been integrated into Dublin Core for use in resource discover of national Electronic resources in Archiving.

The multi pronounces commends that a record must be similarly invalid through the internet of multiple offices. The in completed of digitalized and electronic resources and its requiring may be depended upon the latest techniques of Meta Data and by following the Dublin core study to mange the archival materials in 21st century

4.3. Life Cycle of Records Model

The concept of "Record Life Cycle Model" was developed by the U.S. National Archives and Records Administration studied the functions of Archives, i.e. 'Use of' records, and Responsibility for records change as Records Age', and move from the control of their creator to the physical custody of the Archives, is the basic function and process to reach archives.

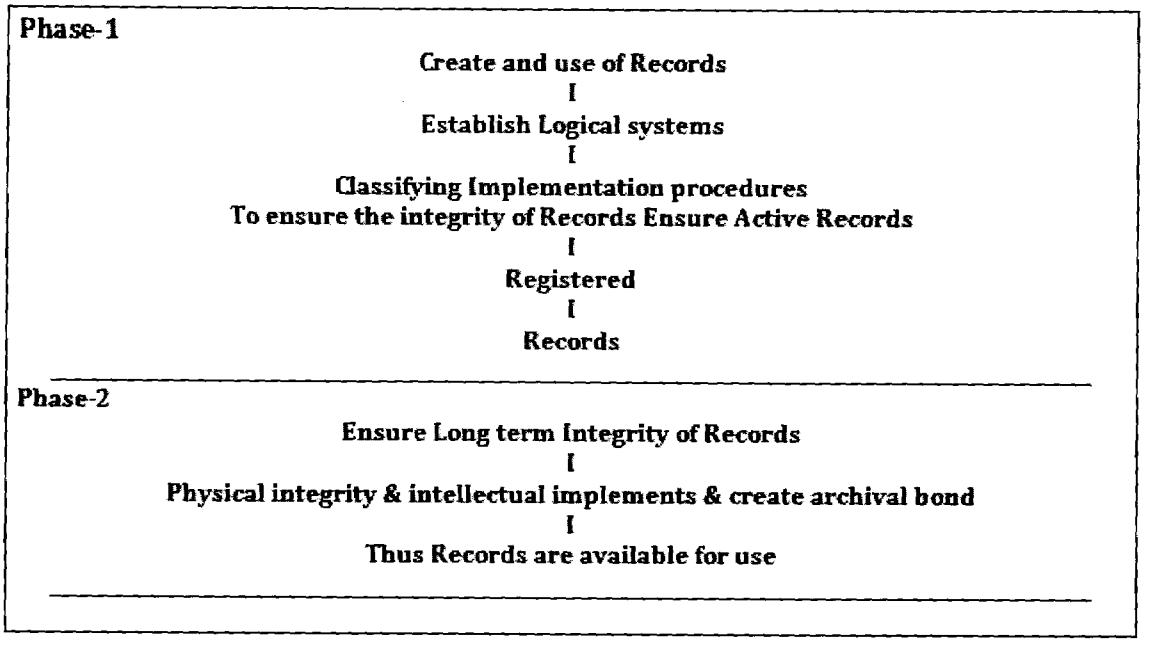


Figure 1 - Functioning of Life cycle of Records

These above said functions of Archives are **in two phases**: i.e.,

- **Phase one:** under this model, administrators create and use records. And the records creator develop a certain logical systems, for classification of the records and implement the procedures of logical systems to bring the integrity of records. Records managers or archivists ensure the status of active records, and identify the records for systematic elimination of the records, or permanent retention, due to age and obsolescence, gradually lessen the reference value, and thus become inactive.
- **Phase two:** In this phase the archives form stands as third party responsibility, for long term integrity. In the second phase, where the records entered into the archives, thus physically and intellectually, integrated with other archival materials of the same province, area, subject establish the archival bond. And the physical integrity ensures the preservation management through the intellectual integrity and archival description. Archival records are thus available for secondary use.

4.4. Digital Environment and 'Life Cycle of Records Model':

As the Changes in record creation methods and the perceptions about the value of archives led archivists to consider how to apply the Life Cycle Model in a Digital Environment.

The archival researchers of University of British Columbia, initiated a (UBC Project), to study the principles underlying the Life Cycle of Records, through Preservation and the Integrity of Electronic Records conducted during 1994-1996. The UBC Project has developed two models, i.e. i) Generic Model to identify and define by-products of

electronic information systems, which constitute the evidence of action; and ii) The Records Continuum model: reiterates the need in the digital environment for completed records placed under the jurisdiction of the archives. The UBC Project has developed i) Generic Model and II) Records Continue model.

- **The Generic Model**: identify and define the byproducts of elective information system and methods for integrity and protection of the by products, which constitute the evidence of action using the deductive methods to ensure control over reliable records creation during the first and second phase of the records life cycle. The project observed that in the digital environment the completed records should be placed under the Jurisdiction of the archives.
- **The Record Continuum Model:** begins the record keeping according to the designed lines. Appropriate maintenance of the records monitor compliance by records creators. The intellectual inter-relationship of active archival records are established by integrating metadata for active records into the archival authors information system. In this custodial model, the archives at should participate actively in the production and use of the records. Thus the model of "Life Cycle of Records extended the benefits in general by:
    - The responsibility of integrity the community for creating developing of and preserving information reasons focusing on the organization and use of information.
    - The process of creating and consumption of knowledge and thus to create new knowledge.
    - This process helps to meet different used needs and;
    - Production of levels of use and management of information storage dissemination etc.

5. Conclusion

The archival sense can be defines as his positive ability of the documents to provide insight into the processes, events that led to create logical, historical and archaeological purposes of evidence. Archival systems established high benchmarks, for information systems, services and preservation. The importance of Evidence value has been (under Sanctity of Evidence) value has been re-emphasized due to the challenges proved by "Electronic Records" with multimedia practices.

The integrity of the evidential value of materials is ensured by demonstrating the unbroken chain of custody of sequence of events. The aggregation of archrivals precisely and integrated with the rest of the associated archrivals materials of the same provinces. The authenticity and primary value of archrival records, related to the legal and fiscal depends upon the records creators. But the secondary values of public records can be ascertained in relation to i.e. (a) the evidence they contain, wherein the concerned government body held responsible and (b) the information contain on persons, corporate bodies, things and problems etc. with which the govt./departments concerned will be responsible. Thus the digital environments for the archives will

certainly maintain the Evidence value and manage the conditions for the Achieves in Digital form and the people of respected des fonds facilities physical and intellectual access to records generated and received regardless of their form, medium or value. The principle of provinces enhanced and ensuring that the records remained as much as possible they were originally created should not be mixed with that of other provinces and maintain the original order which the records were created and kept.

The French conception of respected des Fonds" referred to as principle of original order did not include by the French Archives. Fresh Archivists have been using what was known as the Principle of Pertinence and rearranging the records according to their subject content. Under this principle of Respected des Fonds followed by the Principle of Pertinence integrate the originally created materials protect the intellectual content and access, further enhanced by the Management Principles of Digital Archives. The application of the "Life Cycle Records" described in two phases viz. First Phase it expressed the "Creation & Use of Records" and the record creators must develop a logical system like Classify/Registering of records, implement procedures to ensure integrity of records and eliminate and present relation. In the Second phase: the archives responsible for ensuring the log-term integrity of the records. And the records under archives are physically, intellectually integrated with other archives materials of the same provinces, thus establish the archival bond. Finally the archivists have considered how to apply the 'Life Cycle of Records' model in a digital environment. The principle under "Life Cycle of Records" was verified by initiating the UBC project by the University of British Columbia. This study gave birth to two models to integrate this life cycle of records principles under viz 1. Generic model and 2. Records Continuum model, the digital Archives principles and management techniques help to enhance the Digital Environment. The basic principles of archives support the introduction of digital content, thoroughly to archive this Digital Archives Management.

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Digital Library Consortia for MoEFCC Institutions: *A concept note*

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Abstract: In the present scenario of technological advancement, information needs of the users have increased considerably and no library can meet all information requirements of the users individually. Consortia are also needed for efficient association and collaboration between Libraries and Information Centres for sharing their available resources and information through networking. In the recent past many successful initiatives have been taken in India for the formation of Library consortia. This concept note also discusses the requirements, types, advantages, methodology and activities involved to formulate a digital library consortium for Ministry of Environment, Forest and Climate Change (MoEFCC).

Keywords: E-resources; MoEFCC Consortium; Resource sharing; Networking; Library co-operation

1. Introduction

Cooperation amongst institutions for sharing their library resources is being practiced for decades. Traditionally, the primary purpose of establishing a library consortium is to share physical resources including books and periodicals amongst members. However, the mode of cooperation has gone under a transformation with infusion of new information technology from print-based environment to digital environment. The emergence of Internet, particularly, the World Wide Web (WWW) as a new media of information delivery triggered the proliferation of Web-based full-text online resources. In the era of information technology, web-based electronic databases have become important resources for education and research. Such databases provide functionality and ease of use as compared to print products. There has been a gradual trend towards an increase in use of electronic resources in general and electronic journals in particular. So, libraries are retaining limited print based resources, and are migrating to electronic media so that they can survive in the new digital information environment. E-journals are becoming increasingly in demand as these offers a variety of benefits to libraries and end users such as easy 24x7 access; can be used simultaneously by more than one user and minimize physical storage space.

2. Need For Digital Libraries Consortia Initiative

Libraries are facing the challenges of shrinking budgets, literature explosion; increasing user demands, cost of collection, storage space and trained manpower; and advances in the field of information technology. As per the Association of Research Libraries (ARL) surveys, the bundling of scholarly journals and the marketing practices of the largest commercial publishers have inherent problems that limits the use of such bundles by the users for a variety of reasons. One of the major drawbacks is that when library budgets are locked into large bundles, purchase of non relevant journals becomes a compulsion. Cancellation of bundles often also deprives the benefit of archived journals. Another constraint is that once bundles are purchased, funds for any addition/specific journals are

not available. Moreover, the size of the larger bundles has been growing. In the recent years, merger of the several large publishers have resulted in escalated cost of merged bundles, posing major implications for growth of library. Most of the largest commercial publishers have been offering bundles for many years which are forced to continue. The ARL surveys have shown that consortia play a significant role in journal bundle acquisition. In majority of research libraries e-bundles are acquired through such consortia. A very small percentage of bundles are defined by single institution's historic holding. The above challenges have forced librarians to work together for alternate strategies towards collection, enrichment and sharing of resources. Consortium based library subscription to e-journals has been picking up good momentum in India.

Consortia Activities in India: Many consortia are being run successfully by different organizations in India. Some of them are UGC-INFONET, FORSA (Forum for Resource Sharing in Astronomy), NKRC (National Knowledge Resource Centre) - CSIR e-journal consortia, IIM Library Consortia, ICICI Knowledge Park, DAE Library Consortium, INDEST (Indian National Digital Library in Science and Technology) Consortia. ICMR Library Consortia, HELINET (Rajiv Gandhi University of Health Sciences, Karnataka), DRDO (Defence Research and Development Organization), DeLCON (DBTs Electronic Library Consortium), CERA Consortia etc., ISRO etc.

Types of Consortia and Models: The types of consortia models identified are generally based on various models evolved in India in a variety of forms depending on participants' affiliations and main funding sources (Satyanarayana 2004; Patil 2004).The important types of consortia are:

- Open consortia: FORSA, SNDT's LISA and INDEST,
- Closed group consortia: CSIR, DAE and IIMs,
- Institutional headquarters funded consortia: TIFR and its branch libraries,
- Centrally funded consortia: CSIR, INDEST, UGC-INFONET, ICMR,
- Shared budget models: FORSA, IIMs and HELINET and
- National level consortia: INDEST, UGC-INFONET

3. Ministry of Environment, Forests and Climate Change (MoEFCC)

The Ministry of Environment, Forests and Climate Change (MoEFCC) is the nodal agency in the administrative structure of the Central Government for the planning, promotion, co-ordination and overseeing the implementation of India's environmental and forestry and climate change policies & programmes. The primary concerns of the Ministry are implementation of policies and programmes relating to conservation of the country's natural resources including its lakes and rivers, its biodiversity, forests and wildlife, ensuring the welfare of animals, and the prevention and abatement of pollution. While implementing these policies and programmes, the Ministry is guided by the principle of sustainable development and enhancement of human well-being. The Ministry also serves as the nodal agency in the country for the United Nations Environment Programme (UNEP), South Asia Co-operative Environment Programme (SACEP), International Centre

for Integrated Mountain Development (ICIMOD) and for the follow-up of the United Nations Conference on Environment and Development (UNCED). The Ministry is also entrusted with issues relating to multilateral bodies such as the Commission on Sustainable Development (CSD), Global Environment Facility (GEF) and of regional bodies like Economic and Social Council for Asia and Pacific (ESCAP) and South Asian Association for Regional Co-operation (SAARC) on matters pertaining to the environment. The broad objectives of the Ministry are:

- Conservation and survey of flora, fauna, forests and wildlife
- Prevention and control of pollution
- Afforestation and regeneration of degraded areas
- Protection of the environment and
- Ensuring the welfare of animals

Requirement of MoEFCC Consortium: These objectives are well supported by 8 important offices, 5 autonomous institutes and 10 centre of excellence (Table 1) and several collaborative Science and Technology institutes. The consortium is needed by these institutes for a variety of reasons viz :

- to avoid duplication of e-resources
- to cope up with the information explosion
- to meet the diversity of user needs and
- to overcome financial crunch resulting from increasing cost of e-resources.

4. Objectives

The broad objectives of the MoEFCC Digital Library Initiative would be to –

- To provide access to scholarly e-resources with high impact factor to all participating institutions and centres at substantially lower rate of subscription with suitable terms and conditions.
- To promote inter-institutional cooperation by sharing online information resources
- To develop comprehensive information base on environmental conservation and other related subject areas.
- To bring qualitative change in training, learning and research with an aim to meet the ever growing challenges of globalization of higher education.
- To increase the research productivity of the institutions both in terms of quality and quantity of publications.
- To impart training to the users, librarian, research scholars and faculty members of the institutions in use of electronic resources with an aim to optimize their usage.
- To evaluate the usage of the subscribed resources and to identify new resources that is required to be subscribed.

5. Methodology

The following methodology may be adopted to develop consortium of institutes under MOEFCC-

- The consortium may be initiated by conducting a workshop of librarians and users from member institutes. The workshop will help to assess the feasibility of consortium in terms of existing information resources and required infrastructure like – PC population, Campus-wide connectivity and bandwidth availability in the member institutes. A union catalogue of holdings of participating members is essential. In this context a brief questionnaire should be prepared to elicit information from participatory members of proposed consortium. Based on the areas of specialisation and prioritization of requirements for each of the participating institutions a policy for union catalogue would be formulated to facilitate the function of consortium.
- The workshop will also help in identifying a team of members who will prepare a comprehensive proposal including proper nomenclature of consortia, coverage of subject areas, infrastructure requirements, and memorandum of understanding and funding strategies for sustainability.
- In a consortia-based subscription to e-resources, the selection of e-resources requires careful planning and professional approach. Thus, the representative of target users from each institute would be involved in the selection process for e-resources.
- For making optimal use of e-resources by the users, a real time document delivery process may be developed to achieve maximum benefits from the consortia-based subscription.
- Finally, a well-design feedback online mechanism may be helpful in measuring the effectiveness of consortia.

6. Activities

The following are the scope of activities of the proposed consortium –

- It will act as nodal agency for increasing the cooperation among participating institutes.
- It will integrate and coordinate all activities related to subscription of e-resources.
- It will identify the information needs of users through user surveys.
- It will compile a union catalogue of information resources about the holding of various libraries.
- It will organize the meetings/seminars of stakeholders to improve the functioning of consortium; to identify new resources; and to evaluate the existing resources.
- It will act as a national repository of all e-resources on the subject.

7. Benefits

The proposed MoEFCC-DLI would provide huge benefits to the member institutions in terms of accessibility of the number of e-resources and development of inter-organizational cooperation by sharing information resources. Some of the benefits of the proposed consortium are as follows:

- Subscription to electronic resources through consortium would increase access to a large number of electronic resources across institutions at discounted rates of subscription with favourable terms and condition.
- Access to international and national database/e-journals would enhance the research productivity and quality in education and training.
- On-line culture would reduce the pressure of space requirement for storing and managing the print based library.

8. Conclusion

The initiatives to formulate the consortia for MoEFCC libraries in India will transform the information landscape in future. The present endeavours are no doubt a step forward for future needs and expectations of the MoEFCC. This consortia-based approach would be an apt solution to provide access to e-resources, which probably is the only way to satisfy increasing requirements of the users. The consortium, with its collective strength of participating institutions, may be able to attract highly discounted rates of subscription with most favourable terms of agreement.

Table 1

Name of Autonomous Institutions	Centre of Excellence	Offices
Wildlife Institute of India, Dehradun	Centre for Environment Education (CEE), Ahmadabad	Zoological Survey of India, Kolkata
Indian Council of Forest Reasearch and Education, Dehradun	CPR Environment Education Centre (CPREEC), Chennai	Forest Survey of India, Dehradun
Indian Institute of Forest Management, Bhopal	Centre for Ecological Sciences (CES), Bangalore	Indira Gandhi National Forest Academy, Dehradun
GB Pant Institute of Himalayan Environment and Development, Almora	Salim Ali Centre for Ornithology and Natural History (SACON), Coimbatore	Botanical Survey of India, Kolkata
Indian Plywood Industries Research and Training Institute, Bangalore	Centre for Environmental Management of Degraded Ecosystem (CEMDE), Delhi	Directorate of Forest Education, Dehradun
	Foundation for Revitalization of local health Traditions (FRLHT), Bangalore	National Institute of Animal Welfare, Faridabad
	Centre for Mining Enviromment (CME), Dhanbad	National Zoological Park, New Delhi
	Madras School of Economics (MSE), Chennai	National Museum of Natural History, New Delhi
	Tropical Botanic Garden and Research Institute (TBGRI), Thiruvananthapuram	
	Center for Animals and Environment, Banglore	

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Digital Plus Era: *Profile of a Law Librarian*

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Abstract: Stresses that next generation digital Law Librarian is a specialist librarian to handle legal information to manage & organize the digital/virtual law library and eventually handle specialized tasks of digitization, storage, retrieval, digital data mining digital reference services, etc. in the specialized field of law. Next generation Law Librarian/Court Librarian acts as a guardian of the information superhighway/global digital library. The paper also emphasizes requisite skills required for next generation law librarian especially a Court Librarian in information retrieval, navigation & browsing, access to different legal online and offline software etc.

Keywords: Digital, Law Librarian, ICT, information, retrieval, legal, databases etc.

1. Introduction

Digital libraries are needed to let libraries offer new and improved services and also to deal with a cost crisis now affecting their current tasks. Dreams of computer based libraries which have been around for decades are now practical. It is happy augury that some libraries (Ex. especially Pharmaceutical companies) are already spending more than half of their budget on electronic resources alone rather than conventional hard copy resources, paper. On the contrary, many university libraries are finding it impossible to maintain their traditional collecting practices within the constraints of their institutional budgets. They look especially to the new technology as solution. Law libraries are also not exceptions for the same.

2. Law Librarianship in the Digital era

Law Librarianship especially the librarianship in Judicial Institutions is different from librarianship in any other organization. What makes it different, is the degree of accuracy and urgency by its clientele and services are to be provided pinpointed and very expeditiously. This aspect is more fully explained by Prof. Iger I. Kavass that, "the reason for law librarian being different from other types of libraries is that, they serve a profession which is literally unable to exercise to exercise its work without the use of books. (Kavass 1975). Now, this definition of Kavass needs to be modified to some extent. This holds good even in the digital era if the word "book" will be replaced by the words "virtual/digital resources".

Today while Indian Judiciary is in urgent need of reengineering its process with the new concept of E-courts by harnessing the potentiality of the available ICT and digital information system to its fullest extent for enhancing the judicial productivity both qualitatively and quantitatively and also to make justice delivery system affordable

accessible, cost effective, expeditious, transparent. Against this backdrop, the law librarian cannot stun away from becoming the digital Law Librarian.

Digital information system coupled with ICT can help us to brighten the image of the law libraries as well as Law Courts and can become to more efficient, fast and user friendly. In an era of digital information, electronic technology, WWW, are gaining popularity & simultaneously, there is a tremendous growth of CD-ROM products/Legal Softwares, digitalLaw Libraries that offer a huge range of multimedia information. Mention may be made of the following digital sources.

1. **Few Free Open Access Digital Libraries use to law professional**:

    - Supremecourtofindia.nic.in
    - Bombayhighcourt.nic.in
    - Advocatekhoj.com
    - Mahaonline.gov.in (for Mah. State Govt. GR and E- Gazettes search)
    - E – Gazttes of India
    - JUDIS
    - INCODIS
    - INDIA CODE etc

2. **Few On – Line Legal Databases against subscription are:**

    - supremecourtcases online/ Web Edition (Platinum and Platinum Plus)
    - LEXIS-NEXIS
    - West Law
    - CDJ Online
    - MhLJ online
    - AllMR Online etc

3. **Few Off – Line / CD ROM Legal Databases against subscription are:**

    - Supreme court cases Full Text on Cd Rom
    - Learned Judgments Software
    - AII India Reporter (HC, SC, SCW, CrLJ)
    - Bombay Cases Information Search etc

In building the next generation of digital law libraries, multimedia and artificial intelligence will play several important roles. Thus it is clear that, the advent of digital libraries presents a plethora of challenges and opportunities to the digital law librarian. The Digital Law Librarian has to provide value added information and can make digital libraries truly useful and user friendly.

3. Need for a digital Law Librarian in the Management of Digital Law Libraries

The emerging digital law libraries and worldwide digital legal information centers generate the need for creating a new job title "Digital Law Librarian" to manage the digital knowledge resources.

The Digital Law Librarians are required to:

- Manage digital law libraries
- Organize digital knowledge and information in the field of law
- Provide digital reference service and electronic information services
- Classify and catalogue digital documents and digital knowledge
- Handle the tasks of massive digitization, digital storage process and digital preservation

4. Skills and competencies required for a Law Librarian in a Digital era:

Digital information system management in law libraries refers to overall competencies necessary to create, store, analyze, organize, retrieve and disseminate digital information (text, images, and sounds) in digital law libraries or any type of general information.

It may be inferred that, the competency of a digital law librarian is represented by different sets of skills, attitudes and values that enable a digital librarian to work as digital information professional or digital knowledge worker or digital knowledge communicator. There are skills and competencies that a digital law librarian should develop. One is the ability to manage the digital libraries and digital knowledge management. The following are the essential skills, required in a digital librarian in the management of digital information systems and digital libraries are:

(1) Internet, WWW:

- Navigation, browsing, filtering;
- Retrieving, accessing, digital document analysis;
- Digital reference services, electronic information services;
- Searching network databases in a number of digital sources and Web sites;

- Creating home pages, content conversion, downloading techniques;
- Web publishing, electronic publishing;
- Web authoring.

(2) Multimedia, digital technology, digital media processing:

- Multimedia indexing, image processing, object-oriented processing;
- Cataloguing and classification of digital documents, digital content;
- Searching and retrieval of text, images and other multimedia objects;
- Conferencing techniques including teleconferencing, video conferencing

(3) Digital information system, Development of digital information sources:

- Digitization of print collections;
- Development of machine readable catalogue records;
- Design and development of databases;
- Conversion of print media into digital media;
- Knowledge in digital knowledge structures.

Apart from these, there are additional skills a Law Librarian should develop. These are:

- Digital Law Librarian is a bridge between digital resources and users (Role of Facilitator)
- The concept of digital law librarian is as mentor, as a friend of the user, as personal trainer, who guides the user.
- The social role of the librarian is still strong, even stronger in digital environment (the concept for social inclusion in digital environment)
- Pedagogical skills get stronger in digital environment (the concept of the digital library as a virtual classroom)
- The digital law librarian must has commitment to continuous learning and lifelong improving of skills in all areas of digital applications, services etc.

5. Legal Reference Service in practice with reference to Court Libraries

A Court Librarian often needs to give Reference Service for Hon'ble Judges, Courts, Lawyers etc. Sometimes Court Librarian also needs to serve Faculty in the field of law, Research Students etc. on demand.

There may be lots of queries from the legal professionals. Some of these are:

- Provision of particular section of particular Act/Rule
- Bill of particular Act
- Statement of Objects and Reasons (Legislative intent) of a particular Bill/Act
- Latest amendment to Acts/Rules
- Case Laws on particular point of Law
- Meaning of a particular word, phrase, Legal Maxim t=etc
- Government Notifications, GRs , Rules, Regulations etc.

Most of the above queries, a law librarian may solve with the help of in-house databases created by his own efforts, On Line a& Off Line legal Soft wares and also by surfing Internet for Digital Law Libraries. For making Legal search, special retrieval skill is required with the law librarian. If a Law Librarian acquires expertise in Legal knowledge, may solve such queries in better and expeditious manner. When a Law Librarian receives any requisition or query form the legal professional, for ex. Hon'ble Lordship, then at first he has to understand the requisition. If the query is to find out the judgment/case law by party name, Judge Name or section wise, then this will be very simple to find out from the help of legal soft wares with correct key words. But, when only the subject is given and judgment is to be found, then librarian has to first analyze the subject , form the accurate keywords and then only search could be possible, otherwise, no results would be found. Ex. Of some Queries are:

- "Whether a Judicial Magistrate has power to dispose of the Forest Property"?
- CrPC Section 406, Section 407, Transfer Case, Fair Trial.
- Guidelines of Supreme Court for entertaining PILs.
- Supreme Court Judgment on Bar of Back Door Entries/Appointments etc.

This search will be time consuming if carried out manually. Only use of digital SWs makes it easier to solve speedily.

6. Digital Plus Age : Multiple Media Formats

Most challenging of these changes of digital era is the range of expectations that our patrons have with respect o how they find and interact with information. In this new environment – one in which information is available both in digital and analog formats and where the field of law is growing more international as well as interdisciplinary in it's scope - more and more is expected of law libraries in multiple dimensions. (Philip 2005)

The Law library of 2015 onwards is not entirely digital. Nor, in all likelihood, will the law library ever be entirely digital. Our future will be hybrid of yesterday's predominantly

print based world and tomorrow's primarily digital world. Print will also continue to play a key role in the preservation of legal material. As librarians, we emphasize the need to take precautions to print out backup copies of born-digital materials and store them in a safe place for long term to mitigate a risk of data rot. (Roger 2009) . There is strong case to made for printed books in their current format as a central part of libraries for the future (Robert 2009)

7. Conclusion

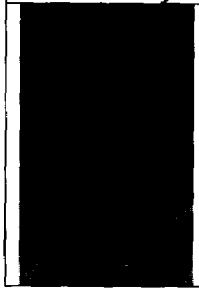
The digital Law Librarian working in the digital knowledge domain is a specialist in the area of digital law libraries. He is the manager of this digital library. Several characteristics and new skills are essential for a digital law librarian to create and manage digital library collection and services of Law Libraries.

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Digital Preservation of Indian cultural Heritage Data: Project Overview

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Abstract *Digital preservation involves the use of well-defined techniques to prevent the digital material from deteriorating further need to perhaps even improve it to the point where is can be better disseminated through modern techniques for maximum use of the digitized information. This paper presents an overview of successful development of SanskritiDigitalya, an Open Archive Information System for Digital Preservation of India Cultural Data by Human-Centred Design and Computer Group, C-DAC, India. The Paper discussed different varieties of cultural data i.e. rare-book; Manuscripts written on palm leave, Burch bark, cloth, paper etc.; slides/photographs; artifacts and archival audio visual material available in IGNCA. Also throne light on the challenges perceived by IGNCA in management of these digital data. This pilot project is a part of Indian National Digital Preservation Programme and after successful completion it would be implemented in all cultural institutions. It also describes the overall structure and workflow for digital preservation tools, techniques and standards.*

Keywords: Digital Preservation; Digital Preservation – Cultural Data; Digital Preservation-Tools and Techniques; Digital Preservation Strategies; Digital Cultural Data-IGNCA, India.

1 Introduction

The term cultural heritage refers to knowledge created by the people associated with Art, culture and allied areas. Cultural Heritage may be classified as Tangible cultural Heritage and Intangible Cultural Heritage; Tangible Cultural Heritage may be further divided as moveable, immoveable and natural heritage. Moveable Heritage includes books, manuscripts, artifacts, art objects, artwork etc. Immoveable heritage refers architecture, monuments, archeological sites and building of historical significance. Natural Heritage may include the record of the countryside, natural environment, flora and fauna, etc.

2 Cultural Heritage at IGNCA

Government of India has established Indira Gandhi National Centre for the arts (IGNCA) as the nodal agency for all matters relating to the setting up of a national data bank on arts, humanities and cultural heritage. This Centre encompasses a wide area of studies, such as creative and critical literature, written and oral; the visual arts, ranging from architecture, sculpture, paintings and graphics to general material culture; photography and film; the performing arts of music, dance and theatre in their broad connotation. The uniqueness of the IGNCA's approach to the arts lies in the fact that it does not segregate the folk and classic, the oral and the aural, the written and the spoken and the old and the modern. Here the emphasis is on the connectivity and the continuity between the various fields that ultimately relate human-to human and human-to-nature.

Kala Nidhi (treasure of arts) Division of the IGNCA is a National Information System and a Data Bank of the arts, humanities, and cultural heritage with a fully supported reference library of multimedia collections. It has a large collection of primary and secondary

material in the broad areas of humanities and the arts. Material relating to different genres in the original and in the other forms of copies is collected, classified and catalogued in the cultural achieves of the Centre. The archives are enriched by personal collection, ethnographic collections, documentation and cultural exchange. These collections are conserved, documented and made available for the purposes of research and dissemination.

Some of the IGNCA collections and various issues concerning copyright, ownership rights and permission rights are discussed below:

2.1 Rare Books

Rare books are crowning jewels of any library and the illustrations in these add to its antiquity. IGNCA has a good collection of 2700 rare books, some of them are 250 years old. IGNCA is making all efforts to identify such books held in large number of institutions and individuals all over the country, to further develop this unique collection. All these books are out of copyright as per Copyright Act, 1957.

2.2 Cultural Archives Collection

The Cultural Archives focuses on the collection, classification and cataloguing of personal collections of scholars/ artists who have devoted a life time in collecting materials pertaining to their fields of interest or discipline. It consists of 37 personal collections of eminent scholars in the field of photography, music, paintings, audio visuals of some living legends, slides, masks, artifacts, sculpture, art objects, and textiles etc.

2.3 Manuscripts Collections

Recognizing the need to encompass and preserve this knowledge resource and to make these accessible to scholars and researchers, IGNCA in year 1989 has initiated the most important manuscript-microfilming programme. The IGNCA has approached many of the private and public institutions and individuals who are in possession of valuable manuscripts preferably in Sanskrit Language and has signed MOU with IGNCA for microfilming of their manuscripts. The IGNCA has, so far, microfilmed over 2.6 lakh manuscripts in 23,000 microfilm rolls. Out of these, 20000 rolls have been digitized and 14000 rolls duplicated. Some of the reprographic material of various primary and secondary texts has also been obtained from many foreign institutions including Bibliotheque Nationale (Paris), Cambridge University Library (Cambridge, UK), Staatsbibliothek(SBPK) (Berlin), INION (Russia), and Welcome Institute for the History of Medicine (London), and India Office Library & Records (London).

2.4 Slide Collection

IGNCA has a collection of 1.1 lakh slides on subject such as Indian arts, paintings, sculpture, architecture, illustrated manuscripts and the performing arts. Over the years it has acquired and generated carefully selected slides from 17 centres in India and 15 abroad. Notable among such acquisitions from museums abroad are the important slides collection from the Victoria & Albert Museum (UK) and the Chester Betty Collection through the

courtesy of INTACH (Charles Wallace bequest). In addition to this, the American Association of South Asian Art has also gifted a complete set of 8,000 slides. Besides slides, the Unit also has a collection of more than 2000 photo-negatives. All slides have been digitized.

3. C-DAC Project at IGNCA

A collaborative project of Indira Gandhi National Centre for the Arts(IGNCA) and Centre for Development of Advance Computing(C-DAC), Pune was started a pilot project in April 2012 for the Digital Preservation of Cultural Data of IGNCA. This project has been sponsored by Department of Electronic and Information Technology (DeitY), Ministry of Information Technology, Government of India, New Delhi.

3.1 Pilot digital repository of cultural digital data

As part of the Centre of Excellence for Digital Preservation Project, the digital preservation technology development team at C-DAC Pune is working with Indira Gandhi National Centre for the Arts (IGNCA), New Delhi in order to develop the pilot digital repository of cultural digital data. IGNCA collects and manages the cultural heritage of India in terms of ancient manuscripts in Microfilm/Microfiche form, rare-books, slides, masks, audio visual material of cultural significance. IGNCA have already digitized a significant portion of this material and maintained the digital copies in various kinds of digital storage media such as CDs, DVDs and hard disks. There are such thousands of CDs and DVDs which has turned into another library of its own kind. The digital preservation technology development team at C-DAC Pune is developing the Rupāntar and Sanskriti Digitālaya an open source software for preserving this cultural digital data. Long term preservation of such data in terms of images, audio /video clips and 3D models is main focus. It is extremely important as the cultural digital data is subjected to digital obsolescence, media failure and it could be easily destroyed or corrupted by computer crash or virus.

3.2 Related work

Therefore, in order to address the requirements of IGNCA with regard to controlled access, archival formats, online availability and digital preservation, C-DAC studied similar international initiatives. British Library[3] and National Library having over 280 terabytes of collection or over 11,500,000 million items are planning to preserve to make the content accessible for future users. Analysis done by NDIIPP[11] gives various policies/ strategies published by different institutes like Archives, Libraries and Museums. Digital Preservation of cultural tangible heritage in Indonesia 'eCultural Heritage[10] and Natural History (eCHNH) Framework'[7] facilitate multi-channel access. Context capturing in terms of metadata is very important while preserving the cultural digital objects[1]. As part of the project, the system is designed to support intranet based collaborative framework for enrichment of the metadata by curators, Indologists and scholars. It also supports OCR and metadata description using large variety of parameters provided by MARC21 in order to capture the context of the cultural digital object. There is also much discussion on

participatory model for heritage organizations wherein the expertise available in different organizations can be used[5]. C-DAC is exploring the collaborative framework over internet for incorporating the expertise available across India and abroad in virtual museums project[8]; however, in the present scope of digital preservation project it is yet to be included. A Digital Archives Framework for the Preservation of Artistic Works[2] provides coherent framework approach that is quiet similar to C-DAC work.

2.3 Challenges of cultural digital heritage as perceived by IGNCA

Over the years IGNCA has enriched its collections[4] with the help of various individuals and institutions from India and Abroad in terms of broad categories of rare books, personal collection, cultural archives collection, manuscripts collections in microfilm/microfiche form, slide collection, national audio visual. Most of the above collections available at IGNCA are already digitized or being digitized. The challenges faced[5] in managing and accessing these digital collections are as under -

- Open access verses restricted access is a debate going on at IGNCA since long. Still no decision has been taken about access to cultural heritage at IGNCA under open access environment.
- More than 80% of non-print material at IGNCA has been digitized. However, there is no centralized archiving system or online digital library in plan. Many of these materials are available in either CD/ DVDs or digital in form of TIFF and JPEG files. Millions of pages of digital material have been stored in form of different files.
- Lack of comprehensive Metadata for all digitized material is also a big hurdle in access to digitized material.
- IGNCA also not having any well-drafted digital preservation policy for long term preservation of digitized material.
- IGNCA is leader in digitization of cultural heritage, however it does not have all well placed IT infrastructure in place. Lack of trained IT manpower also affects the various digital Library initiatives.

The digital preservation R & D team at C-DAC, Pune has analyzed the challenges as under-

3.3.1 Handling CD/DVDs

C-DAC have observed that IGNCA or other similar cultural heritage organizations and museums are producing enormous amounts of digital data that they are primarily storing in CDs and DVDs. As we know, the average capacity of CD and DVD for storing data is approx. 700 MB and 4.7 GB respectively, which results in hundreds and thousands of CD/DVDs to store such data. Regular audit to ensure that the CDs or DVDs are in working condition, maintaining duplicate copies, refreshing, migrating, cataloging tasks are unmanageable due to shortage of human resource and lack of technical expertise. In this approach it is not possible to store the metadata of the digital objects and facilitate search & retrieval due to offline storage media. Therefore, in spite of the digitization efforts, accessibility of this data is questionable. The external storage media is also subjected to

physical decay or degradation, damages caused due to mishandling and variations in temperature and weather conditions.

3.3.2 Obsolete file formats

Proprietary, copyrighted, patented and closed source file formats and obsolete formats pose major threats for the cultural digital data e.g. it has lot of data stored in Kodak PCD format which is not supported by Kodak anymore. Large volume of cultural digital content in many organizations is like to be stored in such unsupported or obsolete formats which must be migrated quickly otherwise such data will be lost permanently.

3.3.3 Proprietary software solutions

It is observed that organizations have relied upon proprietary software solutions for maintaining the catalogues. Such software solutions often store the information in their own proprietary format and do not permit exporting or migrating the cataloging metadata into open format. It becomes a major handicap for the data owners as they have to always depend on the vendor. The data owners can lose entire data if the software license is not upgraded/ renewed or the software is discontinued in future. In such situation, C-DAC's digital preservation technology development team has rescued the data by migrating it into open source and standardized formats.

3.3.4 Lack of manpower and infrastructurep

Most of the cultural heritage institutions and museums do not have adequate computing infrastructure and the manpower with required technical skills to manage the activities like digital data, preservation, backup, etc. C-DAC is presently supporting the pilot digital repository at IGNCA within the scope of this project. However, long term support systems and human resource provisions are necessary for sustaining these efforts.
In order to address the digital preservation requirements at IGNCA, the team at C-DAC, Pune is developing the following digital archival solutions as under-

4. Digital Archival System

Therefore, the digital preservation technology development team at C-DAC Pune has initiated the development of e-Rupāntar and Sanskriti Digitālaya systems based on the study of workflow, metadata requirements, file formats, current digital storage practices available in the cultural heritage organizations. The functional prototypes of these systems are already deployed at Indira Gandhi National Centre for the Arts, New Delhi for testing, feedback and continuous development as part of the pilot project. The solution will be productized and given a generic form to make it suitable for all the cultural heritage organizations. e-Rupāntar and Sanskriti Digitālaya systems are developed using open source technologies and allow collaborative participation of the staff through local area network(LAN).

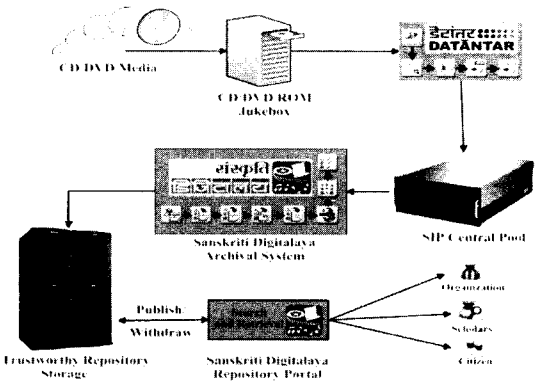


Figure 1. Architecture of Digital Preservation Process

4.1 e- Rupāntar System

The word "Rupāntar" is a fusion of two words of Hindi languages. 'Rupa' means picture, consisting of a graphic image of a person or thing and 'antar' means transformation. Therefore, 'Rupāntar means to convey transforming the data in order to make it preservable. e-Rupāntar software provides a set of best practices such as content organization, watermarking, OCR, naming conventions, tagging, structuring, production of low resolution copy for dissemination, etc for image, audio and video formats. It delivers the valid Submission Information Package (SIP) as per the requirements of Open Archival Information System(OAIS)[9].

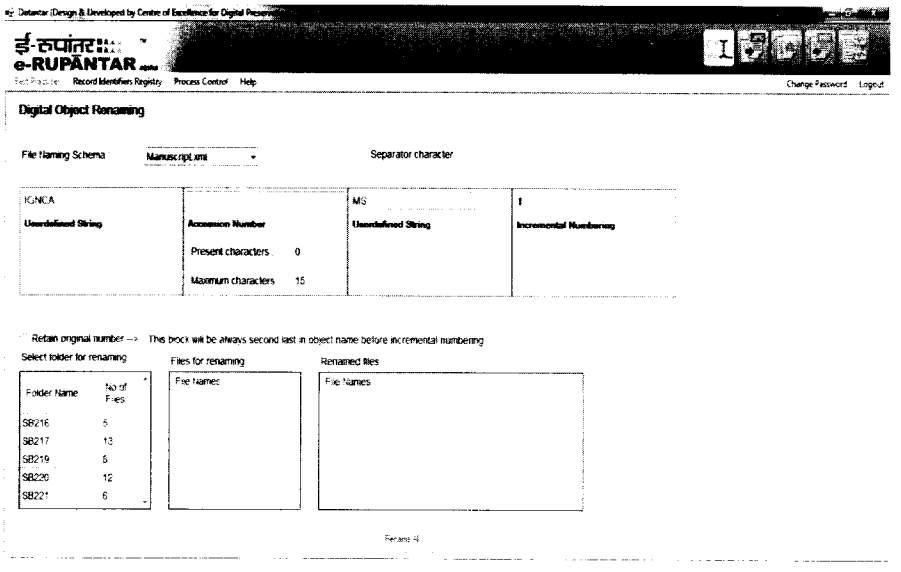


Figure 2. e-Rupanter System

4.2 Sanskriti Digitālaya System

Before processing digital data through Sanskriti Digitālaya Archival System, data is required to be organized in the form of Submission Information Package (SIP) using e-Rupāntar system. These SIPs are generated by producers and sent to the Archival system. Producers or participating institutions having cultural digital data deliver SIPs to the archival system.

Sanskriti Digitālaya Archival System fully complies with ISO standard on Open Archival Information System (OAIS) reference model. If any digital content is need to be preserved then it should follow the guidelines of OAIS model. Under the OAIS model, digital content is transmitted to the Archival system in a form called a Submission Information Package (SIP). The system's ingest process validate, accepts and analyze the SIP and archives its contents according to a specific preservation plan for long-term preservation. Our system produces the Archival Information Package (AIP) and manages to ensure its integrity, security and future accessibility. When a user requests for a particular digital object or a group of objects from the Sanskriti Digitālaya Repository Portal, then Dissemination Information Package (DIP) is configured comprising the object and relevant metadata, as per the assigned rights and privileges of the user. Sanskriti Digitālaya system is aimed at supporting all the file formats used in the cultural heritage domain such as images, audio, video, slides and manuscripts and metadata schemas like MARC21, MODS, Dublin Core, METS, etc.

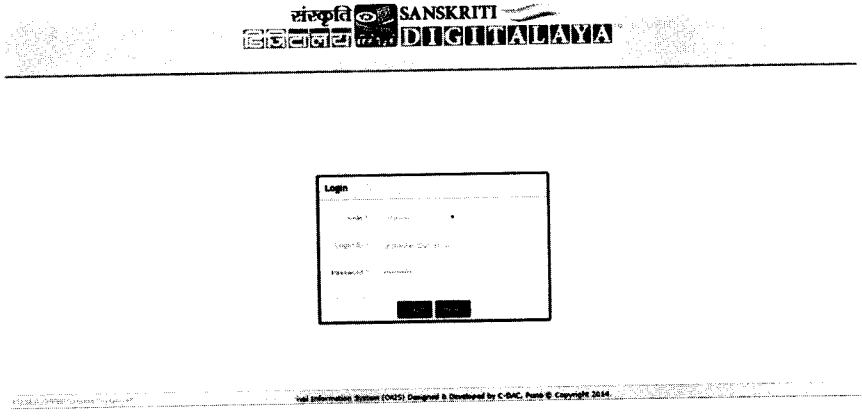


Figure 3.1 Sanskriti Digitālaya Archival System

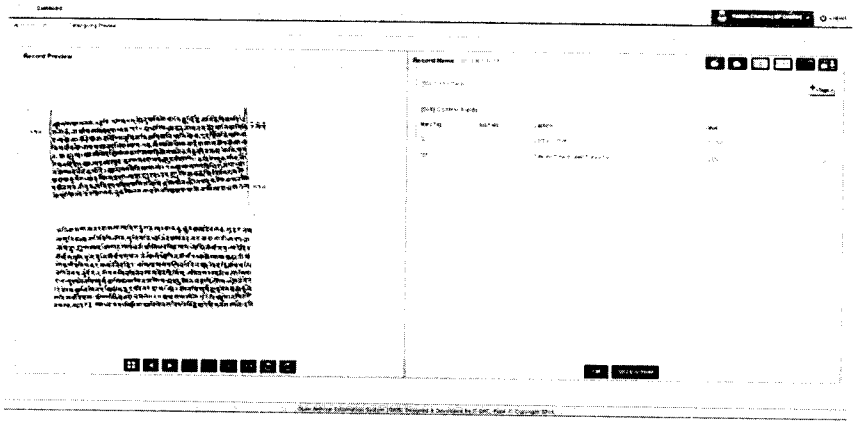


Figure 3.2 Sanskriti Digitālaya Archival System

When SIPs are coming to the Archival system for processing, they are to be validated first because some SIPs will have insufficient representation information or preservation description information to meet stringent AIP requirements. Validation is a process that ensures that the files which are being accepted into the Archival system comply with the standards. After successful validation of SIP metadata enrichment stage comes, so that SIP Creator can enrich descriptive metadata of SIP for better access. Collaborative framework is adopted in the system so that Archivist can check and approve the SIP sent by SIP Creator and after approval, SIP Creator can ingest that SIP. The ingest process of SIP includes various steps such as XML parsing, technical metadata extraction, fixity calculation, XML generation, indexing, packaging, etc. The system also allows defining preservation policies based on various technical parameters, administering the user accounts and accessing control for the material published on the repository portal.

4.3 Access through Repository Portal

Sanskriti Digitālaya Repository Portal is for accessing records present in repository through internet. In this system user can search records through basic search and advanced search. Fuzzy logic is used for searching, so that it find matches even when users misspell words or enter in only partial words for the search. If user wants to perform specific searching within required fields then Advanced Search and Command Search features can be used. In these all sorts of combinations of fields through logical operators like AND, OR & NOT can be made and appropriate results can be fetched. Search results can be filtered with fields like author, publisher etc. and appropriate result list will be displayed. User can select any record from result list and view its content with metadata. The repository portal facilitates the DIP with proper access controls.

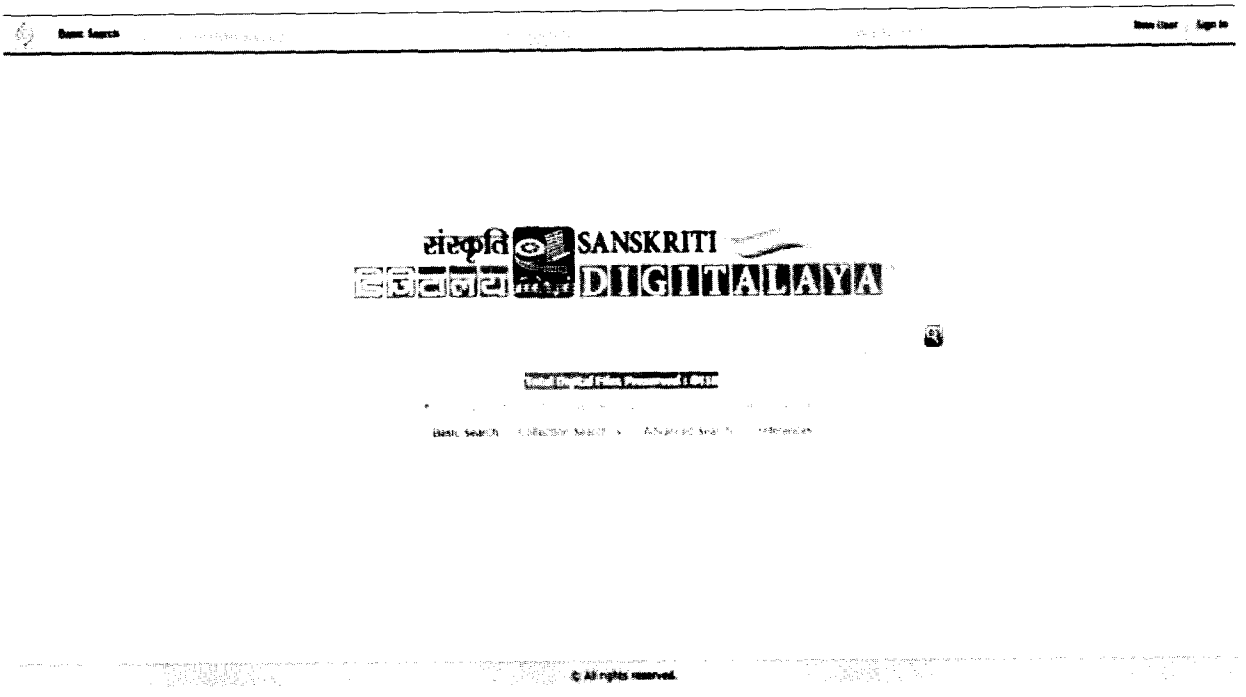


Figure 4.1 Sanskriti Digitālaya™ Repository Portal (Result Preview)

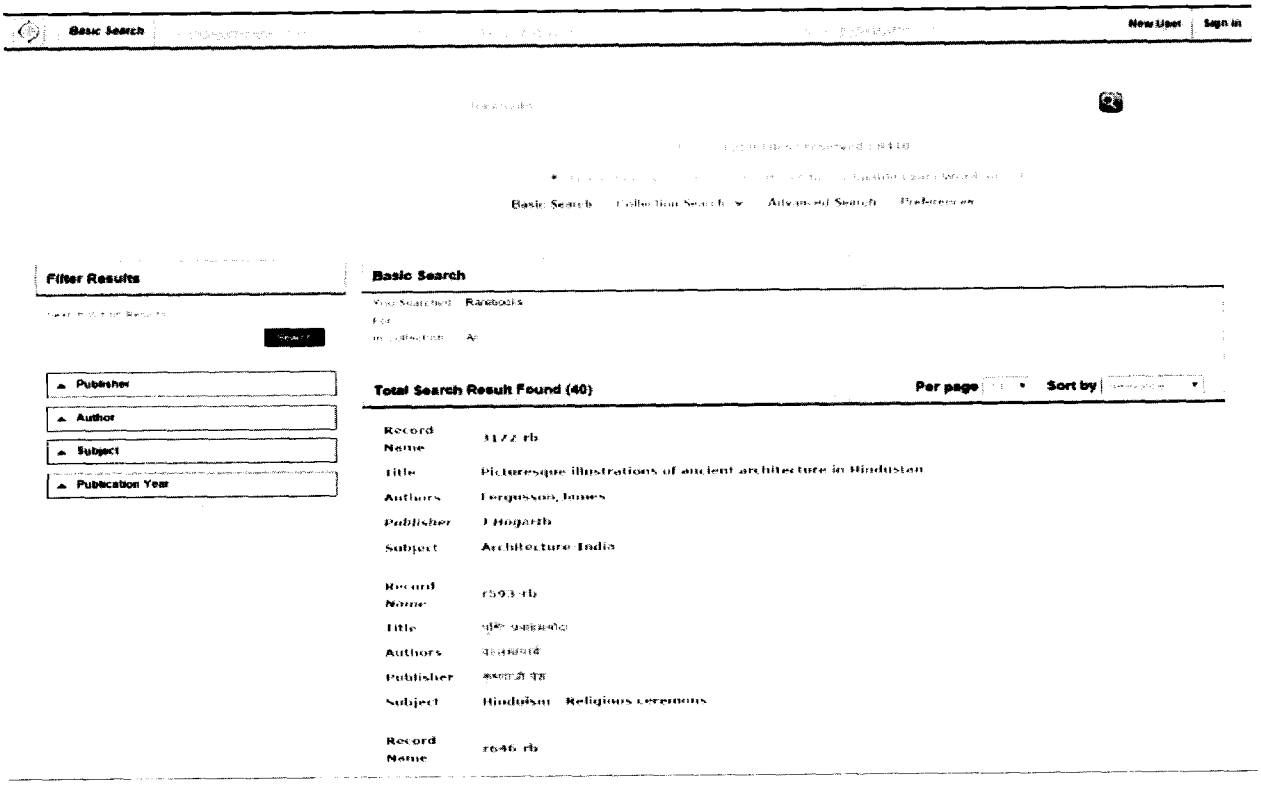


Figure 4.2 Sanskriti Digitālaya™ Repository Portal (Result Preview)

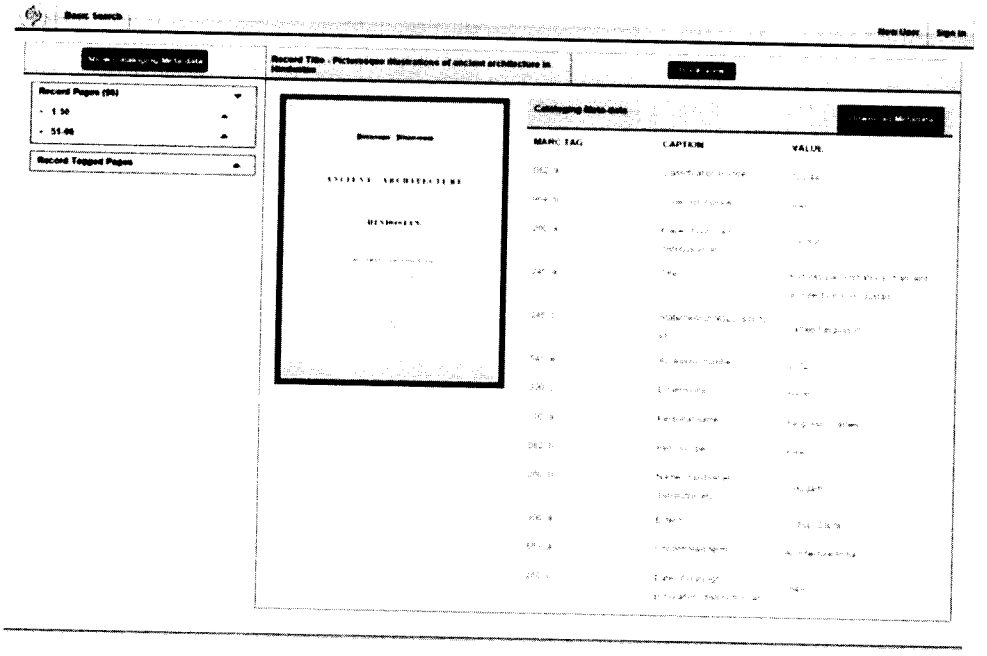


Figure 4.3 Sanskriti Digitālaya™ Repository Portal (Result Preview)

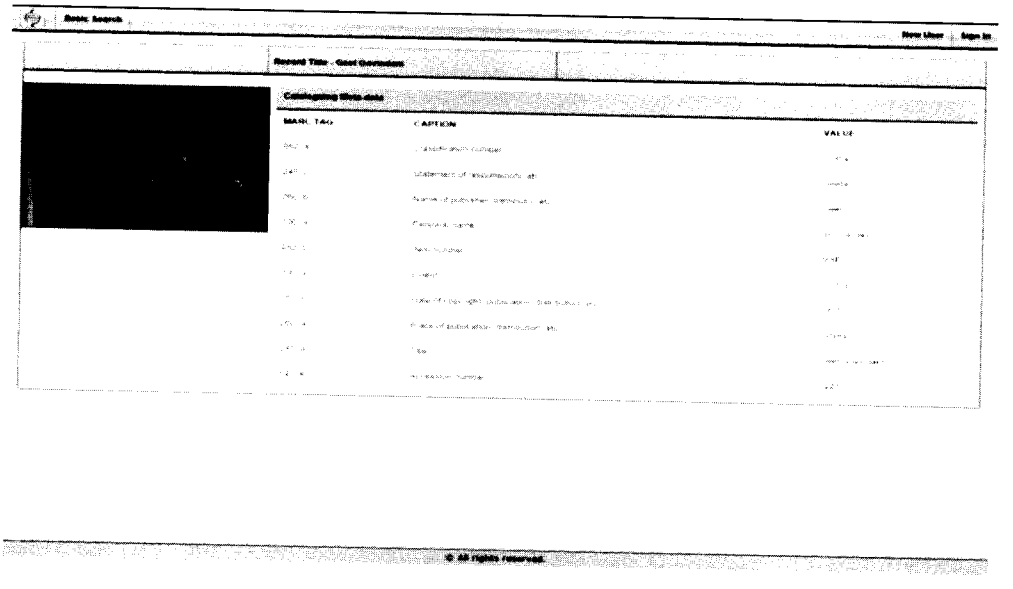


Figure 4.4 Sanskriti Digitālaya™ Repository Portal (Result Preview)

5. Opinion and Result

The emergence of electronic technology in general, and digital library technology in particular, has opened up exciting new possibilities for digital preservation of heritage material. Digital media have several advantages, which make them particularly suitable for heritage preservation. They are durable and reproducible, and provide unprecedented flexibility while accessing the preserved content. However, there are several issues that need to be addressed and continuous R&D is necessitated to resolve existing issues of

concern, refine & fine tune the systems and evolve new techniques and tools that could be teamed as the best practices.

In India, Ministry of Information and Communication Technology is supporting digitization of Indian cultural heritage. National Digital Preservation programme (NDPP) is a good beginning to have a National Digital Preservation Policy for India. Like other countries, India will also be needing legislation for legal deposit of digital material. In such a Scenario proposed National Mission on Libraries under consideration of Ministry of Culture, Government of India seems to be the best choice to work on a comprehensive legislation in relation to safeguarding, access and preservation of Indian cultural heritage resources.

Design and development of Digital Preservation System for Indian cultural heritage is a massive effort involving active participation and collaboration of various cultural institutions of India. This paper tries to establish a benchmark in the domain of national digital preservation infrastructure and will also guide and give directions to all the future initiatives in digital preservation landscapes. Draft National Rules and policy in this regard requires to be finalized on high priority. Indian National digital preservation policy and digital preservation rules under the 2000/2008 Act should be revised and finalized.

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Electronic Theses and Dissertations (ETDs) Repositories initiatives in India: *A study*

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Abstract: Theses and dissertations are one of the important information sources in any academic and research library. The libraries have now changed the theses production of theses and dissertations in electronic format. This paper covers the ETDs initiatives in India and presented under Universities and institutional level. Some of the ETDs repositories are taken initiatives in India they are Vidyanidhi, shodhganga, CSIR exploration, Indian National Theses databases and DELNET studied in this paper. The study observed that the shodhganga has implemented 198 universities of ETDs repositories and can be accessible full text theses on 2010 onwards. The paper aims to take an overview of the contents of these repositories and to highlight the problems in self archiving approach of researchers in India.

Keywords: Electronic Thesis and Dissertations, Digital Library software, Indian digital repositories, institutional repositories

1. Introduction

Theses and dissertations from all Universities level become part of the university's library collection. Once approved the theses from the Universities departments, researchers should be submit the theses to the university libraries and Ph. D section. In olden days, theses and dissertations are the written documents formatted and bound like a book. It is known to be the rich and unique Primary source of information useful to the researchers. In the recent technology, digital library technologies are changed the routine works in the libraries. Today, access to scholarly research is improving as a result of the growth of institutional repositories and associated with IT developments using open source platforms such as EPrints, DSpace, Fedora, Greenstone and other programs have been released now a days. These allow digital resources to be organized, described, and most importantly shared through metadata harvesting projects such as the Open Archives Initiative (OAI). An increasing number of academic institutions are encouraging the students to submit theses in electronic format which as a result become increasingly visible within the competitive research environment. Theses and dissertations represent a global source of research information.

The digital libraries of electronic theses and dissertations (ETDs) are promising to be extremely advantageous to scholars, especially in developing countries. The ETDs initiatives started in India during the year 1990s and popularity of this concept is growing rapidly in higher education and research institutions to disseminate newly emerged knowledge and expertise. The aim of this study to known the status of Indian Electronic

theses and dissertations repositories in India using digital library software. It may also be serve as a baseline study that to assess the development, impact, and viability of Indian ETDs repositories.

2. Benefits of ETDs:

There are numerous advantages of ETDs on different type of group such as libraries, institutions and students community. Bandra (2002) cited by Hirwade (2011) identifies the following benefits of ETDs:

- To empower students to convey a richer message through the use of multimedia and hypermedia technologies;
- To improve graduate education by allowing students to produce electronic documents, use digital libraries and understand issues in publishing;
- To increase the availability of student research for scholars and preserve it electronically;
- To lower the cost of submitting and handling theses and dissertations;
- To empower universities to unlock their information resources and
- To advance digital library technology.

3. ETDs Initiatives in India

Indian National Theses Database @INFLIBNET: Online Union Catalogue of Indian Universities is integrated with Online Library Catalogues of books, theses and journals available in major university libraries all over in India. This database contains bibliographic description, location and holdings of information for books, journals and theses in all subject areas available in more than 160 university libraries across the country. The Indicat consists of three components available in open access to users and librarians having number of books - 1,28,36,579 records in 160 universities, theses - 2,65,351 records in 309 universities and Serials - 33,184 records in 213 universities are uploaded.

Union database of Theses covers the bibliographic Metadata of Doctoral Theses submitted to **287** Universities/Institutes in India. It has over **2,53,073** unique records can be accessible bibliographical records from all subject areas. This Data is contributed by participating Universities (as on January 2015).

Vidyanidhi: Vidyanidhi began as a pilot project to demonstrate the feasibility of Electronic Theses and Dissertations in the Indian Context. This project got in the year 2000 at the Department of Library and Information Science, University of Mysore, Manasagangotri, Mysore, sponsored by the National Information System for science and Technology, Department of Scientific and Industrial Research, Ministry of Science and Technology, Government of India. Currently Vidyanidhi is evolving into an information infrastructure

and portal for strengthening and augmenting the doctoral research capacities of Indian Universities. It is also has the strategic support from the University Grants Commission.

Vidyanidhi digital Library of Indian doctoral dissertations setup in the year 2013 using the open source software of e-prints archive. This database providing to access 9,536 only full text articles in different subject areas are Agriculture Biological Sciences (2304), Humanities and Fine Arts (106), Information, Computer and Applied Sciences (707), Management Sciences (136), Physical Sciences (5875), Social Sciences (601) and other subjects (2). This database covers journal articles, conference papers, books, books review during 1919 to 2015 available the theses in University of Mysore.

Table 1- shows the digitized journal articles of doctoral dissertations in University of Mysore

Sl. No.	University of Mysore	Digitized journal articles of doctoral dissertation in UoM
1.	**Constituent Colleges (706)**	
•	Maharajas College Mysore	43
•	Prior to UoM Bifurcation	193
•	University College of Physical Education	1
•	Yuvaraja's College Mysore	469
2.	Institutes/Centres Mysore	150
3.	Departments in University of Mysore	8,816
4.	PG Centre, Hassan	63
5.	PG Centre, Mandya	209
6.	Satellite Centre, Chamarajanagar	6
	Total	**9950**

Shodhganga: The University Grants Commission (UGC) is a statutory organization established by an act of parliament. This is a national body for the coordination, determination and maintenance of standards of University education. The UGC serves as a vital link between the Union and State Governments and the institutions of higher training. The UGC Notification (Minimum Standards & Procedure for Award of M.Phil. / Ph.D Degree, Regulation, 2009) dated 1st June 2009 mandates submission of electronic version of theses and dissertations by the researchers in universities with an aim to facilitate open access to Indian theses and dissertations to the academic community throughout the world.

"Shodhganga" is the digital repository of Indian Electronic Theses and Dissertations setup by the INFLIBNET Centre. The Shodhganga@INFLIBNET is setup using an open source digital repository software called DSpace developed by MIT (Massachusetts Institute of Technology) in collaboration with HP. The submission of full text e-theses (as on 24th February 2015) as shown in Table No. 2

Table 2 -Shows the list of digitized e-theses in state wise universities

Sl. No.	State	Universities	ETD repositories
1.	Andhra Pradesh	15	**4779**
2.	Arunachal pradesh	2	2
3.	Assam	4	375
4.	Bhiar	4	8
5.	Chattisgarh	3	885
6.	Goa	1	516
7.	Gujarat	14	1387
8.	Haryana	6	505
9.	Himachal pradesh	2	59
10.	Jammu and Kashmir	4	308
11.	Jharkhand	3	47
12.	karnataka	14	920
13.	Kerala	6	4160
14.	Kolkata	2	8
15.	Madhya Pradesh	10	866
16.	Maharashtra	23	1909
17.	Manipura	1	57
18.	Meghalaya	1	41
19.	Mizoram	1	20
20.	New delhi	7	5230
21.	Orissa	3	8
22.	Punjab	7	927
23.	Rajasthan	16	650
24.	rajkot	1	339
25.	Tamil Nadu	30	3898
26.	Tripura	1	16
27.	Uttar pradesh	22	4201
28.	uttarakhand	4	469
29.	West bengal	7	186

"Shodhganga" provides a platform for research scholars to deposit their Ph.D. theses and make it available to the entire scholarly communication in open access. The repository has the ability to search by chapterwise, bibliography, index in PDF format submitted by the researchers in reputed universities. In this database 198 Universities have signed the Memorandum of Understanding (MoU) in Shodhganga. This repository can be accessible of 32,832 full text theses in form of theses format and it is also uploaded synopsis of different Universities in shodhgangothri about 1,884. The search techniques is used to search the ETDs records in different fields are universities and departments, submit date, Research guide, title, keyword and universities.

CSIR Explorations

CSIR has been development of human resource for research and development. It pursuing the research fellowship to young post-graduates, doctoral, post doctoral research at national laboratories and universities in all over India. CSIR exploration in a digital library of electronic theses and dissertations and research reports of the fellowship and projected by CSIR. In this database e-theses digitized about 970 in different subject of institutional level during the year 1938 to 2015 and serves as a valuable source of information about doctoral theses submitted to Indian universities.

In this website, listed out all institutions in categories wise available in India and some of the universities regulations in UGC also included in this list. The searching tools are possible to search e-theses by different keywords viz title, author, guide, institute, universities and synopsis. Table No. 3 shows the list of institutions was digitized doctoral dissertations.

Table 3 -The list of institutions/universities digitized e-theses

Sl. No.	Institutions/ Universities	Total no. institutions added within the subject	Total no. of institutions digitized e-theses	Records of ETDs
1.	Council of Scientific and Industrial Research(CSIR)	37	20	779
2.	Department of Biotechnology	20	5	9
3.	Department of Science & Technology (DST)	17	6	7
4.	Indian Council of Agricultural Research (ICAR)	95	5	8
5.	Indian Council of Medical Research (ICMR)	30	1	1
6.	Indian Universities	327	66	166
			Total	**970**

6. Major Findings and Observations

The study evaluate the status of the ETDs repositories under taken initiatives in India they are Vidyanidhi, Indian National Theses Database, Shodhganga, CSIR exploration and DELNET.

- The study found that the shodhganga@INFLIBNET has been implemented the ETDs repositories of all the universities in India. 198 universities under signed MoU for digitization of e-theses in shodhganga project. Out of 198 Universities, 20 universities are not uploaded the e-theses even single document. Shodhaganga repositories also uploaded the synopsis and full text theses can be accessible 32,000+ in the chapter wise on 2010 onwards.
- It is observed from the Vidyanidhi ETDs repositories has been implemented the Journal articles submitted the doctoral dissertations in University of Mysore. It covers digitizations of journals articles from theses of all the departments in university, constituent colleges, institution within the Mysore, PG centres in mysore. It is also found that the only journals article of doctoral dissertations and some the synopsis are also uploaded for the year 1919 to 2015.
- CSIR exploration website has listed out 197 institutional level in india and 327 universities are covered in this doctoral dissertation database. Out of 526 institutions/universities, only 103 institutions/universities of theses were digitized totally about 970+.
- The study shown that the Indian National theses databases@INFLIBNET have unique records of bibliographic details about **2,53,073** theses of all subject areas in 287 universities in India.

7. Conclusion

There are a growing number of institutions at international and national level which are initiating new programs and policy in digitizing ETDs. ETD repositories are becoming a major source of information. It is a journey that is rigorous and also fraught with many a challenges from selecting a topic to writing the thesis.

Many ETDs repositories have very limited access to e-theses databases under taken in India. Only shodhganga has implemented the full text theses of about 198 universities, but it covers the e-theses 2010 onwards. Shodhganga@INFBLINET take the decision to covers e-theses of all the universities in India and also to suggest that the ongoing ph.d work should be implement in the website for avoiding the duplicate topic for the ph.d work.

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Authors Profile



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ETD Repositories in India: *Some Major Initiatives*

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Abstract: The digital libraries of electronic theses and dissertations (ETDs) are promising to be extremely advantageous to scholars especially in developing countries. The ETD initiatives started in India during late nineties and popularity of this concept is growing rapidly in the higher educational and research institutions to disseminate newly emerged knowledge and expertise. Presently ETDs submitted in Indian universities is mainly in text format, and many libraries have no open access policy. Perhaps the greatest challenge for librarians today, is to develop and maintain sustainable model of open access ETD repositories for users. This article discussed about the current developments of ETD repositories in India.

Keywords: Electronic Theses and Dissertations, ETD consortia, ETD digital libraries, ETD repositories.

1. Introduction

The Indian libraries have witnessed a great impact of Information and Communication Technology (ICT) in last three decades. The development can be traced in three phases 1stPhase 1980s: Automation of House-keeping operations; 2nd Phase 1990s: Networking of Libraries and 3rd Phase: 2001 onwards: Digitization initiatives; E-content creation; Digital Repositories and Library 2.0. Electronic Thesis and Dissertation (ETD) increases the availability of research to the academic community worldwide, increase the exposure to potential employers, improve student understanding of electronic publishing issues and reduce the need for library space. Technical innovations are changing the way we communicate and share information around the globe. ETD offers a new generation of theses and dissertations that can include colour diagrams, colour images, hypertext links, audio, video, animations, spread sheets, databases, simulations, and virtual reality worlds. ETD helps in accelerating workflow within the university and library systems and makes theses and dissertations more quickly available to outside audiences. The greatest advantages of ETDs are avoiding duplication in research work, ensuring quick retrieval of information, promoting resource sharing, and providing a permanent solution to the problem of space.[1]

2. Theses and Dissertations in India

Indian universities/institutes plays a major role in generation and dissemination of knowledge by conducting research works and producing Ph.D. theses as a unique genre of information sources. Every year nearly 8000-10000 Ph.D. are awarding in India. The purpose of the thesis is to provide an experience in scholarship, which will be of enduring

value to the student in understanding how new knowledge is acquired and communicated within the chosen field. These works contain valuable content, including focused literature reviews and details on research, which are not generally made available elsewhere. At the moment, most unpublished theses are hard to get hold of, as they are field only in the university library where the students has worked. The Indian theses literature is beset with many problems like lack of systematic acquisition, Lack of access, uncertain publication practice, enormous growth in the number of theses etc. [2]

3. ETD in India

Electronic Thesis and Dissertation (ETD) initiatives in India are at an embryonic stage. At present, access to theses and dissertations is limited, as availability of comprehensive theses bibliography database or ease of availability of full–text theses is not available. Since the beginning of this decade, few national institutes started ETD initiatives with focus on Open Archives Initiative (OAI) complaint repositories, thus allowing metadata harvesting. It may not be surprising that some of these institutes received funding or collaborative support from other organizations to start their digital library initiatives. Information Library Network (INFLIBNET) consortium, Vidyanidhi Library of Theses and Dissertations etc. are actively involved in the development of bibliographic ETDs and digital ETDs.[3] In 2007, the National Knowledge Commission (NKC) in India recommended development of web based common open resources and encouraged open access for all material research papers, books, periodicals etc. It also recommended that all academic institutions must set up institutional repositories of ETD. This should be made mandatory for accreditation and such repositories should offer open access.

The UGC Notification (Minimum Standards & Procedure for Award of M.Phil./Ph.D Degree, Regulation, 2009) dated 1st June 2009 provides for submission of electronic version of theses and dissertations with an aim to facilitate open access to Indian theses and dissertation to the academic community world-wide. Online availability of electronic theses through centrally-maintained digital repositories will not only ensure easy access and archiving of Indian doctoral theses but will also help in raising the standard and quality of research. All these events have significantly contributed for establishment of E-theses repositories and OA movement in India.[4]

4. Current scenario

As per the OpenDOAR directory, there are 35 E-theses repositories in India on 26-Mar-2014. The oldest E-theses repository registered in ROAR is ETD@IISc in 2005.The list of Indian E-theses repositories is presented in tabular form.[5]

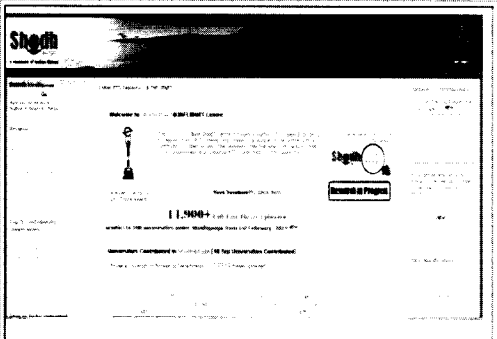
Repository name	Country	Num. Recs.	Pubs	Confs	Theses	Unpub	Other	Base URL	Software
ARIES, Digital Repository	India	805		+	+	+			DSpace
Catalysis Database	India	2327		+	+			OAI	EPrints
CMFRI Digital Repository	India	9661	+	+	+	+	+		EPrints
Digital repository of Cochin University of Science &	India	2525			+		+	OAI	DSpace

Technology									
DigitalLibrary@CUSAT	India	6199	+	+	+		+		DSpace
DIR@IMTECH	India	1330			+		+		EPrints
DRS at National Institute of Oceanography	India	4452		+	+			OAI	DSpace
DSpace @ GGSIPU	India	135			+		+	OAI	DSpace
dspace @ sdmcet	India	60	+		+	+	+	OAI	DSpace
DSpace at Indian Institute of Management Kozhikode	India	530		+	+	+		OAI	DSpace
DSpace at M S University	India	246			+				DSpace
DSpace at NCRA	India	84			+	+	+		DSpace
DSpace at Vidyanidhi	India	5482			+			OAI	DSpace
Dspace@NITR	India	1985	+	+	+			OAI	DSpace
DSpace@TU	India	2561		+	+				DSpace
DU Eprint Archive	India	170	+	+	+		+	OAI	EPrints
ETD at Indian Institute of Science	India	2215			+			OAI	DSpace
Eprint@NML	India	5692	+	+	+		+		EPrints
Eprints @MDRF	India	676	+		+			OAI	EPrints
Eprints@IARI	India	230		+	+	+			EPrints
EPrints@IITD	India	2144			+			OAI	DSpace
EPrints@NIRT	India	830	+	+	+		+	OAI	EPrints
Etheses - A Saurashtra University Library Service	India	1016			+		+	OAI	EPrints
IACS Institutional Repository	India	220			+	+			DSpace
Indian Institute of Astrophysics Repository	India	6307			+		+	OAI	DSpace
Institutional Repository of Intectual Contributions of Delhi Technological University	India	841			+		+	OAI	DSpace
Institutional Repository@CSIO	India	311		+	+	+	+	OAI	EPrints
Institutional repository@VSL	India	11037		+	+	+	+		DSpace
Kautilya Digital Repository at IGIDR	India	247		+	+	+		OAI	DSpace
Knowledge Repository Open Network	India	886		+	+			OAI	DSpace
Librarians' Digital Library	India	490		+	+		+	OAI	DSpace
Mahatma Gandhi University Theses Online	India	1814			+				Nitya

National Aerospace Laboratories Institutional Repository	India	5667		+	+	+	+	OAI	EPrints
ShodhGanga: A reservoir of Indian theses	India	14993			+				DSpace
Social Science Cyber Library	India	14782	+		+				CALIBER

5. Major ETD initiatives in India

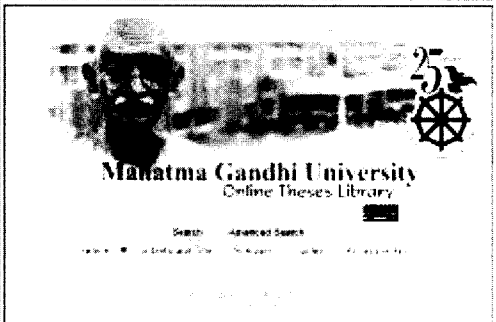
Some major ETD initiatives in India are Shodhganga: a reservoir of Indian Theses, Mahatma Gandhi University Open Access Online Theses Digital Library, IndCat: Online Union Catalogue of Indian Universities, Vidyanidhi, etd@IISc, Etheses - A Saurashtra University Library Service, Dyuthi- Digital Repository of Cochin University of Science and Technology, Library of the Indian Institute of Science (JRD Tata Memorial Library), North-Eastern Hill University Digital Library and DELNET Databases of Theses and Dissertations.These are discussing below:



Shodhganga: a Reservoir of Indian Theses

Description: The Shodhgangais the digital repository of Indian Electronic Theses and Dissertations set-up by the INFLIBNET Centre provides a platform for research students to deposit their Ph.D. theses and make it available to the entire scholarly community in open access. The repository has the ability to capture, index, store, disseminate and preserve ETDs submitted by the researchers. Number of Theses: 33106.[6]

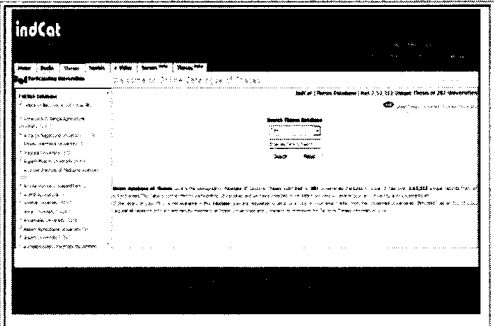
URL http://shodhganga.inflibnet.ac.in/



Mahatma Gandhi University: Online Theses Library

Description: Mahatma Gandhi University Open Access Online Theses Digital Library is an important step towards democratization of knowledge and it is the model of digital archives created by MG University will be emulated by other Indian universities leading to transpancy in education research. Number of Theses: 2012.[7]

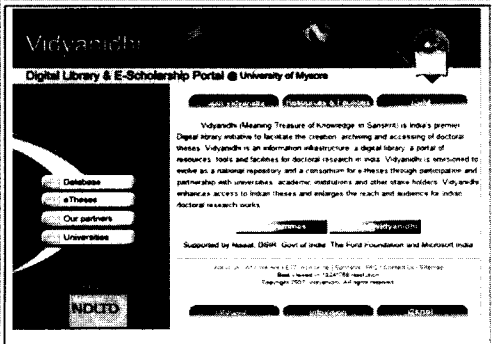
URL http://www.mgutheses.org/



IndCat: Online Union Catalogue of Indian Universities

Description: IndCat is unified Online Library Catalogues of books, theses and journals available in major university libraries in India. Union database of Theses covers the bibliographic Metadata of Doctoral Theses submitted to 287 Universities/Institutes in India. Number of records: 2,53,312 (Bibliographic).[8]

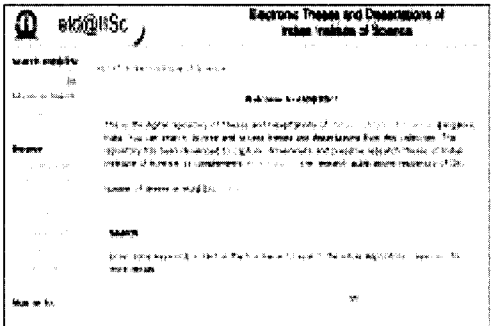
URLhttp://indcat.inflibnet.ac.in/



Vidyanidhi

Description: Vidyanidhi is India's premier Digital library initiative to facilitate the creation, archiving and accessing of doctoral theses. Vidyanidhi is an information infrastructure, a digital library, a portal of resources, tools and facilities for doctoral research in India. Vidyanidhi is envisioned to evolve as a national repository and a consortium for e-theses through participation and partnership with universities, academic institutions and other stake holders. Number of Thesis: 5000.[9]

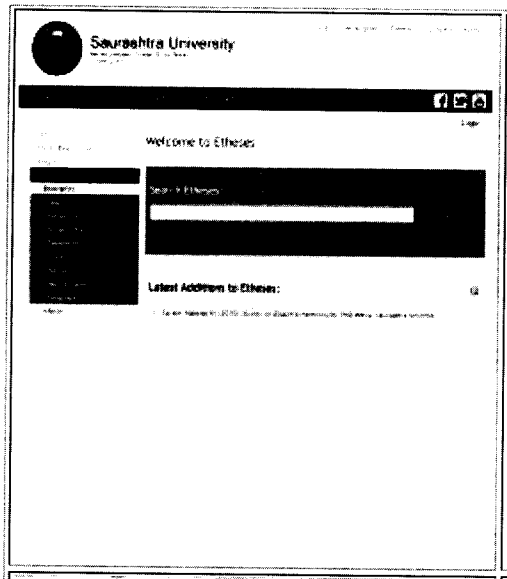
URL http://www.vidyanidhi.org.in/



Indian Institute of Science

Description: This is the digital repository of Theses and Dissertations of Indian Institute of Science, Bangalore, India. You can search, browse and access theses and dissertations from this collection. This repository has been developed to capture, disseminate and preserve research theses of Indian Institute of Science. It complements ePrints@IISc, the research publications repository of IISc. Number of theses: 2370.[10]

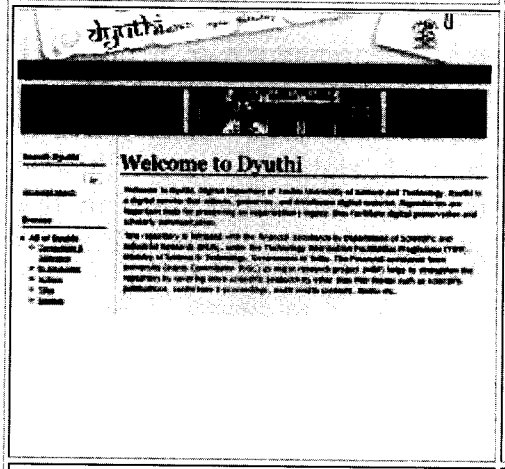
URL http://etd.ncsi.iisc.ernet.in/



Etheses - A Saurashtra University Library Service

Description: Saurashtra University Research Archive [SURA] is a project of the Central Library of Saurashtra University. The repository acts as a focus for the University's research output and helps to manage the research process in future. It is for full-text electronic copies of theses produced by PhD students from the University. It is an Open Access repository, aiming to make the material available to the widest possible audience, and it supports the national project Shodhganga developed and maintained by Inflibnet.Number of theses: 1164.[11]

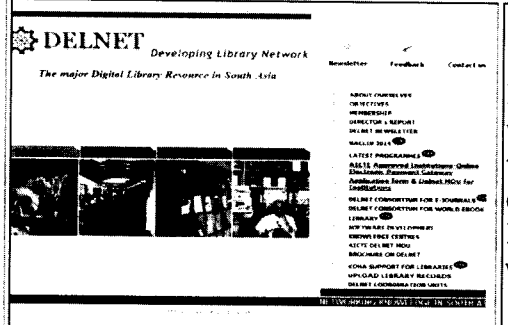
URL http://etheses.saurashtrauniversity.edu/



Dyuthi - Digital Repository of Cochin University of Science and Technology

Description: Dyuthi is a Digital Repository of Cochin University of Science and Technology. Dyuthi is a digital service that collects, preserves, and distributes digital material. Repositories are important tools for preserving an organization's legacy; they facilitate digital preservation and scholarly communication. Number of thesis: 2281.[12]

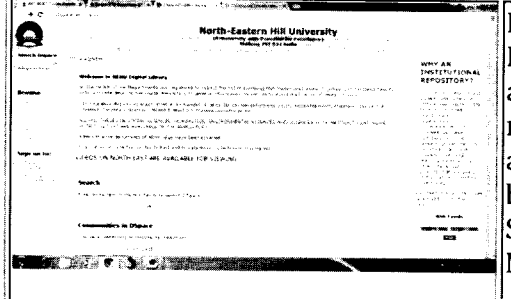
URL http://dyuthi.cusat.ac.in/xmlui/



DELNET Database of Theses and Dissertations

Description:DELNET has been actively engaged with the compilation of various Union Catalogues of the resources available in member-libraries. A database of Theses and Dissertations submitted to Indian Universities has been started, which covers various subjects. The database has 70,293 records.[13]

URL http://delnet.nic.in/



North-Eastern Hill University Digital Library

Description: The NEHU Central Library at Shillong and the NEHU Campus Library at Tura cater to the needs of the students, research scholars, faculty, administrators and staff of the university.The library building, funded by DoNER, was inaugurated on 20th September, 2006 by Shri P. R. Kyndiah, Hon'ble Union Minister of Tribal Affairs &DoNER, Govt.

URL **http://dspace.nehu.ac.in/**

6. Conclusion

In spite of great interest for e-thesis development and majority of doctoral students in India get their theses produced electronically, no wide scale activity is initiated by government in terms of the storage and dissemination of these materials. Furthermore, adoption of national-level policies on institutional repository development is lacking in India. Till date very few institutes request students to submit electronically their theses and dissertations. This article proposes the construction of a reservoir of extensive doctoral research and an Indian portal, to enable preserving of scientific and technological research materials in the country and a global view of Indian institutional research assets. Few national level institutes like Indian Institute of Science and Indian Institute of Technologies have established ETD repositories and few are at the planning stage. The survey has revealed that digital preservation of Theses and dissertation are already in progress, though some of them are still in a novelty stage. The major problems and concerned reported by respondents are summarized and findings are discussed.

The greatest advantages of ETDs are avoiding duplication in research work, ensuring quick retrieval of information, promoting resource sharing, and providing a permanent solution to the problem of space. There is need for concerted effort by all ETD stakeholders to integrate theses and dissertations produced in India in a unified database to be coordinated by a central agency of Government of India. INFLIBNET is now taking steps in this direction. It has started developing a complete national union catalogue of ETDs in India.

There is need for concerted effort by all ETD stakeholdersto integrate theses and dissertations produced in India ina unified database to be coordinated by a central agencyof Government of India. INFLIBNET is now taking steps in this direction. It has started developing a completenational union catalogue of ETDs in India.

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7. http://www.mgutheses.org/(accessed on 2 March, 2015).
8. http://indcat.inflibnet.ac.in/(accessed on 2 March, 2015).
9. http://www.vidyanidhi.org.in/(accessed on 2 March, 2015).
10. http://etd.ncsi.iisc.ernet.in/(accessed on 2 March, 2015).
11. http://etheses.saurashtrauniversity.edu/(accessed on 2 March, 2015).
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13. http://delnet.nic.in/(accessed on 2 March, 2015).
14. http://dspace.nehu.ac.in/(accessed on 2 March, 2015).

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ICT Applications and E-resources in Technical College Libraries in Punjab: *A Survey*

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Abstract: This study was conducted to inspect the application of information and communication technologies (ICT) in technical college libraries in Punjab, India. Questionnaire survey of librarians and library users, semi-structured interviews with librarians, and observational visits in the libraries. This study was confined only to the computerized and automated technical college libraries. The analysis revealed that though the libraries had hardware, software, and communication facilities to some extent, ICT-based resources and services were not reaching the users to the expected extent. Library automation in technical college libraries was largely commenced during the period 1980-2000. The study provides recommendations to give priority to digital library initiatives, consortia based subscription and to enhance effective and efficient application of ICT.

Keywords: Information communication technology, Library automation, Research oriented, technical libraries.

1. Introduction

Information is a dynamic and everlasting resource that affects all disciplines and all works of life. The availability of the right information at the right time in the right form is of utmost importance to users for their knowledge and development activities. Application of ICT in academic and research libraries has become inevitable in the present era of information explosion and wide spread use of digital information resources. Research and Development is the back bone of any research institution which helps in the advancement of research and development activities. All the researchers require latest and relevant information to keep themselves abreast of new developments in their respective areas of interest.

The technical college libraries are switching over to ICT based resources and services at an accelerated pace. E – Journals, e- Books, CD-ROM databases, online databases, web based resources and a variety of other electronic resources are fast replacing the traditional resources of these libraries. It is a right time to evaluate the existing application of ICT facilities in the libraries in a region, particularly in developing countries like India. Punjab is characterized as the hub of the ICT activities and developments in India. The present analytical study is expected to provide fundamental understanding on the current status of

ICT applications in technical college libraries and it would also prove that it is quite useful for suitable modification or improvements of the existing research and development libraries in Punjab.

2. Objectives of the Study

The main objective of the study is to explore the use and application of ICT in engineering, pharmacy, bio-technology, architecture, Polytechnics and MBA college libraries in Punjab. In order to fulfil this aim, the following specific objectives were identified.

- To understand the use of modern information communication technologies in technical college libraries.
- To assess the current state-of-the-art Information and Communication Technology Infrastructure in technical college libraries in Punjab.
- To assess to what extent users are satisfied with information and communication technology resources and services in technical college libraries in Punjab.
- To know the various areas of applications of ICTs in technical college libraries.
- To know the practical opinion of the users and librarians about the application of ICTs in technical college libraries.

3. Methodology

Three main methods were used in data collection: questionnaire method, semi-structured interviews with library users, and observational visits in the libraries. Structured questionnaires were prepared and administered to the chief librarians. The purpose of the questionnaires was to obtain data regarding the current application. A total of 220 questionnaires were distributed to the library users. A total of 180 filled in questionnaires were received back. From these, 150 questionnaires were found to be usable, which comes to an overall response rate of 68.18 per cent. A total of 70 questionnaires were rejected, as they were incomplete and not properly filled.

4. Use of Library

Information is the essential element for progress of higher education and plays vital role in national progress. Proper use of information is directly related to the growth of study, research and teaching facilities and its multidirectional growth of higher education. The use of library could be measured in various ways.

One such way, which may give an idea of the use of the library, is that of finding the frequency of the visits of users to the library. For the present study, the use pattern of library includes frequency of visit to library, time spent on information gathering, purpose of visit to library and sources of information used.

Table 1: Distribution of frequency of visits to the Library by respondents

S.No	Category	Frequency of Library Visit					
		Daily	Twice a Week	Once a Week	Once a Fortnight	Once a Month	Occasionally
1.	Teachers	32 %	19%	12%	14%	16%	75%
2.	Students	18%	26%	11%	5%	19%	21%
3.	Researchers	14%	27%	20%	26%	5%	8%
4.	Guest Readers	2%	10%	12%	18%	35%	23%
5.	Others	3%	17%	21%	19%	9%	31%

- Chi-square value = 8.991
- Degrees of freedom = 20
- Level of significance = 5%
- Figures in parenthesis indicate percentage

4.1 Hypothesis: Respondents differs in their frequency of visit to the library on the basis of category.

It is inferred from the **Table 1** that 32% of the teachers visit the library daily, 19% of them visit twice a week, 12% of them visit once in a week, 14% of them visit once a fortnight. But in the case of students, only 18% of them visit daily, 26% of them visit twice a week, 11% of them once in a week, 5% of them visit once in a fortnight and 19% of them once in a month 21% of them visit library occasionally. In the case of researchers, 14% of them visit daily, 27% of them visit twice a week, 20% of them visit once in a week, 26% of them visits once a fortnight, 5% of them visit once a month and only 8% occasionally. 2% of the Guest readers visit daily, 10% of them visit twice a week, and 12% of them once in a week, 18% of them visit once a week, 35% once in a fortnight and 23% of them occasionally. Others, 3% of them visit daily, 17% of them visit twice a week, 21% of them once in a week, 19% of them visit once in a fortnight. So, more number of teachers visits daily than the other groups.

Table 2: Purpose of visit to the Library on the basis of category

S.No	Purpose of Library visit	Large Extent				Total (A)	Less Extent				Total (B)	Total (A+B)
		P	R	S.L	L		P	R	S.L	L		
1.	To Use/ To Borrow Books	7	15	41	53	116 (77.33)	2	6	7	19	34 (22.67)	150
2.	To Consult Periodical	5	14	42	46	107 (71.33)	4	7	6	26	43 (28.67)	150
3.	To Consult Reference material	6	12	39	48	105 (70.00)	3	9	9	24	45 (30.00)	150

4.	To get current information	4	14	41	45	104 (69.33)	5	7	7	27	46 (30.67)	150
5.	To get bibliographic information	3	7	35	41	86 (57.33)	6	14	13	31	64 (42.67)	150
6.	To get statistical information	2	4	17	23	46 (30.67)	7	17	31	49	104 (69.33)	150
7.	To get recreation purpose	-	1	2	12	15 (10.00)	9	20	46	60	135 (90.00)	150
Total		27	67	217	268	579 (55.14)	36	80	119	236	471 (44.86)	1050 (100.00)

- *Figures in parenthesis indicate percentage*

The **Table 2** shows the purpose of these visits to the library. Among the various cadres irrespective of the designation, 77.33% of them visit the library to use and to borrow books as large extent. 71.33% of them visit to consult periodical, 70% of them visit to consult reference materials, 69.33% of them visit to get current information, 57.33% of them visit to get bibliographic information, 30.67% of them visit to get statistical information and 10% of them to get recreation purpose as large extent. But In the case of less extent, 90% of them visit to get recreation purpose followed by the statistical information 69.33%, 42.67% for bibliographic information, 3.67% to get current information, 30% to consult reference material and approximately 25% to use to borrow books, and to consult periodical as less extent.

Table 3: Distribution score for amount of time spend in computer and online service per week by the respondent

S.No	Category	Time spend by the respondents					Total
		More than 15 hrs.	12-15 hrs.	8-11 hrs.	4-7 hrs.	Less than 4 hrs	
1.	Principal Investigator	5 (50)	3 (30)	2 (20)	0	0	10
2.	Scientist's	13 (52)	7 (28)	3 (12)	2 (8)	0	25
3.	Technical Officer's	15 (42.86)	13 (37.14)	3 (12)	2 (5.71)	1 (2.86)	35
4.	Researchers	45 (75)	10 (16.67)	3 (5)	2 (3.33)	0	60
5.	Others	10 (50)	5 (25)	2 (10)	2 (10)	1 (5)	20
Total		88 (58.67)	38 (25.33)	13 (86.67)	8 (5.33)	2 (1.33)	150 (100.00)

- Chi-square value = 7.648
- Degrees of freedom = 9
- Level of significant = NS (Non Significant)

Note: Figures in parentheses indicate percentage.

4.2 **Hypothesis:** Staffs Differ in their Spending of Time per Week in Libraries

As per the obtained data, it is evident from the **Table 3** that among the principle investigator, 50% of them spend more than 15 hours per week, 30% of them spend 12-15 hours, and 20% of them spend 8-11 hours per week. In scientists group, 52% of them spend more than 15 hours per week, 28% of them spend 12-15 hours per week, 12% of them spend 8 to 11 hours per week, 8% of them spend 4-7 hours per week. Among the technical officers, 42.86% of them spend 15 hours per week, 37.14% of them spend 12-15 hours per week, 12% of them spend 8-11 hours per week, 5.71% of them spend 4-7 hours per week and 2.86% of them spend less than 4 hours. Among the researchers, 75% of them spend more than 15 hours per week, 16.67% of them spend 12-15 hours per week, 5% of them spend 8-11hours per week and 3.33% of them spend 4-7 hours per week. Others, 50% of them spend 15 hours per week, 25% of them spend 12-15 hours per week 10% of them spend 8 to 11 and 4-7 hours per week 5% of them spend less than 4 hours per week.

But this difference is not statistically confirmed by the obtained Chi-square value, which is non-significant. So the hypothesis is rejected. Maximum number of staff spends less than 7 hours per week.

Table 4: Level of satisfaction about the Information communication Technology Service

S.No	Information Communication Technology Service	Level of Satisfaction			Total
		Fully Satisfied	Partially Satisfied	Not Satisfied	
1.	E-Mail	91 (60.67)	51 (34.00)	08 (5.33)	150
2.	Internet	85 (56.67)	56 (37.33)	09 (6.00)	150
3.	OPAC System	87 (58.00)	41 (27.33)	22 (14.67)	150
4.	Online Journal	85 (56.67)	37 (24.67)	28 (18.66)	150
5.	CD-ROM	53 (35.33)	67 (44.67)	30 (20.00)	150
Total		401 (53.47)	252 (33.60)	92 (12.93)	750 (100.00)

- Chi-square value = 45.47
- Degrees of freedom = 8
- Level of significant = 1%

Note: Figures in parentheses indicate percentage.

4.3. **Hypothesis:** Staff Differs in their Level of Satisfaction about the ICT Service.

It is seen from the **Table 4** that, among the ICT service, 60.67% of them are fully satisfied about E-mail and 34% of them are partially satisfied. 56.67% of them satisfied about

Internet, 37.33% of them partially satisfied. Regarding OPAC system, 58% of them satisfied, 27.33% of them partially satisfied. In the case of On-line journal, 56.67% of them satisfied and 24.67% of them partially satisfied, 35.33% of them satisfied about CD-ROM and 44.67% of them partially satisfied. Majority of them are satisfied with e-mail and Internet. This difference is confirmed, so the stated hypothesis is accepted.

Table 5: Respondent's opinion about the Internet usefulness for study /Research or professional Purpose

S.No	Internet Usefulness	Level of Internet Usefulness					Total
		Very Useful	Quite Useful	Occasionally Useful	Useless	No Opinion	
1.	Online E-Journals	53 (35.33)	63 (42.00)	8 (5.33)	0	26 (17.33)	150
2.	Research Project Sites	58 (38.67)	54 (36.00)	27 (18.00)	0	11 (7.33)	150
3.	Scholarly paper & abstracts on the net	42 (28.00)	77 (51.33)	24 (16.00)	2 (1.33)	5 (3.33)	150
4.	Library Site	40 (26.67)	43 (28.67)	28 (18.67)	11 (7.33)	28 (18.67)	150
5.	Academic Dept. on the net	32 (21.33)	39 (26)	43 (28.67)	6 (4.00)	30 (20.00)	150
Total		225 (30.00)	276 (36.80)	130 (17.33)	19 (2.53)	100 (13.33)	750

- Chi-square value = 99.4
- Degrees of freedom = 16
- Level of significant = 1%

Note: Figures in parentheses indicate percentage.

4.4 Hypothesis: Respondents Differ in the Opinion about the Usefulness of Internet.

The above **Table 5** shows the users opinion about the usefulness of Internet for study/research/teaching or professional purpose. Regarding the various sites available in the Internet, 30% of them say very useful, 36.80% of them say quite useful, 17.33% of them say occasionally useful 2.53% of them say useless. This difference of opinion is statistically proved by the obtained chi-square value, which is significant at 1% level. Hence the stated hypothesis is accepted.

Table 6: Main problems when- trying to use Information communication Technology Resource by the respondents

S.No	Problem	Yes	Not Relevant	Total
1.	In Accessing PC	55 (36.67)	95 (63.33)	150 (100.00)
2.	In Accessing Software	65 (43.33)	85 (56.67)	150 (100.00)
3.	In Accessing external networks for e-mail or internet	77 (51.33)	73 (48.67)	150 (100.00)
4.	Lack of information about how to use	81	69	150

	digital resources	(54.00)	(46.00)	(100.00)
5.	Lack of time to acquire these skills	66 (44.00)	84 (56.00)	150 (100.00)
6.	Lack of high quality information available for using digital resources	59 (39.33)	91 (60.67)	150 (100.00)
7.	Feeling that ICT resources are not relevant to you needs	41 (27.33)	109 (72.67)	150 (100.00)

Note: Figures in parentheses indicate percentage.

The above **Table 6** shows the main problems faced by the users while using Information communication technology resource. As per the obtained data 55% of them face problem with accessing suitable personal computers, 65% of them facing problems with accessing suitable software, 77% of the respondents face problems with accessing external networks for e-mail or internet, 81% of the users face problems due to lack of information about how do use digital resources, 66% of the respondents face problems due to lack of high quality of information available from ICT resources and 41% of them feel that electronic resources are not relevant to their needs. Therefore it is concluded that most of the respondents face problems because most of the respondent do not get a proper training to use the electronic resources in the library.

5. Findings

The following important findings have been drawn:

- The research libraries have good infrastructure facilities like internet, library website, online database of the research libraries have LAN and printer other facilities.
- Due to computerization of library, the faculty members feel that the library activity has been changed for the past two years.
- The result shows that the respondent has awareness about the electronic resources.
- The result also found that the entire respondent used computer / online service.
- Regarding the ICT service, most of the staff members are fully satisfied, E Mail, Internet, OPAC system and online journals.
- Further the researcher found that On-line electronic journals and research project sites are very useful.
- The result found that irrespective of their categories majority of them used Journals and Internet / World Wide Web for their research / study purpose.
- Further the researcher found that irrespective of their category, most of them spend thirty minutes per day.

6. Recommendation and Suggestion

- There are a numerous views and comments offered by the librarians and library users of research and development.
- Research libraries should adopt a hybrid collection development policy.
- Majority of the research libraries should given the need based on value added users services.
- Digital library environment the existing rare and valuable resources should be digitization through ICT for preservation and future use.
- All research and development libraries should safeguard their resources by implementing any one of the electronic security systems in addition to professional security.

7. Conclusion

Research and development libraries are the life blood of research organizations. Every R&D libraries have strong collection of publications to support researchers. The rapid technological developments portrayed that the present information age have left a great impact on research and development libraries in Punjab. The majority of the R&D institutions in Punjab have good hardware and software facilities. The study pointed out that greater part of the researchers working in these institutions has shown positive preference toward application of ICT. These Research libraries are using standards to create internal databases, which are used for information retrieval purposes. The study recommended the R&D institutions to give priority to consortia based subscription and increase the funds and recruitment of information technology trained staff for better ICT based services and products to their users.

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Intellectual Property Rights in the Digital Age

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Abstract: With the development of information and communication technology (ICT), information appears in various forms and format. These electronic/digital information resources can be accessed from through networks particularly over the Internet from anywhere. Storing of work in electronic format and electronic transmission of copyright material should be protected. Intellectual property rights (IPR) have become important in the face of changing trade environment which is characterized by global competition, high innovation risks, short product cycle, need for rapid changes in technology, high investments in research and development (R&D), production and marketing and need for highly skilled human resources. Regardless of what product an enterprise makes or what service it provides, it is likely that it is regularly using and creating a great deal of intellectual property. This paper provides a conceptual view of intellectual property, intellectual property rights etc. The paper also highlights the intellectual property rights in the digital age.

Keywords: Intellectual Property, Intellectual Property Rights (IPR), Information and Communication Technology, Digital Age, Copyright.

1. Introduction

Libraries are committed to provide equitable access to information to the communities they serve. How do intellectual property rights and copyright affect this mission? The purpose of copyright is to protect the author while at the same time benefiting the user of information. It balances the interests of the copyright holder and the users. (Large, 2007). Librarians and their role in society have evolved in pace with technological development and Intellectual Property Law. Originally, a repository for published works which could be borrowed or physically accessed by the public, libraries are now "information brokers" operating as part of an international network of libraries that have the ability to digitize works and provide users with online access to a worldwide repertoire of works. Digital technology has led to new uses of copyright works both on and off the internet. It allows copyright works to be copied, manipulated and disseminated with minimal effort and cost that cannot be matched using analogue technologies.

2. The Object of Intellectual Property

There are three fundamental preconditions for an object of intellectual property to be subject to protection. First, the created work must be original. This means that the work must be based on an original idea of the author's and not be an imitation or a piece of plagiarism. No qualitative judgment is attached to this term: i.e. there is no requirement that the work be of artistic or intellectual value. In English law, for instance, "original" simply means "not copied", i.e. the degree of originality need not to be great (Oppenheim, 1997)

Second, a created work must be man-made. A work "created" by a machine is not susceptible to legal protection, even if the user of the machine has put original work into the machine, e.g. by programming, although in such cases legal protection would be available for the programme itself. Similarly, a work "created" by an animal cannot be legally protected. Since the creator/ originator/author must always be a natural person, intellectual property cannot originate with a legal person. The rights, however, may – in full or in part – be acquired by a legal person (an institution or an enterprise).

Third, the work must be fixed or recorded in some way. This principle excludes, e.g. unrecorded conversations or speeches from being subject to intellectual property. (Helge,2004)

3. Nature of Intellectual Property Rights

IPR are largely territorial rights except copyright, which is global in nature in the sense that it is immediately available in all the members of the Berne Convention. These rights are awarded by the State and are monopoly rights implying that no one can use these rights without the consent of the right holder. It is important to know that these rights have to be renewed from time to time for keeping them in force except in case of copyright and trade secrets. IPR have fixed term except trademark and geographical indications, which can have indefinite life provided these are renewed after a stipulated time specified in the law by paying official fees. Trade secrets also have an infinite life but they don't have to be renewed. IPR can be assigned, gifted, sold and licensed like any other property. Unlike other moveable and immoveable properties, these rights can be simultaneously held in many countries at the same time. IPR can be held only by legal entities i.e., who have the right to sell and purchase property. In other words an institution, which is not autonomous may not in a position to own an intellectual property. These rights especially, patents, copyrights, industrial designs, IC layout design and trade secrets are associated with something new or original and therefore, what is known in public domain cannot be protected through the rights mentioned above. Improvements and modifications made over known things can be protected. It would however, be possible to utilize geographical indications for protecting some agriculture and traditional products (Saha, 2010).

4. Rights Protected under Intellectual Property

Following are the different types of important property protected under intellectual property rights:

- **Patent**: A patent is an exclusive right granted by a country to the owner of an invention to make, use, manufacture and market the invention, provided the invention satisfies certain conditions stipulated in the law. Exclusive right implies that no one else can make, use, manufacture or market the invention without the consent of the patent holder.
- **Copyright:** It provides legal rights exclusively given for a definite period to the creators of an intellectual work, e.g. literary works, artistic works, musical works,

film ,sound. recording, computer programs for sale or any other use. Copyright protection begins when works are actually created in the tangible form. Copyright was designed for three basic reasons that are to reward creators for their original works; to encourage availability of the works to the public; and to facilitate access and use of copyrighted works by the public in certain circumstances. The technological advances like the digitization of information, networking and worldwide web have changed the economics of information upside down.. Digitization of information has changed the economics of reproduction, networking has changed the economics of distribution and the worldwide web has changed the economics of publication.

- **Trademark**: A trademark is a sign, word, picture or other symbol, which is used to differentiate goods produced by different manufacturers or merchants. It provides the trader a trust to market the goods with confidence.
- **Design**: In the context of intellectual property 'design' refers to ornamental or shape related aspects of useful objects. Design itself is intangible but refers to a drawing or plan which is tangible.
- **Utility Models**: It is a registered industrial property right which confers protection similar to patents but, unlike patents, protection is granted without a novelty search and the exclusive rights granted here is shorter than in case of patents (normally 4 yrs).
- **Geographical Indications of Source**: It is a sign used on goods that have a specific geographical origin and possess qualities or a reputation that are due to that place of origin. e.g. 'Darjeeling' tea, 'Tuscany' olive oil, etc.
- **Industrial Designs**: are the visual features of shape, configuration, pattern or ornament (or any combination of these) applied to a finished article of manufacture. It is an ornamental or aesthetic aspect of an article. The design may consist of three dimensional features, such as the shape or surface of an article or of two dimensional features such as patterns, lines or colours.
- **Integrated Circuit Topographies**: It is three dimensional configuration of the electronic circuits used in microchips and semiconductor chips in integrated circuit products or layout designs.
- **Trade Name:** A symbol used to differentiate companies, unlike a trade mark and service mark used to identify goods or services.
- **Service Mark**: A service mark is a sign, word, picture or other symbol, which is used to differentiate services provided by different enterprises.

5. Duration of Intellectual Property Rights in India

- Term of every patent will be 20 years from the date of filing of patent application, irrespective of whether it is filled with provisional or complete specification. Date of patent is the date on which the application for patent is filed.

- Term of every trademark registration is 10 years from the date of making of the application which is deemed to be the date of registration.
- Copyright generally lasts for a period of sixty years.
- The registration of a geographical indication is valid for a period of 10 years.
- The duration of registration of Chip Layout Design is for a period of 10 years counted from the date of filing an application for registration or from the date of first commercial exploitation anywhere in India or in any convention country or country specified by Government of India whichever is earlier.
- The duration of protection of registered varieties is different for different crops namely 18 years for trees and vines, 15 years for other crops and extant varieties.

6. An Overview of the Intellectual Property Rights in India

India has made definite strides in the protection, administration, management and enforcement of IP. The growth of the IP system has acquired a palpable vibrancy during the last two decades. The nodal department for trademarks, patents, designs and geographical indications is the DIPP which functions under the Ministry of Commerce and Industry; copyright is administered by the Ministry of Human Resource Development; semiconductor integrated circuits layout-designs by Department of Information Technology; plant varieties and farmers' rights by the Ministry of Agriculture; and biodiversity by the Ministry of Environment and Forests.

Indian laws provide for both civil and criminal remedies for IP enforcement. The Government has taken effective steps at all levels to enforce IPRs. The legal, administrative and enforcement machinery has been strengthened. The customs and police enforcement machinery has been streamlined and the measures for curbing piracy and counterfeiting related activities have become progressively more effective.

India has a very large copyright-based creative industry. The Copyright Act is comprehensive and with the recent amendments, the rights of creators have been strengthened. India was the first country to ratify the Marrakesh Treaty 2013 for Access to copyright works for visually impaired persons. The challenge in the future is the enforcement of copyright in digital platforms for which the statute has adequate provisions.

The creation of the Traditional Knowledge Digital Library (TKDL) has been a major achievement for India which has a vast pool of traditional knowledge. India has been able to thwart attempts to misappropriate its traditional knowledge. The next challenge is to use India's strength in traditional knowledge for its effective promotion, development and utilization (Srideven, 2014)

The Rules and Laws governing Intellectual Property Rights in India are as follows (Adukia, 2013):

- The Copyright Act, 1957, (as amended in 2012)
- The Patents Act, 1970 (as amended in 2005) The Patents Rules, 2003, The Intellectual Property Appellate Board (Patents Procedure) Rules, 2010 and The Patents (Appeals and Applications to the Intellectual Property Appellate Board) Rules, 2011.
- The Trade Marks Act, 1999, The Trade Marks Rules, 2002, The Trade Marks (Applications and Appeals to the Intellectual Property Appellate Board) Rules, 2003 and The Intellectual Property Appellate Board (Procedure) Rules, 2003
- The Geographical Indications of Goods (Registration and Protection) Act, 1999 and The Geographical Indications of Goods (Registration and Protection) Rules, 2002
- The Designs Act, 2000 and The Designs Rules, 2001
- The Semiconductors Integrated Circuits Layout-Design Act, 2000 and The Semiconductors Integrated Circuits Layout-Design Rules, 2001
- The Protection of Plant varieties and Farmers' Rights Act, 2001 and The Protection of Plant varieties and Farmers Rights' Rules, 2003
- The Biological Diversity Act, 2002 and The Biological Diversity Rules, 2004
- Intellectual Property Rights (Imported Goods) Rules, 2007 .

7. Intellectual Property Rights in the Digital Age

The libraries as a service have allowed their users to read a document, to browse through the whole collection; to search through the library catalogue; to supply Xerox copy for specific individual research and education purpose; to procure photocopies of articles from other libraries or clearing centers; to widely distribute the re-produced copies of documents requiring public awareness and to provide inter library loan service. Whether all these activities will continue in the digital age? If digitization is considered as reproduction, it is clear that in digitization the initial work is merely changed into the digital form and the process of changing is accomplished by a machine, without any creativity. At the same time if it is considered as a translation from one language to another, the digitization is also a change from natural language of humans in to binary language of machine. In digitization however, there is no creativity involved and it could be considered as an activity similar to reprography. The copyright protects creative works. Simply transformation in to the digital form of an original document cannot be considered as creative.

Copyright laws are an instrument of balancing the interests of creators and the societal obligations to facilitate the free flow of information. The digitally networked world has threatened this cultural topology and has dramatically shifted the balance with the ability to download materials, to make any number of perfect copies and distribute these with virtually no extra cost or effort. Creators feel threatened and have become paranoid in view of the threat to their market potential, and so technology is being used to enable copyright holders to exercise enormous restrictions and controls over use. Safeguarding the private

and public interests has been reduced to a win or lose situation. The Digital Millennium Copyright Act (DMCA) of 1998 in the US is one such example which has endangered the legitimate "fair use" of creative works. Retaining the balance between public and private concerns is the key to addressing the challenge of achieving equilibrium of intellectual property rights.

8. Are Existing IPRs Applicable in the Digital Age?

In today's networked society, the community served by the library is no longer confined to the academic. The community is the entire world, accessing information from anywhere. Libraries, too, have expanded and have websites that act as portals to information that they contain. In addition, inter-library loans can be in the form of materials sent digitally. On the other hand, while information technologies have enhanced the creation and distribution of information, these same technologies can control public access to information. Commercial companies have added tools to their products that disallow access unless the proper user identification and passwords are presented. These practices hinder electronic transfer of information. The purpose of copyright law is to balance the rights of copyright holders and users. Is existing copyright law still applicable to the digital age? Libraries pay for information to equitably deliver it to their communities. As more and more information becomes available in digital format, care must be taken by libraries to ensure that the public can enjoy the same access rights as with printed information.

Today, libraries do not purchase digital materials to own. Instead, they purchase the right to access, which requires an ongoing subscription. Licenses are contracts between the library and the supplier of the information and dictate what the library can or cannot do with the materials. Although access is faster and wider, what users can do or cannot do are also affected by licensing issues.

9. Exemption for Libraries and Archives

"Section 404 of the Digital Millennium Copyright Act (DMCA) updates section 108 of the Copyright Act to allow libraries and archives to take advantage of digital technologies when engaging in specified preservation activities. The amendment to subsection 108(a)(3) is intended to ease the burden on libraries and archives of the current law's requirement that a notice of copyright be included on copies that are reproduced under section 108. Under this amendment, such notice would be required only where the particular copy that is reproduced by the library or archive itself bears a notice. The amendment to subsection 108(b) permits a library or archive to make up to three copies or phonorecords, rather than just one, for purposes of preservation and security or for deposit for research use in another library or archives, and permits such copies or

phonorecords to be made in digital as well as analog formats. The amendment provides that any such copy in a digital format must not be otherwise distributed in that format and must not be available to the public outside the premises of the library or archives." (Band,,2000).

Provisions of Section 108 "Limitations on Exclusive Rights: Reproduction by Libraries and Archives" state:

- Libraries may photocopy journal articles, book chapters, etc. and send these copies to other libraries through inter-library loan.
- Copies must include a notice of copyright that appears on the copy when available. If the work does not include a notice of copyright stamp, a note must be included to state that the work is protected by copyright.
- A library may make up to three copies of a published work to replace a damaged, deteriorating, lost or stolen work (when an unused replacement cannot be obtained at a fair cost). The library may also make up to three digital copies to replace a work in an obsolete format as long as that format is not made available to the public outside of the library or archives.
- A library or archives may reproduce, distribute, display or perform in facsimile or digital form any work in the last 20 years of its copyright term for purposes of preservation, research or scholarship provided that the work is not subject to normal commercial exploitation, a copy cannot be obtained at a reasonable price, and the copyright holder has not filed notice with the Register of Copyright Regulation that either of the above conditions apply.

The DMCA was passed on October 12, 1998 by Congress and became effective in 2000

10. Conclusion

The complexity and jurisdictional issues relating to ICT are changing the IPR regime drastically. IPR in the digital age have added a new dimension to the traditional regime of IPR. Certain technological measures and techniques have also been adopted to protect IPR in the digital environment but their efficiency and effectiveness is doubted and to be judged. The librarians in the digital environment have the same responsibility to collect information and help the readers by giving it even if the form is electronic information. The role of librarian is to be protected and enhanced. The copyright protection should be encouraging the use of information for creativity and not for creating hurdles in the use of information. The Librarians should continue to work as catalyst for the free flow of information between the owners of copyright and the users of the information. There is an emergent need for enterprises and professionals to systematically consider the steps required for protecting, managing and enforcing intellectual property rights, so as to get the best possible commercial results from its ownership.

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IPR Issues in e-Learning in Digital Era

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Abstract: Intellectual property rights have until recently been relatively obscure parts of the e-learning but they are now rapidly becoming crucial to future development. In addition they are in turn influenced by regulation of areas such as e-commerce. IPR information is vital for digital libraries and repositories as it records who owns the e-learning resource, who can access it and use it, and under what conditions the resource is made available. The issue of IPR is one of growing importance and seems to increasingly permeate discussions of e-learning.

Keywords: E-learning systems; e-commerce; Copyright, Trademarks, Patents, Open Source;

1. Introduction

Intellectual Property Rights (IPR) is a broad term that refers to the legal protection available in relation to certain property that is intangible which can be created by individuals. It is fair to say that the law is lagging behind the digital technology which is changing the way that the creation, publication and access to the products of intellectual activity now happens. New technology creates challenges that the law is responding to. But it would be a mistake to think that the use and management of technology is unregulated or beyond the law.

Intellectual Property Rights (IPR) is the collective name for new and unique ideas, products and creations resulting from human creativity and innovation. Copyright, Trademarks, Patents, Database Rights and Performance Rights are the most relevant rights with regards to those that may apply to digital content. In most cases, once a creative endeavour or innovation is protected, like property, the associated rights can be traded, bought and sold, bequeathed and licensed.

2. Intellectual Property Rights In eLearning

Good management of intellectual property (IP) rights is critical for the successful implementation of eLearning, courses and materials. The effective application of intellectual property rights in the creation, development and implementation of eLearning courses is a critical component in the field of education, as it plays it part in a knowledge-based economy. Not long ago, the terms eLearning and mLearning implied laptop computers and mobile carts that were wheeled from classroom to classroom. However, technological advancement has enabled the rapid development of new types of digital

publishing and tools which in many instances, have overtaken the current provisions of the law. In spite of this however, there has been significant legal advances and discourse regarding intellectual property rights of eLearning courses and materials. The history of intellectual property rights is one of adaptation to educational, technical and commercial change. It is therefore vital that developers, practitioners, and consumers of eLearning content have a clear idea and understanding of what is permissible with the product of their labors and what is impermissible.

As a growing number of digitized and eLearning courses increase and are offered on a global scale, eLearning practitioners have expressed legitimate discussions and concerns about the legal ramifications of their work and products. Questions of ownership of copyrighted or digitized products also abound as well as issues pertaining the legal download of copyrighted materials and resources, patents and trademarks. eLearning practitioners often find themselves involved in situations that are less than desirable and that may likely pose legal ramifications.

3. Intellectual Property Rights and the eLearning Landscape

The issue of intellectual property rights is one of growing importance and increasingly permeate discussions among eLearning experts (Duncan, C., & Ekmekcioglu, C., 2003). The rise of eLearning courses and materials with the capabilities of mobile technologies small enough to carry in one's pocket, and the increasing power and functionality of these devices, is causing both a shift, and an opportunity for eLearning experts and practitioners. Legal questions and concerns become more crucial as practitioners forge ahead and make significant milestones in the area of content management, content delivery and eLearning implementation. Inherent in this technological advance, are real challenges of intellectual property rights. Knowledge about **intellectual property rights** have until recently been relatively obscure parts of the eLearning and the mobile learning world but are now rapidly becoming essential. eLearning practitioners crave access and use to vital legal information that will assist them in their content development, delivery and management. Therefore knowledge about intellectual property rights information is vital for practitioners, individuals, students, digital libraries and repositories as it records who owns the eLearning resources, who can access it and use it, and under what conditions the resources is made available.

4. Copyrights in eLearning

A copyright provides protection for original works of authorship, fixed in a tangible medium of expression including literary, musical, and dramatic works, as well as photographs, audio and visual recordings, software, and other intellectual works. (Hinson, 2015). Copyright protection begins as soon as the work is fixed in a tangible medium. An eLearning practitioner should begin using the copyright symbol immediately development of original works commences, as a method of informing others that he intends to exercise control over the production, distribution, display, and or performance of his or her work. While it is not necessary to file for copyright protection, doing so for work of significant

value will make it easier to seek court enforcement of your copyright if there happens to be a material breach. (Hinson, 2015).

Copyright protection give owners exclusive rights to reproduce their work, publicly display or perform their work, and create derivative works. Additionally, copyright owners are given economic rights to financially benefit from their work and prohibit others from doing so without their permission. As an eLearning content developer or practitioner, it is important to realize that copyrights do not protect ideas. Copyright protects how ideas are expressed. **Copyright** protected works for eLearning practitioners includes literary, musical, and dramatic works, as well as photographs and graphics, audio and visual recordings, software, and other intellectual works. A copyright provides protection for original works of authorship, fixed in any tangible medium of expression. In order for the work to be "fixed in a tangible medium of expression", it means that it has been set in a form in which it can be perceived either directly or with the aid of a device.

5. Patents in eLearning

Patents unlike copyright are unique inventions that are crucial to the success of many organizations, institutions or businesses. While copyright protects the material expression of ideas, the patent system protects the ideas themselves. For example, if you produce a new system for the management of digitised material, it may be worth considering patenting the idea and in that way, preventing others from using your idea without you benefiting economically from that exploitation.

e-Learning practitioners or content developers who have developed new and better products or processes that are unique, useful, and non-obvious, need to protect the competitive advantage this gives them by obtaining a patent. The implications of obtaining a patent for a unique invention is that the holder of a patent can stop third parties from making, using or selling his or her invention for a period of years depending on the type of invention.

6. Implications and Best Practices Of Intellectual Property Rights In e-learning

Protecting your **intellectual property rights** is crucial to the success of any institution or organization. In order to do so, institutions need sensible policies and practices for managing the intellectual property rights represented in the field of elearning. As a general rule and legally, intellectual property produced in the course of employment belongs to the employer, but, traditionally, for example, individual members of academic staff in higher education have controlled the IP in their publications. It is therefore vital that developers, practitioners, and consumers of elearning content have a clear idea and understanding of what is permissible with the product of their labors and what is impermissible. It is also crucial for participating institutions and organizations to including IPR management in their project planning and management activities.

7. Open Source

Copyleft and Free Software Licences can vary enormously and organisations in the cultural heritage sector should be aware that alternative forms of licensing are both relevant and

available for consideration within their role as licensors and licencees. In contrast to traditional digital content suppliers who have limited the terms under which digital content can be accessed, the Open Source, Copyleft and Free Software movements encourage rights holders to share content under more open terms. The ethos behind this is to promote collaboration, dispel with licensing agreements reliant upon payment and provide the means to disseminate digital content and software more broadly. By relinquishing certain rights in software code, the Open Source movement encourages software code to be shared amongst users, allowing for problems to be fixed more easily and technological progress.

8. Conclusion

Importance of following good practice Following pre-determined good copyright practices and implementing the necessary support mechanisms will satisfy the responsibilities to rights holders, users and potential clients. Rights issues need to be handled at an organisational level and therefore approached strategically. The potential benefits of devising a strategic approach to these issues can be summarised as follows:

- Helping to identify the key copyright concerns and issues facing your organisation
- Reducing the risks of infringement
- Helping organisations achieve their public access remit
- Assisting in the full exploitation of assets
- Clarifying the role of staff and raising the general awareness about the importance of copyright
- Preventing rights from being inadvertently given away because they have not been recorded properly
- Pinpointing when copyright should be dealt with for projects
- Cementing the position of the guardianship role of the cultural heritage sector

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Making Library Resources Easily Discoverable: *an Overview of Web-Scale Discovery Service as Being Implemented in PEC University of Technology*

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Abstract: In the emerging information society, it is for the librarians to provide comprehensive and single point search to thousands of available e-resources on a single platform. Dr. Ranganathan's fourth law of library science 'Save the time of the reader' has become more significant and relevant in the transition towards e-information based society. If librarians are to serve their users in the digital age efficiently and effectively, they will have to save users' precious time by making multiple resources searchable through a single interface. The idea is to offer a way to search all the available resources that are accessible under diverse access platforms are made available through a single access-point irrespective of their mode of access. This could be done by adopting discovery services for the benefit of users.

Key words: Web-scale discovery, PEC university of Technology, Discovery services.

1. Introduction

Resources in electronic form are being added to library collections at an exponential rate as users are fascinated with the concept of digital libraries and their desk-top availability. Main components of digital library include e-books, e-journals, bibliographic database, OPAC, e-patents, e-thesis, and institutional repository. The excessive use of e-resources in libraries is inevitable because their advantages generally outweigh their disadvantages. Demand of the time is to add more and more number of e-resources to the library collections for the dissemination of e-information. But users require that all e-resources in different subject areas that are accessible to them under diverse access platforms are made available from a single point irrespective of their mode of access. In the emerging information society, it is for the librarians to provide comprehensive and single point search to thousands of available e-resources on a single platform. One of the alarming problems in managing access to e-resources is compiling these at a single point for easy access. Dr. Ranganathan's fourth law of library science 'Save the time of the reader' has become more significant and relevant in the transition towards e-information based

society. If librarians are to serve their users in the digital age efficiently and effectively, they will have to save users' precious time, which is generally spent in clicking the mouse umpteen times in accessing various portfolios of digital library. For this, multiple resources in multiple formats should be made searchable through a single interface.

2. Challenges of Digital Library

Even though digital libraries are being accepted enthusiastically all over the world and with great expectations yet no new innovation comes without any challenges to cope with. Some of the challenges being imposed by the digital libraries include:

- **Huge investment in form of high cost:** Libraries are investing a large chunk of their budgets in developing the collection of various components of digital libraries.
- **Enormous resources:** The major challenge confronted by the librarians to incorporate this new medium of scholarly communication is availability of vast number of e-resources from a variety of publishers. Earlier libraries had access to less number of e-resources pertaining to a subject domain, but now the growth of scholarly information on the web has made possible access to a large number of databases, both bibliographical and full text, for even a small-sized library.
- **Google Generation:** Libraries are struggling to reestablish themselves as a compelling place to start re-search (Somerville & Conrad, 2013) as most of the users just wanted to 'Google' the information.
- **Seamless Access:** Tech-savvy users, being aware of many value-added features of e-journals, demand easy and seamless access to current information in electronic form on their desktops. Providing seamless access to e-journals has always been the utopia of library and information professionals.
- **Underutilized or Unused Resources:** Further, each database contains number of e-resources and users may not be aware about availability of e-resources related to the subject domain of his interest. So, the users are confronting the blessings and difficulties of abundance (Okerson, 2000). But, librarians can't leave their users in flood of electronic information where finding pertinent information is very intricate, and at times can be a time-consuming and frustrating experience.
- **Changing Needs of Users:** The move from atoms to bits has complicated the jobs of information professionals (Sreekumar, 2001). Librarians are witnessing changes in the information seeking habits and spiraling expectations of users as well. Users now show high reliance on their own digital library in terms of ease of navigation between the many and varied electronic information resources as they want to input minimum efforts for their information seeking activities.

3. Profile of the PEC University of Technology

The PEC University of Technology, a notified deemed university by Govt. of India in 2003 offers graduate, post-graduate and doctoral programs in nine branches of sciences and engineering and is at 23rd rank amongst the top engineering institutions (both government

and private) in India for the year 2011-12 (Outlook India-MDRA Survey). The institution was originally established as Mugalpura engineering college at Lahore (now in Pakistan) on November 9, 1921. The name of the college was later changed to Maclogan engineering college and it started functioning under this name on March 19, 1924. In the year 1931, the college got affiliated to Punjab University, Lahore. After partition in 1947, the college was shifted to Roorkee (India) and was renamed as East Punjab College of Engineering. In the year 1950 the word east was dropped and it came to be known by its present name Punjab Engineering College. Towards the end of December 1953, the Institute shifted to its present campus in Chandigarh to function under Govt. of Punjab. In 1966, with the formation of Union Territory of Chandigarh, the institute came under control of Govt. of India through Chandigarh Administration. In October 2003, the Govt. of India notified the Punjab Engineering College as a Deemed to be University and thereafter it became known as Punjab Engineering College (Deemed University). In 2009, the Board of Governors renamed the Institution as PEC University of Technology which now works on IIT based Academic Model.

PEC holds the pride of being one of the first ever technological institutions in India, and has a glorious past which is about a century old. In addition, PEC has been nationally recognised as one of the finest technological universities in the country. Consider the following highlights of achievement:

- CSR-GHRDC ranked PEC 5th in the nation among TOP Engineering Colleges of super excellence.
- OUTLOOK MDRA ranked PEC 23rd amongst Top 75 Engineering Colleges in India, ahead of most NITs.

Its Central Library is changing itself from a traditional one to a modern one with adoption of new technologies for its collections and services. The total collection of the library covers more than one lakh (120,591) documents comprising of books, theses, journals and electronic resources in the form of video cassettes and CDs in the fields of science, engineering, humanities, literature and management. It supports a clientele of approximately 2500 comprising of students, faculty and other staff. The library is fully computerized using the Libsys, a commercial software package which provides web-based access to its online catalogue. The library has a fairly well-developed computer and network infrastructure to facilitate the use of all the web-based services. The library also has its own sub-local area network (LAN), which in turn, is connected to the campus LAN. The library has two servers and 27 Internet-enabled PCs. 12 of which are exclusively earmarked for users for On-line Public assess Catalogue (OPAC) searches and accessing e-journal resources in the form of Multimedia Resource Centre.

4. Digital Library Components @ PEC

When the records/information is held in electronic/digital form, these constitute important components of the Digital Library. Thus Digital library is not only digitization of physical resources, but also thoughtful organisation of electronic collection for better

access (Sharma, 2011). The e-journal service was introduced in the library in 2004, with the help of INDEST consortium. At that time PEC library was providing access to more than 200 e-resources of three commercial publishers: ASCE (American Society of Civil Engineers), ASME (American Society of Mechanical Engineers) and IEL (IEEE/IET Electronic Library) under the category of complimentary access for AICTE-sponsored institutions. In the year 2009, PEC library subscribed to three more databases as demand for electronic resources increased.

In 2015, PEC library has access to following Digital Library components for providing electronic access to over three thousand unique e-resources published by learned societies as well as commercial publishers, as per details given in Table 1.

Table 1 - Components of Digital Library in PEC

Sr. No.	Database	No. of journals accessible
Full Text Databases		
1.	ACM Digital Library	32
2.	API	18
3.	APS	18
4.	ASCE Journals	33
5.	ASME Journals	25
6.	Emerald Engg. Collection	
7.	IEL Online	219
8.	Science Direct	276
9.	Springer Link	1400
10.	Taylor & Francis Engg. Collection	
E-resources		
11.	McGraw Hill Access Engg.	4000 articles+ 255 books
Bibliographic/Indexing Databases		
12.	MathSciNet	NA
13.	Scopus	NA
Standards Database		
14.	ASTM SEDL	NA
E-Books		
15.	Springer	775
16.	EBSCO	64
Open Public Access Catalogue		
17.	OPAC	LAN

Most of the collections are subscribed by the library on annual lease basis except e-books where access rights are purchased on perpetual basis. Because of the licensing reasons; the electronic components can be accesses only within the campus. At PEC library users are

provided with a secured and hassle-free log on procedure via IP (Internet Protocol) activation. Users can access all the electronic resources through the Institute's IP ranges. This arrangement helps the user to access all the electronic resources immediately. This also keeps them free from memorizing user ID, Password, publishers URL etc. All the resources are available through campus wide network, but this arrangement restricts access to electronically available journal titles from within the university campus only.

- **Planning of discovery services for PEC**

PEC University of Technology is one of the renowned technical institutions of North India. The University offers Bachelor's, Master's, and Doctoral degrees in a wide variety of majors, with strong programs across technical disciplines. As already stated PEC is subscribing to a lot of resources in electronic form to cater to diverse information needs of the users. But with the growing number and variety of components of digital library, one of the challenges being confronted by PEC library is to find ways and means to select and offer a logical and easy access to growing collection of diversified resources to the users in a manner that enhance the research experience, provides timely and convenient access to relevant and appropriate resources. A mechanism has to be devised to organize the myriad e-resources on a single gateway to disseminate comprehensive and customized information to users in a right way that makes sense to them. Moreover, users generally expect a faster response to their information needs without wasting any time in clicking the mouse umpteen times in accessing full text of e-resources. The idea is to offer a way to search all the available resources that are accessible under diverse access platforms are made available through a single access-point irrespective of their mode of access. This could be done by adopting discovery services for the benefit of users.

- **Providers of Discovery Services**

During the last couple of years, we have seen the development of a lot of 'library discovery services', such as Summon from ProQuest's Serials Solutions business, EBSCO's Discovery Service, and Ex Libris' Primo Central, all of which aim to put the library back at the center of search and information discovery. However PEC Library is planning to activate web scale discovery services developed by two major vendors: Serials Solutions and EBSCO, which are being discussed here.

- **EBSCO Discovery Services**

EBSCO Discovery Service™ (EDS) launched in early 2010 provides web-scale discovery through creating a unified, customized index of an institution's information resources, and an easy, yet powerful means of accessing all the content from a single search box. It is offered as a hosted service and required user authentication for searching the index. Guest mode with limited search capabilities was also released for unauthorized users in later years. The EDS content include metadata from Journal & magazines, index of all the EBSCO host databases, also indexes institutional archives/repositories, catalogue records of the library and other additional databases. The search results are ranked by relevancy based

on the frequency of term in document (Pradham, Trivedi, & Arora, 2011). The interface also provides faceted navigation, search refinement, export to various citation formats, printing, e-mailing and adding to cart, RSS feeds, spelling suggestions, option for adding widgets and also a mobile interface for searching on mobile devices (Chand, 2012).

- **Serial Solutions Summon**

The Summon™ by Serial Solutions was released in the mid 2009. It is offered as a hosted software-as-a service solution providing the Summon service and index (Chand, 2012). The items in Summon include library catalog records, e-journal articles, databases, newspaper articles, e-books, dissertations, institutional repositories, conference proceedings, grey literature, cited references, reports, digital library, etc. The index is updated through an automated process on regular basis varied on the content publication, like daily for a newspaper and on monthly basis for a monthly journal. One of the interesting things is that, it is open to all on the web and does not require any user authentication for searching. The search results are sorted by relevance ranking based on various parameters like peer-reviewed journal articles, citation count of the articles from Web of Science and so on (Pradham, Trivedi, & Arora, 2011).

- **How Discovery Works**

Fagan (2012) defined discovery tools as web software that searches journal article and library catalog metadata in a unified index and presents search results in a single interface. Web scale discovery services for libraries provide deep discovery to a library's local and licensed content, and represent an evolution, perhaps a revolution, for end user information discovery as pertains to library collections (Vaughan, 2012). Web-scale discovery is a transformative search tool that allows library users to search seamlessly across a vast range of local and remote, pre-harvested and indexed content, receiving relevancy-ranked results in a user-friendly interface which is the requirement of present day researchers. Discovery services enable the entire library's material, print and e-books, journal articles, streaming video, everything, to be discovered through one search box. Discovery services don't search live sources, this the basic difference between federated search applications and discovery services. By harvesting metadata from both internal (library) and external (database vendors) sources, discovery tools create a pre-indexed service of unprecedented size and speed. It presents speedy search results because library discovery services don't search the library's locally-held resources one-by-one; instead, they index and search a centrally held database of publisher content, thereby allowing more complete indexing which is much faster in searching, and provides more complex integration of result sets. Another feature which distinguishes it from other is rather than seeing multiple results for the same article if it's held in several different databases or abstracting and indexing services, these search tools display a composite result for each item. Linking from the list of results to the full text of an article is also controlled by the library through their link resolver system, so a user is directed to the most appropriate full text copy a library holds, generally the version of record on the publisher's own platform.

- **Perceived benefits of discovery services**

As envisaged by Vaughan (2011) Web scale discovery services for the library environment have the capacity to more easily connect researchers with the library's vast information repository. This includes locally held and hosted content such as physical holdings, digital collections, and local institutional repositories. Perhaps more significantly, web scale discovery also accesses a huge array of remotely hosted content often purchased or licensed by the library, such as publisher and aggregator content for tens of thousands of full-text journals, additional content from abstracting and indexing resources, and content from open access repositories. With the access to Discovery Services, a number of benefits including single search across the central index; fast response time; relevancy-ranked results list; facets, sort, and other tools for refining and using the results; connections to full text via direct links and OpenURL and End-user accounts and features deemed to be achieved. These can be further elaborated as,

- **Search Interface:** Discovery tools facilitates the searching by providing an interface which is as simple and common as Google with the advantage of discovering credible and reliable library content through pre-indexed metadata.
- **Relevant ranking**: Discovery tools provide search results in a relevancy-ranked list indicting high rank for the most relevant search.
- **Comprehensive Search**: Incorporates the comprehensive knowledge of library's holdings so that researchers can access their results including full-text of electronic articles. This platform works as an integrated access interface for all the e-resources available.
- **Saves the time of the user:** Availability of full-text electronic articles with fewer mouse-clicks provides ease of access by reducing amount of labor to get relevant e-information.
- **Speed of search:** With the discovery solutions users don't have to wait tens of seconds for their search results. In terms of response time, live searching can't compete with index searching. Less perplexity for users to get all the information about e-resources.
- **Enhancing the Results:** Easily navigate and narrow search result sets using multiple methods, such as filtering, faceting and sorting. The discovery also provides time-efficient research for the busy users by allowing results set to be limited to items immediately available in full text online.
- **Citation formatting:** Quickly generating of citations in the preferred style required.
- **Familiarity to print**-content: In addition to above Discovery solutions also provide Book jacket images and publication-type icons.
- **Information Literacy:** There is a new opportunity for user-centred information literacy programs to emerge. The new web-scale discovery systems have also made impact on information literacy programs and pedagogical approaches to library instruction. Discovery systems offer new possibilities to shift instruction programs

away from their historical focus on explanatory searching and citing, towards exploratory higher level thinking in relation to evaluating and using information itself. As library search gets easier and varied platforms become unified, the focus of information literacy on search rules and platform choice and navigation is able to truly give way to critical thinking and imaginative exploration.

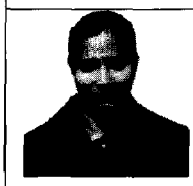
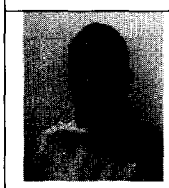
5. Conclusion

Discovery tool is vital component of an Information Portal, which provides the speedy results from assorted information resources as this indexes all the content for which a library has electronic access either by indexing the full text or the metadata. To deal with the huge deluge of information, the users get a single window search or a single query like in Google to search the rich content of the collection of the library with the speed they have come to expect. So the Discovery empowers the user with effective tools to manipulate a large and varied search result set and act as a key to users' success with searching the relevant information. Application of discovery tools in PEC University of technology with well organized manner aims to effective usage of e-resources among students and faculty. Awareness and exploitation of huge information resources available in the library is also the purpose to be considered for the access of Discovery tools.

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Metamorphosis of libraries: *from Papyrus to Clouds*

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Abstract: Since the opening of the first library, there have been many significant and dramatic changes in the trends of library, the way they evolved and the way they developed. The "Royal Library of Alexandria" in Alexandrine, Egypt, was the Largest and most significant library of the Ancient World. The library was opened during the region of Ptolemy-I Soter (323-283 B.C). Latest advancements in the fields of information technology have compelled libraries to embrace automation as the facilities provided by the automated Libraries go far beyond the services delivered by the traditional libraries. Computerization of libraries started in 1940's. In India first use of computer in Libraries and information center was reported in 1965 at INSDOC, now known as NISCAIR. Later on several libraries, particularly those attached to industrial and research organization started using the parent's Mainframe computer. The automation of the libraries started by late 1980's and early 1990's, by mid 90's the Libraries started maintaining on-line catalogs, which provided a more clear view of the information present in the library to the user. Today library automation has moved far beyond the concept of maintaining databases of books available in the library.

Keywords: Chhattisgarh, Cloud Computing, Library Automation, Knowledge Hub.

1. Introduction

Cloud computing is the delivery of computing and storage capacity as a service to a community of end-recipients. The name comes from the use of a cloud-shaped symbol as an abstraction for the complex in infrastructure it contains in system diagrams. Cloud computing entrusts services with a users data, software and computation over a network. Up to the early 1990s, 'Digitizing the library' meant computerizing the traditional library functions of distribution, cataloging, the public catalog, acquisition, and serials check-in using the library's database as the foundation" . Early library automation centred around the development of "systems that were fundamentally local, with importance on controlling and accessing resources within a distinct library or defined network of libraries, and not on accessing remote databases or library catalogues. Modern library

automation has now moved ahead of 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". Cloud computing has a considerable place in the higher education landscape both as a omnipresent computing tool and a powerful platform that can boost engagement among educational researchers and educators to understand and improve practice, and thus, increase the quality of their students' learning outcomes. The higher education (HE) scenery around the world is in a constant state of change and development, mainly as a result of significant challenges arising from efforts in adopting emerging technologies and pedagogies in their teaching and learning environments. This is mainly because of a new variety of students with learning needs vastly different from their predecessors, and it is increasingly being known that using new technology effectively in higher education is essential to providing high quality education and preparing students for the challenges of the twenty-first century. The cloud model offers a much cheaper way to acquire and use IT services.

2. Impact on library and Information services

- With cloud computing students can have 24X7 access of the library regardless of their location and time, providing the students the freedom to study with their choice of time and place.
- Large university or a consortium might become a supplier of cloud services. Storage and processing needs can also be met by the cloud. Institutions pay only for the resources used, and users can access the applications and files they need from nearly any Internet-connected computer.
- A number of universities, service providers and government organizations are investing in study around the topic of cloud computing.
- In July 2008, HP, Intel Corporation and Yahoo! declared the creation of a global, multi-data center, open source test bed, called Open Cirrus designed to encourage research into all aspects of cloud computing, service and data center management.
- In July 2010, HP Labs India announced a new cloud-based technology intended to reduce to bare bones taking content and making it mobile-enabled, even from low-end devices.
- The objective is to improve students' knowledge of similar computing practices and better prepare them for increasingly accepted large-scale computing that takes place in the "real world," such as search engines, social networking sites, and scientific computational needs.
- Google and IBM have joined to offer millions of dollars in resources to universities in order to promote cloud computing projects.

- Yahoo! has extended its partnerships with top U.S. universities : The University of California at Berkeley, Cornell University, University of Massachusetts at Amherst and the Carnegie Mellon University to advance cloud computing research through the use of Yahoo!'s cloud computing bunch large-scale systems software.
- IBM established an association with the European Union and universities to research new cloud-computing models to reduce the cost of hosting and maintaining Internet-based services.
- The Qatar Cloud Computing proposal led by Carnegie Mellon University, Qatar University and Texas A&M University aimed to develop cloud computing technology and provide a stage for local organizations to test applications in the cloud.

Cloud computing solution can create the new workflows needed by librarian because it offers the opportunities for a supportive platform for libraries to build on. There are four key ideology of a cooperative platform:

3. Chhattisgarh at a Glance

Chhattisgarh was formed on 1st November 2000, separating 16 (now 27) Chhattisgarhi speaking districts of Madhya Pradesh, as the 27th state of India, situated in the heart of the country; the state enjoys a tropical climate. It is one of the important electricity and Steel producing hub of the country accounting for 15% of the total steel produced in India. Chhattisgarh receives an annual rainfall of 50.9 inches yearly which makes it suitable for cultivating paddy thus making it the "Rice bowl of India". Since its formation in year 2000 the state has set many benchmarks in the field of Industries, Agriculture and Education. With a per capita income of rupees 46573/-, Growth rate of 13.1% and GDP of 11.57%, Chhattisgarh is one of the most rapidly developing states of the country.

- **Barriers in access to information in Chhattisgarh**
  - Poor means of Transportation- 26.21 km of roads/ 100 km
  - Poor means of Communication- 30.7% people connected via phone
  - Least per Capita Income of the AADIVASI- Less than Rupees 15000/year
  - Less educational resources- Literacy 64.7%
  - Densely forested and remotely located- Approximately 47% covered by dense forest
  - Less technological advancements.
  - Mostly tribal and Naxal affected areas
- **Statistics from Chhattisgarh**

People	%
Deprived from Transportation	41%
Deprived from communication	69.30%

Deprived of education	33.33%
Below poverty line	42.91%
Gross Enrollment ratio	13.60%
naxal affected	33.00%

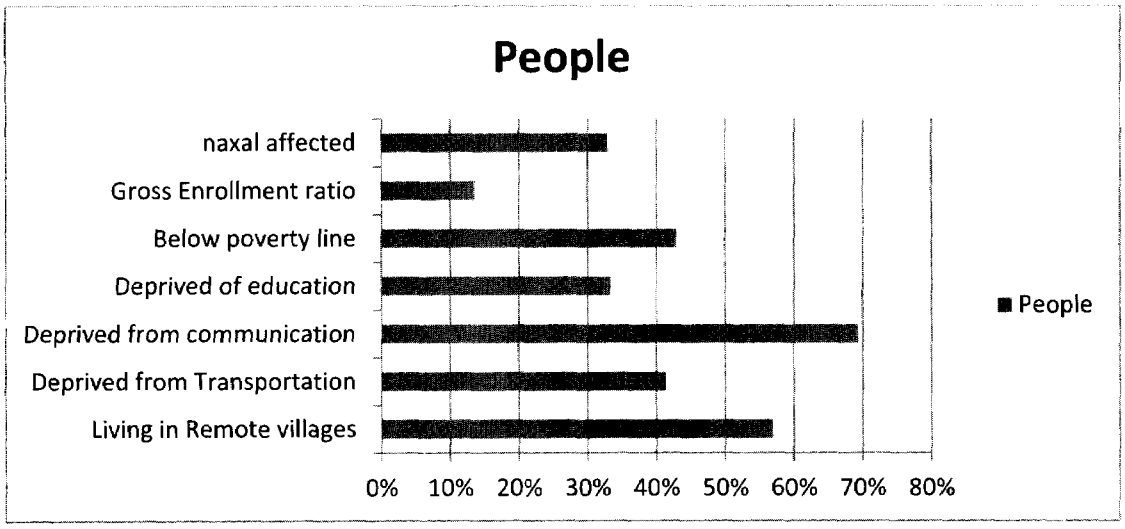


Figure 1 - Various Reasons Affecting access to information in Chhattisgarh

Comparative Study of Cloud Computing Vendors & Pt Ravishankar Shukla University

Windows Azure	Google cloud Storage	IBM Smart Cloud	Amazon EC2	Pt Ravishankar Shukla University
Supports 10 Instances at a time (High CPU and Memory Instance)	Supports 6 Instances at a time (High CPU and Memory Instance)	Supports 7 Instances at a time (High CPU and Memory Instance)	Supports up to 12 Instances at a time (High CPU and Memory Instance)	1,65,000 books equivalent to 8056 GB
720 hours of monthly access.	100 parallel static IP upports.	100% access all time	12.48 paisa for per hour usage.	10 hours of daily Access
High Bandwidth of 1000 Gigabits.	Medium Bandwidth	Medium Bandwidth	2.5 rupees /GB download.	-
75 Gigabytes of SQL database.	7.5 rupees/ GB download	10,000 GB download	Up to 10 GB free Access	-
7 Virtual machines of 1.6 GHz processor, 7 GB RAM and1000 GB application storage space.	6 Virtual machines of 1.6 GHz processor, 5 GB RAM and 512 GB application storage space.	7 Virtual machines of 1.6 GHz processor, 6 GB RAM and1024 GB application storage space.	8 Virtual machines of 1.6 GHz processor, 7 GB RAM and1690 GB application storage space.	Rupees 1666.66/- Yearly expenditure per Student as per 2012
30,000 Gigabytes of Georedundant data.	No uploading charges	1000 GB upload	No limit on upload	-
Yearly subscription fees- Rupees 40,00,000/-	Yearly subscription fees- Rupees 35,00,000/-	Yearly subscription fees- Rupees 42,00,000/-	Yearly subscription fees- Rupees 39,00,000/-	Yearly expenditure of Rupees 50,00,000/-

4. Possibility of Cloud Computing in Chhattisgarh

A very important role can be played by cloud computing in overcoming all the barriers and hurdles that come in the way of exploring the educational resources and can pave the way for the state to set benchmarks in the field of education by forming a consortium of all the educational institute of the state to share their resources, forming a "knowledge Grid" that can be accessed by the user all around the state irrespective of their geographical location and that can be accessed 24X7. Implementing such "Knowledge Grid " will lead to the foundation of a very strong educational system where users can share their views, get updated with latest technological facts, debate and discuss over the current and important topics related to country, technology and development all by just the click of a button. Sharing data and information in such a way will lead to creation of Geo redundant data, giving the user clearer and concise view of the topic.

- **Knowledge Hub**

Referring the comparison provided between Cloud computing vendors and Pt. Ravishankar Shukla University Library presented in the table above, we can clearly draw the conclusion that cloud computing can provide more access time, better service , Performance, Reliability and Resource utilization than the manual Library management process that too in a much cost effective manner. The whole concept of the paper is to deploy a technique that can share resources among the various libraries of the state and the country to create a "knowledge Grid" that can be accessed by the user round the clock 24X7 irrespective of their geographical location. The Vision is to develop a consortium of the educational and non educational Institutes ready to share their information, which is also the objective of the National Mission on Libraries formed in 2012. Sharing data in this way will not only reduce the cost overhead of hiring services from the cloud vendors but will also add to the knowledge base of the state thus empowering the state to meet the ever growing standards of primary to higher education.

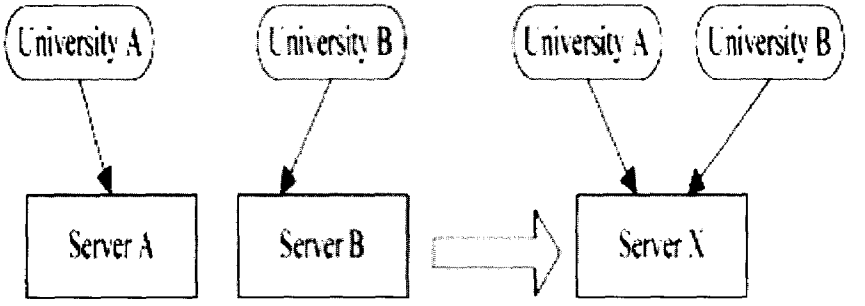


Figure 2: Two libraries sharing same server

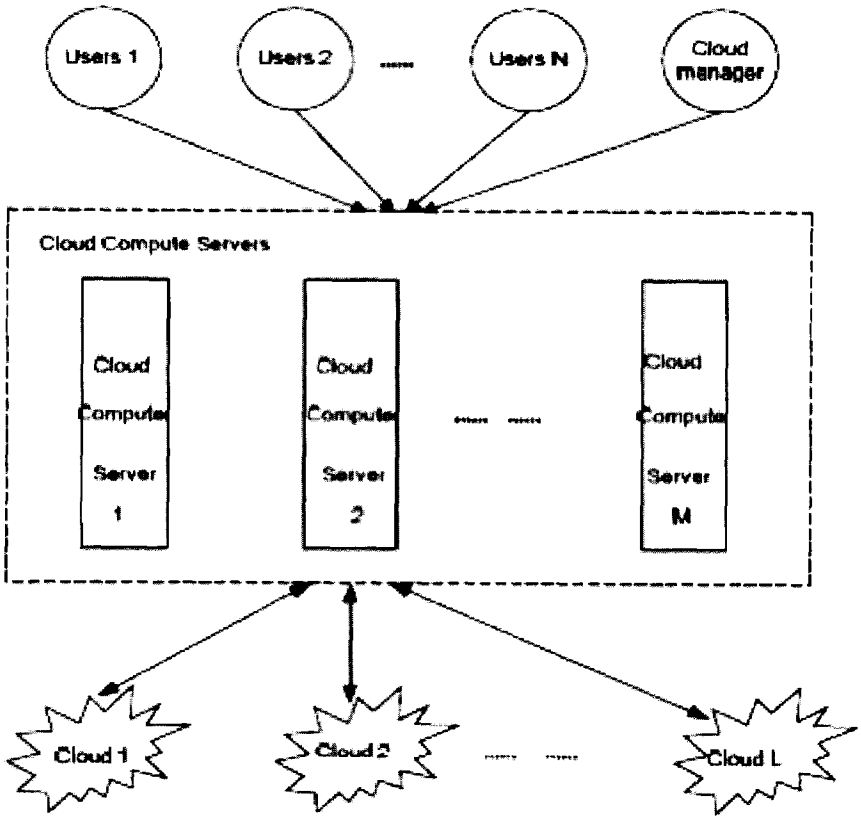


Figure 3: Sharing of servers to create a Knowledge Grid

- **Policies of Government that may Encourage Cloud Computing:**
  - Government of Chhattisgarh has declared to establish livelihood colleges in several naxal hit district like Dantewada which will provide vocational trainings.
  - Honorable HRD minister Shrimati Smriti Irani has declared to distribute Akash Tablets to student free of cost.

5. Conclusion

According to *Michael King*, IBM's vice president of global education industry: "Cloud computing is ultimately going to enable a significant transformation of education to increase quality, increase access to educational resources, and at the same time lower costs . . . I think the next two to three years will really be about developing shared services, exploiting cloud computing models, and really driving fundamental transformation in how we organize education and deliver value to students and the education community."

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Open Source Content Management System for Content Development: *A Comparative Study*

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Abstract: Designing dynamic and static web pages have been possible with many good software like Frontpage, Dreamweaver etc. but gradually it became difficult for web developers to design pages due to dynamic nature of these software and different file formats. Butevolvement of open source content management system such as Joomla, Drupal, Wordpress, Plone, DotNetNuke etc. have been found as an alternative to this. This paper deals with comparative study between Joomla and Drupal. The basic objective of this paper is to find out the best content management system for content development based on selected criteria which includes installation, platform support, browser support, documentation, community support, modules, extensions, user management, usage, design, performance, scalability etc.

Keywords: Content Management System, Joomla, Drupal

1. Introduction

There has been tremendous change in information generation, distribution and access in the present information society which has affected most of the human's life, the same way, there has been affect and growth in Information on the web alsowhich has made the searching more complex. Due to Information explosion, a new set of problem has arrived for the administrator who produces and manages the content. So, a system which can allow to manage, create and distribute various forms of content was needed, thus CMS was created. Joomla and Drupal are two most popular open-source content management systems to design powerful and dynamic websites. Both have similarity in nature such as open licenses, strong community support for further development, LAMP-based (Linux, Apache, MySQL, PHP) hosting architecture &environments. Joomla and Drupal, both are also flexible and able to deliver content management functionality with ease. This paper describes about the differences between Joomla and Drupal for the content development and involvement of costs. This information is provided for web developers, library professionals, IT department heads etc. who are facing the difficulties while choosing the choice between Joomla and Drupal. Reading this paper, one should be in better position to understand the differences between these two CMS.

2. Content Management System:

A system which is used to manage the content is called as Content Management System which consistsof two elements: the Content Management Application (CMA)and the Content Delivery Application (CDA).The element ofContent Management Applicationallows the web developer or author (who may not be familiar withHypertext Markup Language(HTML)) to manage the creation, modification, and removal of content from a

web site without having the expertise of HTML or web designing. The element of Content Delivery Application uses and compiles that information to update the web site.

An individual can use a template as well as wizard and other tools to create or modify web content with its web publishing feature. Documents including electronic and scanned paper can be formatted into HTML or PDF using format management feature for the website. The content can also be updated to new version using revision control feature. Content Management Systems have additional features such as indexing, searching and retrieval. A Content Management System indexes all data available on the site. Individual can then search for data using keywords, which the CMS system retrieves. A Content Management System consists of different subsystems that interact with each other:-

- Collection
- Management
- Publishing

3. Need of Content Management Systems

Content Management System is the fastest way to create content and update the website. It gives freedom to create new pages in one click,and inactive unused pages, without worrying about disturbance in the design. A website holder need not to be pay every time he wants to modify the content of hiswebsite. It also saves money and time. A powerful content management system has the following advantages.

- CMS is generally web-based and it can be accessed over network system through browser.
- CMS allows to add, change and remove the text, images, and videos.
- CMS allows editing the page titles, descriptions and URLs.
- CMS allows to create or delete the new category or page in the website.
- CMS allows editing the tag.
- CMS also allows changing the text of the navigation bar.

A CMS keeps websites well organized, increases the data security, and reduces the site maintenance costs. Several open source content managementsystems such as Joomla, Drupal, Wordpress, Plone, DotNetNuke etc. are available that may be of much use while designing a website.

- **Joomla:** Joomla is an award winning open source content management system which is written in PHP scripting language and uses MySQL database for the backend. Joomla is gaining more popularity among users due to ease of usability and extensibility. More than 5000 extensions and modules enhances the functionality of the core Joomla package. The important feature is that it can be installed and run on different operating systems such as Linux, Windows or Macintosh and can be

distributed under General Public License (GPL) means it is free to use. Model-View-Controller (MVC) design pattern is mainly responsible for advanced component of Joomla. It contains the basic features such as blogs, RSS feeds, caching, search functionality, printable versions of pages, create and manage menus, administer the system and support for language internationalization. Database which is used in Joomla can be utilized for dynamic formatting. Look and feel of Joomla can be customized using templates which are composed of XHTML block and in line tagged element. The whole system consists of two types of pages: **Categories and Articles.**

- **Joomla File Structure:** At the time of installation of Joomla, some of the important file will be created either on the local machine or on the server. The example is given below showing how each folder has all the important documentation structured and organized.

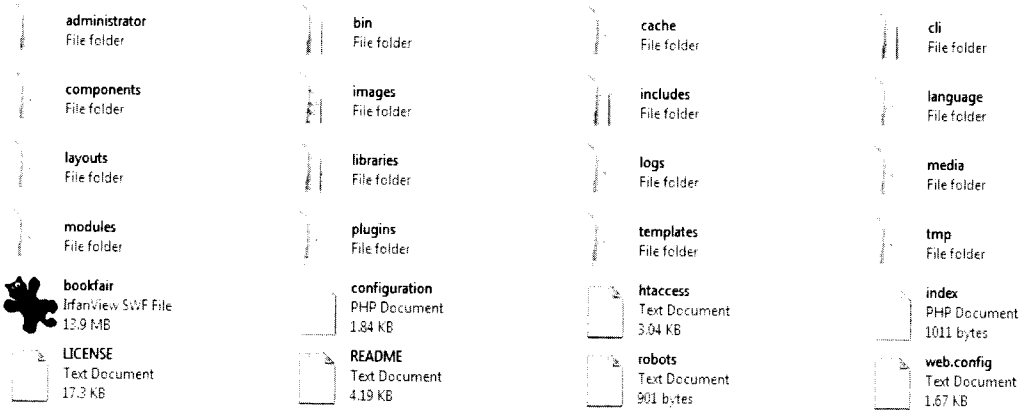


Figure 1 - Joomla File Structure

- **DRUPAL**

Drupal is also an open source content management systemwhich is written in PHP and uses MySQL or PostgreSQL. It can be installed on different operating system such as Linux, Windows or Macintosh. Drupal is distributed under General Public License and is free to download. The Drupal's architecturehas been designed in such a way that the three different layers work independently and correlate with each other to give the final output. These three layers are the content which generate the website.

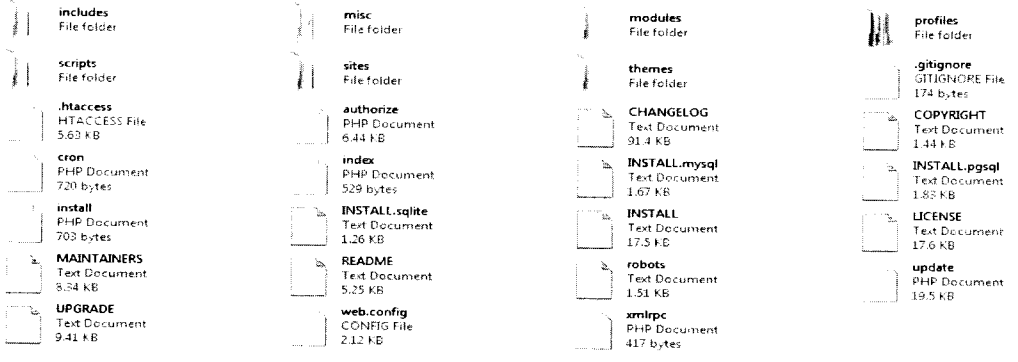


Figure 2 - Drupal File Structure

- **Methodology to compare**

Internal and external variables have been the biggest challenges in comparison of two full-featured content management system. These variables are mainly responsible for implementation processes and real cost involved in implementation. In addition, one system may be better suited than the other to handle a particular requirement of the website, even though both are capable of supporting it.

When we compare two content management systems, itrequires a deep familiarity with both platforms and experience with multiple deployments with special requirements. It is also important to understand that how a particular CMS can fit into the context of a project and can go a long ways toward effectively managing integration costs, support and ongoing maintenance.

Both Joomla and Drupal have developed several versions in past few years. Comparison about capabilities and details of two content management systems relate to the most recent, stable, long-term-support releases i.e. Drupal 7 and Joomla 3, respectively.Both Joomla and Drupal are very easy to learn and deploy.

- **Setup and Configuration of Hosting Environment:**

A number of tasks involve to create the environment for web hostingwhich includesselection of hardware and system configuration, operating system and installation of software on webserver and configuration & network setup.

Joomla runs well on any properly configured system with Apache and PHP.

Drupal runs well on properly configured server same as Joomla.

Environment setup and configuration costs for hosting Joomla or Drupal locally or on web server are effectively the same. However, for large-scale websites that require load balancing across servers, as well as projects that must support multi-site capabilities, **Drupal may require less time for server planning, setup and deployment**.

- **Installation of CMS and Configuration:**

Installation process for both Joomla and Drupal is almost same. The process involves uploading files to your server (hosting environment), create database for the CMS then visit URL at the install location (localhost or web address) and walk through a series of step by step configuration. Once the installation is complete, a default version of the CMS is available at the install location, and from there, it can be further configured, customized and populated with content.

Joomla installation is straightforward and nearly all steps take place within Joomla's step-by-step installation process. After successful installation, it provides a default version of both the front end and back end sides of Joomla. In addition, Joomla also provides options to work with demo content as part of the installation process, which provides freedom for implementers to works easily with example site.

Drupal installation is also straightforward but it requires minor server-side manipulation of file permissions and file names (in case of installation through control panel) and then the process is very similar to a Joomla installation. Initial Drupal configuration settings are implemented via control panels and include things like front page designation, cache settings and basic site information.

Process of base installation of the content management system is similar between Joomla and Drupal and the time required for installation is essentially the same for both.

4. Content Types and Structures

The construction of well-organized website with rich content provides a versatile and stable platform for growth of website content. Implementation of content types and structures includes setting out the nature of the content the site is to display, as well as creating the hierarchical structures used to organize and display that content.

Joomla includes several core types of content which includes Articles, Contacts, Banners, Newsfeeds and Weblinks. Each of Joomla's core content types contains capabilities and settings supporting that specific type of use, and they are all available as soon as Joomla is installed. It uses a nested category hierarchy for organizing its content as default method. A single content item can stay at any level of Joomla category tree. Joomla can have unlimited number of categories and articles.

Using specific set of tools, site structure are planned and built in Drupal. The site designed with Drupal requiresexpertise and can support very high versatility, many different use cases, and extremely complex site.
Joomla is considered less expensive and much faster to implement structured site content. Most of the sites designed with Joomla employ its general-purpose article content type as the main method for containing web page content to keep things organized using the default categories/subcategories. Whereas Drupal websites require implementers to plan and create content types first before meaningful content build-out can begin. This process requires enough time for specialized content items and complex website. **In general Drupal requires 50% more time than the time required in Joomla for site structure construction.**

5. Site Design and Layout

Both Joomla and Drupalhave some common characteristics and contain systems for managing the layout of site elements, as well as implementing completely custom web designs with the help of HTML and pre-defined layouts.

Joomla has pre-defined structure and it uses 'Template' to control site design and layout. It includes two front-end templates for users and two back-end templates for administrative area at the time of installation. Joomla administrator control the template selection through template manager at the back end of Joomla.

Drupal uses "**Themes**" to customize a website's design and layout through conventions and processes focused around discrete sets of files in a Drupal installation. By default, Drupal ships with four in-built Themes, any of which can be extended or customized by spawning off a copy, registering the copy within Drupal under a new system name, and then adjusting CSS files and template files (named with *.tpl.php file name extensions in Drupal). A top-level *.info file declares the Theme within Drupal; references CSS, JavaScript and other files used within the Theme; and defines page layout areas, which Drupal calls "**Regions**."

Both**Joomla and Drupal**include highly capable systems for managing site design and layout. Joomla has in-built capabilities and standards which makes it easier and faster to implement website designs. Based on the design and capability requirements, Drupal may take up to 50 percent more time than Joomla to implement a web design and layout.

- **Site Navigation**

Any website designed with content management system, navigation consists of menus or individual menus. Both Joomla and Drupal are benefited from third party developers who provides additional plug-in and modules that can change and improve the appearance and behavior of menu.

Joomla's Menu Manager allows administrator to add, edit and delete menus as well as control the items within a particular menu. While creating a new menu item, selection of the type of content such as article, contacts, Weblinks etc. is compulsory and based on this menu is created. After defining destination type of content, additional parameters for the particular menu in order to display further options to target content. In Joomla, menus are associated with module which is positioned as per template structure which can be rearranged and moved from one menu to another anytime.

Drupal manages the menus through its Menu Module which allows developer to add, edit and delete the menu on the site. In order to contain a link pointing toward internal link site content, the defined menus must be linked with the particular content type of targeted page. Both Joomla and Drupal has mature system for building menu and configuring menu items. Drupal may take slightly longer time to implement menu but the time expense is still nominal for both of them.

- **Editorial Tools**

A good content management system's editorial tools is mainly responsible for enabling content formatting.

Joomla includes many tools for formatting and managing content at the time of installation. It ships with WYSIWYG editor with rich content editing options. Using control panel which is associated with content items, expiry of content can also be set. Through 'Media Manager' file uploading and storage is maintained.

Drupal does not ship with WYSISYG editor which is a common complaint. By default, Ituses plain text area for drafting and changing the content. By default, Joomla includes more in-built editorial tools and controls than Drupal, including a native WYSIWYG editor, scheduling controls and interfaces for managing the presence of content item elements. For primary content formatting needs, Joomla offers more tools and options by default.

- **Rich Media Support**

Rich media consists of flash, audio, video, image galleries or other non-text elements within web page content. Both Joomlaand Drupal support rich media display through the installation and configuration of additional third party software.

Joomla can support rich media display through the installation and configuration of third-party extension software. **Drupal** requires additional software in order to manage rich media display. The Drupal administrator manages rich media support by adding rich media fields, configuring different options. Few good Drupal Modules supports publication and management of rich media content. Both Joomla and Drupal require third- party extension software to support the easy display and publication of rich media elements. Joomla has more flexibility and it provides tools to manage the rich media content at fast rate whereas Drupal requires additional tools to manage the same. As a result, **enabling rich media support in Drupal tends to take more development time than in Joomla**.

- **SEO Support**

Search engine optimization (SEO) is the process of configuring website structure and elements to best synchronize with the methods that search engines like Google to evaluate, index and rank content. Both Joomla and Drupal include significant support for SEO features, however, each implements them in very different ways. **Joomla**'s native support for SEO is extensive, and it can be further expanded with the installation of third-party software. **Drupal**'s SEO support can be significant, and it requires planning and implementation by the Drupal developer. By default, Joomla has more rich and easy-to-implement SEO features than Drupal.Drupal requires significant configuration and site-specific development to enable SEO throughout a site, especially for high-quality SEF URLs.

- **Social Media Features**

Social Media such as Facebook, Twitter, and LinkedIn etc. are playing major role for marketing of the successful web site. The third party extensions are available for implementing social media features on both Joomla and Drupal sites, the costs are essentially the same.

- **Site Membership Features**

Both Joomla and Drupal have inbuilt access and permissions control to allow site administrators, content developers and other authorized users to log into the webpage and edit the content, configuration settings and add extra features. **Joomla**ships with several in-built features to support site administration and membership options. At the time of installation, a single super user account is enabled for Administrator (back end) and End

User (Frond end users). **Drupal** installs with two types of user "**Roles**" available to the system: an anonymous (or public) user role, and an authenticated user role, used to enable Drupal administrative login. Both Joomla and Drupal install by default with extensive capabilities for site administrators to log in and conduct site build out. **By default, Joomla offers more site membership features than Drupal.**

- **Tuning & Testing of Performance**

Any website is benefited from good performance which includes dynamic web pages, CSS, media assets and quick delivery to the browser. **Joomla** provides site wide caching control accessible through its back end whereas Drupal provides system-wide caching settings and controls, including the ability to enable site-wide caching, dump the site-wide cache, and aggregate CSS and JavaScript files to result in fewer server calls. Joomla's site-wide caching controls are well-balanced, easy to implement and effective: **In general, it takes less time to configure site-wide caching for Joomla than it does for Drupal.**

- **Deployment of Website**

To launch a new website, it involves moving files and the database from development server to the live server. Once a website is functional and running, there is complexity in implementation of new updates. ***Joomla****provides control panel settings which allows* the administrator to keep the website in offline mode in order to update the changes. A user having privileges of administrator can login during off-line mode and interact with the content in order to update the website. **Drupal** provides a maintenance mode setting that allows administrators to temporarily take a site offline and display a custom message to site visitors. When in Maintenance Mode, only the top-level super administrator account has login access to the Drupal site in order to conduct updates and make other changes. Both Joomla and Drupal sites follow the same process and have the same general costs for launching a website. Both also offer similar features for taking a site offline while updates are implemented, although **Joomla lets multiple authorized users log in while a site is in offline mode, whereas Drupal limits this to the superadministrator**.

- ***Platform Support***

Every content management system is designed for a Linux platform in which Apache is preferred webserver. It can be deployed on either Windows or Linux, both are written in PHP. Database support varies between the two. Joomla and Drupal both supports MySQL versions above 4.1. Drupal also supports PostgreSQL version 7 and above. For both Joomla and Drupal, LAMP (Linux Apache MySQL PHP) is the targetenvironment. Since Joomla and Drupal share verysimilar requirements, database support plays largepart in the decision.

- **Community Support**

Joomla has strong community support for which registration is free. Anyone can register and get the benefit of community support. A group of people working on Joomla answer the question and provide the tutorials as ready reference. There are also companies who provide professional community support by taking some nominal charges. Drupal also has strong community support and it also offers professional community support by charging

some nominal fee. Acquia offers Drupal support in a variety of plans based on number of servers, sites, or single issue packages. Drupal and Joomla have very similarity in support systems.

Table 1 - Comparative Table

Attributes	Joomla	Drupal
Setup and Configuration of Hosting Environment	It requires time to plan.	It requires less time for server planning.
Installation of CMS and Configuration	Straightforward	Requires server side manipulation
Content Types and Structure	Excellent	Requires 50% more time than Joomla.
Site Design and Layout	Highly capable	Highly capable
Site Navigation	Mature system for building menu	Requires longer time to implement menus
Editorial Tools	Includes more in-built editorial tool	It has less no. of tool than Joomla.
Rich Media Support	More flexible	Requires additional tool to manage
SEO Support	Rich SEO feature	Requires significant configuration
Social Media Features	Excellent	Excellent
Site Membership Features	Has more site membership feature	Limited
Tuning & Testing of Performance	Requires less time to configure site-wide caching	Requires more time for caching
Deployment of Website	Multiple users are authorized to login during offline mode	Limited to super administrator
Platform Support	Supports Windows & Linux	Supports Windows & Linux
Community Support	Strong community support	Strong community support

6. Conclusion

Hopefully by reading this article, one will be able to understand the basic differences between Joomla and Drupal. However, based on difference resources and study, it is found that Drupal is the first choice for web developer for complex and complicated site. But, at the same time, Joomla is considered good for simple site. But in my opinion, neither Drupal

nor Joomla can be considered appropriate software. While designing the website, we are not only supposed to design the site simply but look into other options available into content management systems and as per our requirement, one should select the appropriate content management system for content creation.

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Print Books Vs Digital Book: Challenge for Change Management in Libraries.

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1. Introduction

In this digital age, the library resources are being reformed based on the readers needs and they demand for digital version of print books. The library professionals understand the aspiration of digital savvy reader and are well acquainted with digital books and understand the value of both digital as well as print books. This paper will try to understand more aspects of change management from print to digital books which needs to be focused and considered before proposing any decision in the interest of the reader and organisation.

A comprehensive and systematic assessment needs to be conducted to get a fair picture of what a library professional must know and develop a system to analysis the facts related to digital books and print books.

2. Objectives:

The objectives of the study are to support to achieve the organisational objectives, what information resources are available within the organisation, and which resources are actually being used for various courses, groups and specializations. The study findings will be useful to understand where there is a match between information needs and available resources, where there are redundancies, and where information gaps—unmet information needs, exist. This will also help to provide the basis for evaluating strengths and weaknesses in how the organisation currently acquires, handles, stores, uses, reuses, and disseminates information.

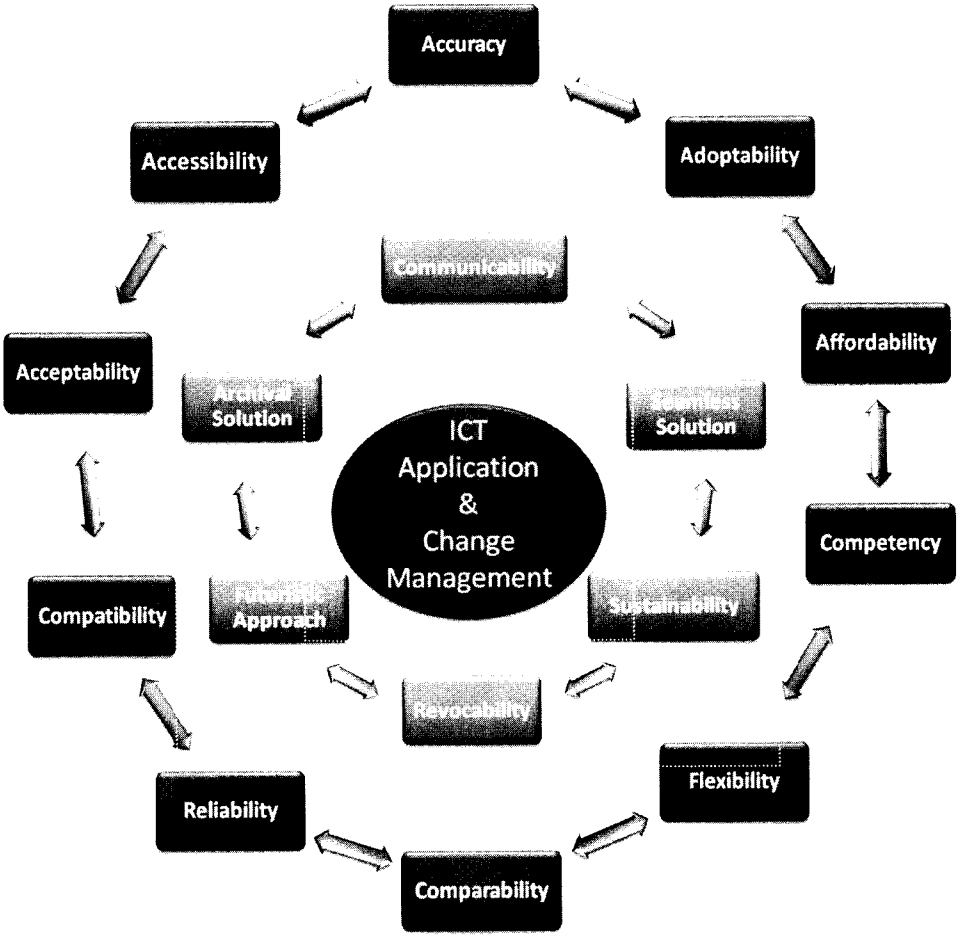
The prime objective of this study is based on prescribed textbooks in respect...

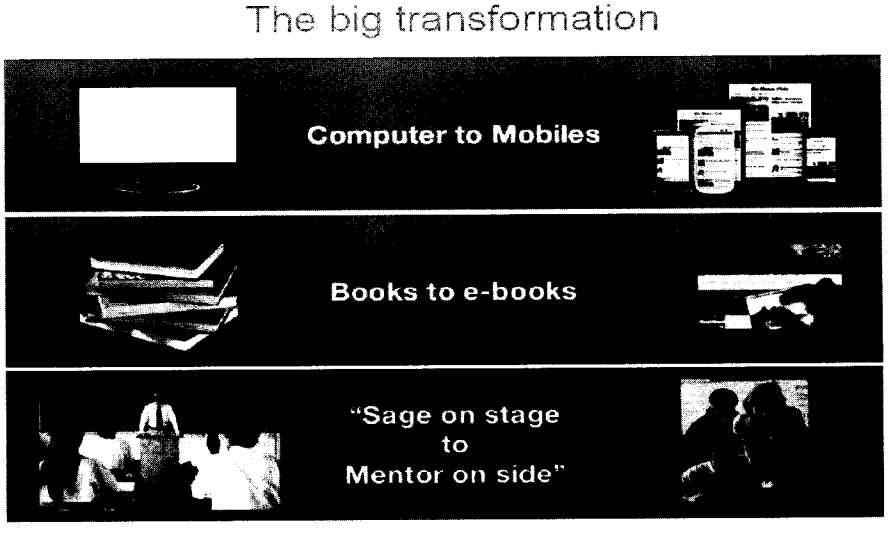
To select, maintain and develop systems that are fit for purpose and represent best value;

To identify opportunities to exploit our current investment and to upgrade consolidate systems;

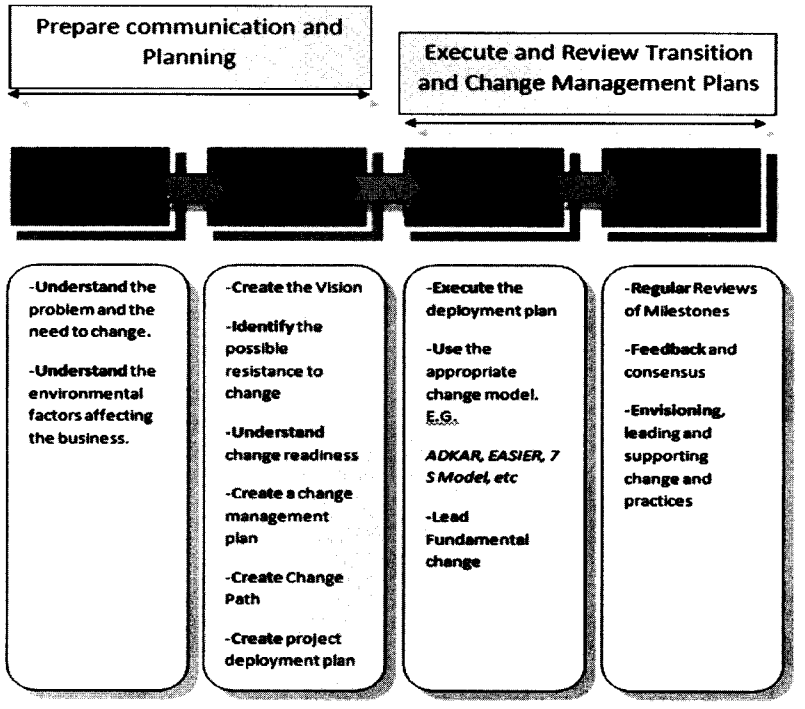
To analysis the study results for transformational change to apply the proposed concept.

3. The Application of ICT and Change Management





4. Challenges for Change Management



Deploying digital textbooks and challenges

- Students expect a "great experience"
- Difficult to do this consistently because:
  - Mobile technologies are nascent & evolving
  - Multiple content formats exist across publishers
  - User expectations itself are quite high

Challenges: Sources textbooks

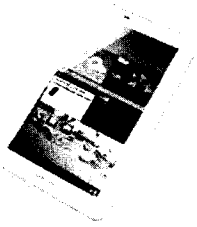
- Multiple publishers need to be approached
- Publishers have content encryption & DRM concerns – these need to be addressed
- Different standards need to be addressed (ePUB3 vs PDF)

Challenges: Teacher delivering experiences

Teachers themselves create a lot of content and would like to deliver this to the students – PPTs, notes, videos etc.

- This experience needs to be integrated to text-books
- Integration to LMS

The student gets a complete solution with the software platform.

Hardware	Software Platform	Content Bundle
 Andoid tablet +	•Suite of applications that convert a generic Android Tablet to a Learning Device suitable for the classroom •Developed over 2 years by the team at Edutor •Deployed in multiple ways to deliver the solution most appropriate to the institution	+  Digital Content •Multiple formats (ePub, PDF, multimedia etc) •Multiple publishers (Multimedia, Text-book publishers, Test-prep players)

Analysis of financial figures, software and hardware.

Component	Details	LIST PRICE	Pricing to your institute*
PART A **IGNITOR Tablet Learning Platform**	**Mobile Learning Environment application loaded onto the Device, with ongoing support & upgrades**	**Rs 450/- per device (ONE-TIME)**	**Rs 1200 per device (ONE-TIME)**
	Content & Application Security Solution – loaded onto the device	Rs 500/ per device (ONE-TIME)	
	Mobile Device Manager – loaded onto the device	**Rs 460/ per device (ONE-TIME)**	
	Content & Application Security Solution – PowerChip component loaded onto each MicroSD card	Rs 50 per SD card	FREE
	Cloud Solution: Course Delivery Engine – Content & Test Uploads, Downloads, Upgrades, Scores, Reports, Forums etc	**Rs 100/- per user per month**	**Rs 600 per user per year**

Component	Details	LIST PRICE	Indicative Pricing to your institute*
PART B **Digital Courseware**	Digital versions of Text-books (Refer Annexure 2)	List price – as per MRP	Rs 5900 for 1st year (including SD card)

Component	Details	LIST PRICE per Unit	Pricing to your institute – per Unit
PART C: **Hardware**	Intel Education Series Tablet (10 inch WiFi only) - Annexure 1	Rs 14500/-	Rs 13950/-

The costing comparison of major textbooks.

						Print List Price	Digital Price	Discount	Quote Price
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	425	383	30%	268
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	595	595	20%	476
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	550	495	30%	347
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Only e Edition available	850	25%	638
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	750	750	25%	563
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	450	405	30%	284
2	MB13201	Financial Management	Financial Management	Prasanna Chander	TMH	695	695	20%	556
2	MB13202	Management Information System	Management Information System	Kenneth C. Lauden & Jane P. Lauden	Pearson	775	775	25%	581
2	MB13203	Marketing	A framework for marketing management 5e	Philip Kotler, Kevin Lane Keller	Pearson	590	590	25%	443
2	MB13203	Marketing	MKTG - A South Asian perspective	Charles W. Lamb, Joseph F. Hair, Sharma	Cengage	675	610	30%	427
2	MB13204	Human Resource Management	Principles of Human Resource Management	Bohlander and Snell	Cengage	595	535	30%	375
2	MB13205	Production and Operation Management	Production and Operation Management	Shailendra Kale	TMH	420	420	20%	336
2	MB13206	Legal Aspects of Business	Legal Aspects of Business	Ravinder Kumar	Cengage	495	450	30%	315

The advantages of Print and Digital Books

1	It is a traditional way of learning & teaching	Trend of e-books : Text-books are increasingly being digitised
2	Once it is purchased, it become the property of buyer	Rich learning material – videos, animations etc
3	It can be read any time without any application, equipment & internet	Personal learning device – can learn anytime, anywhere
4	No licenses is required	Intuitive & easy to use
5	No fear of IPR violation	Engage multiple senses & help students interact with concepts: see, hear & touch
6		Empowers the teacher who has a window into each student
6		Enables differentiated instruction & learning
7		Teacher gains rich insights to student learning
8		Increases productivity and eases administrative load
9		Compatible with desktop, laptop, tablet & mobile technologies
10		Sharing in multiple content formats, i.e. , word, pdf, xls, images, voice, video, etc.

The disadvantages of Print and Digital Books

1	Carrying of books is not a easy task	Teachers / Students experience needs to be integrated to text-books
2	One book can be read by one user at a time	Publishers have content encryption & DRM concerns – these need to be addressed
3	It can not have multiple options, i.e., copy, print, email, etc.	Different standards need to be addressed (ePUB3 vs PDF)
4	No added value features, i.e., comments, sharing, discussions with teaching learning platform, etc.	Different sets of students requiring different book bundles
5	It can be brunt, spoiled by water, stolen , defaced, damaged , etc & there is no way of recovery	Managing various licenses. No accessibility after expiry of license. Multiple publishers need to be approached
6		Simultaneous access of internet to access content can cause crashes
6		Integration to LMS
7		Always need equipment, application or / and Internet connectivity and renewals
8		Cost of e-books, application, equipment & internet is very high.
9		Uncertainty and Technology failure

The overall costing of print and digital textbooks

Cost per student in Rupees	Print Book	Digital Book
Book Cost (in package for first year)	4636.00	5606.00
SD Card (one year cost)	-	50.00
Equipment cost (one time cost)	-	13950.00
Application Cost (one time cost)	-	1200.00
Cloud Solution (one year cost)	-	600.00
	4636.00	**21406.00**

There are following check points and marking system at the institutional level has been applied.

Sr.	Check points	Opinion	Marking
1	Is this objective or change is in the line of organisational vision?	Yes	95
2	Is there any clear and compelling reason for adopting this change?	No	-80
3	Does the institute feel the urgency to this change?	No	-90
4	Is this change a futuristic approach?	Yes	60
5	Do your organisation / library is competent to undertake this change?	Yes	80
6	Are all implementation plans in place to achieve the objectives?	Yes	50
7	Are remunerations, rewards and punishments aligned with this change?	Yes	-60
8	Do any risk factors carry this change?	Yes	-90
9	Does the library prestige on stake due to this change?	Yes	-70
10	Are the stakeholders, i.e., users and institute ready to adopt this change?	Yes	60
11	Are the decision makers practically agreed with this change?	No	-60
12	Is this change financial viable?	No	-90
	Total Score for Final Decision to this change	No	-195



5. Conclusion

Therefore the 4636 < 21406, the cost of Print book is less then Digital book and decision taken based on the above study that the proposed initiative is not feasible. Overall costing factors and other facts studied during this paper have indicated that the proposal of shifting digital books from print books is not acceptable as on date. There are many factors needs to be considered, i.e., reducing the cost of digital books, reducing the cost of instrument and delivery of content. The major point considered that the authors of the books needs to come forward and deliver their content directly to the reader and such mechanism to be develop which may assure the win – win position for both students and authors. The role of the facilitators, i.e., libraries and organisations also needs to be addressed which play a pivotal role in dissemination of services.



About Author

Dr. Bhardwaj has more than twenty five year's professional experiences, out of which nine years rich experience with Delhi Technological University, more than two years as Librarian with TERI. He has been the Keynote Speaker in HUC (Himalayan University Consortium) Librarian's Seminar organized by ICIMOD, 2010. He possesses degrees, i.e., MA, MBA, MLISc, MPhil, NET. He has more than fifteen publications in his account.

Promoting Open Access Movement with Special Reference to Institutional Repositories in University Libraries of Karnataka: *An Update*

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Abstract: Institutional repository being an integral component of open access occupies significant role in collecting, organizing and preserving the intellectual output of a university to encompass scientific, technological, cultural, artistic, and historical materials. The study highlights the significance of Institutional repository and its status in Universities of Karnataka. The challenges for creating such repositories and a case study of Gulbarga University has been showcased and shows how this can be done with ease, but caution of maintenance to reveal the hidden treasure to the academic and research community providing its conceptual development and elucidates the various Open Source Software's used for capturing the hidden knowledge of research value.

Keywords: Open Source Software, Scientific Productivity, Institutional Repository

1. Introduction

It was Dr S R Ranganathan, Father of Library and Information Science, who proclaimed the concept of open access movement, when he found that the books are kept under locking system and were chained and felt privilege of a few. This has led to the first law `Books are for use'. In the digital environment, efforts to provide access to the digital content to the user community under network environment and even through remote access serves the philosophy of open access. Satija and Singh (2007) enumerated the implications of the five Laws with respect to the ubiquitous Internet, Electronic publishing, Information Literacy, Virtual Reference Desks, Open Access Archives, Information Transfer, Knowledge Management, Information Marketing, OPACs and Hypermedia and reiterated that all the new concepts and processes facilitate the implications of the five Laws which square well with the IT enabled services and information society. It would be needless to mention that the ideas of Dr S.R. Ranganathan's transformed to reality to form the Budapest Open Access initiative during 2001 to make the academic and research literature of all disciplines made available freely on the Internet. National Assessment and Accreditation Council indicates that for better recognition of librarians from the perspective of university libraries, it is not what others have done, but what an individual university library has contributed or developed a mechanism to reveal its scientific temper of its own university productivity to the students, research scholars and teaching faculty, which is termed as Institutional repository - one of the significant component that forms open access. The study attempts to highlight the perspectives of Institutional repositories in Universities of Karnataka and its challenges.

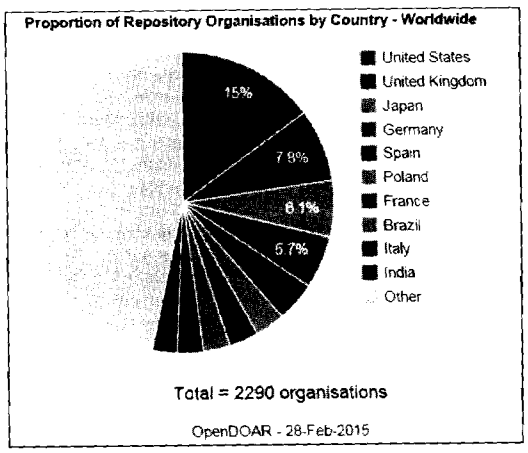
2. Literature Review

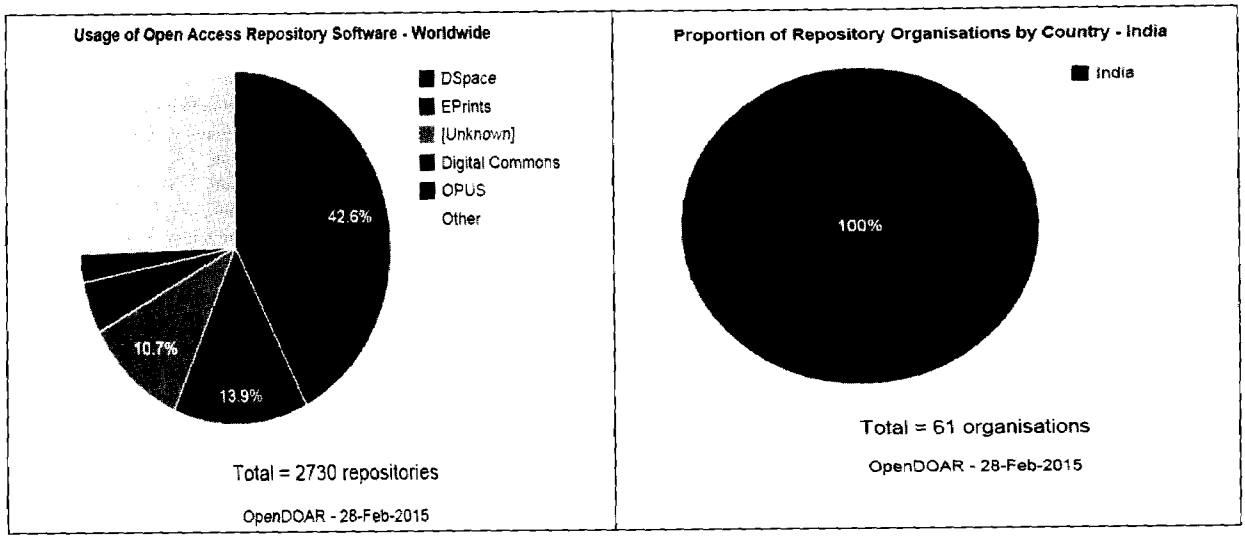
In the stiff competitive world, where scientific information is becoming a costly affair and at the same time, budget cuts are common phenomena in university or college libraries. Institutional repository being the intellectual out of institution but unfortunate thing is very few academicians are willing to contribute to the treasure of institutional repository being developed. Research studies on Institutional repositories particularly in the university environment are reported.

Manjunatha K (2014) in his doctoral study reported academic scholar's attitude towards Institutional repositories in Karnataka and found that Researchers deposits research material for a various reasons. 969 (56.80%) respondents motivated to contribute to the IRs. All the 1736 researchers responded to both the awareness and perception questions. Majority of the researchers were found be aware of the Institutional Repository concept the perception to make publicly access to result through the Institutional Repository have been found strong and positive. 56.80% (n=969) of the academic scholars agreed that it was very important to publish in IRs in order to disseminate their research findings. Similarly **Sambhu Nath Halder and Suvra Chandra (2012)** also examined the user-awareness of institutional repositories in Jadavpur University. **Krishnamurthy** and **Kemparaju, (2011)** studied 20 repositories covered collections of diverse types in various institutions in India with respect to institutional repository software and data based on the content type, metadata and characteristics. **Bansode (2012)** highlighted the project undertaken for creation of Institutional repository at University of Pune sharing experiences and challenges faced in creating its institutional repository.

3. Institutional Repository in India: Status Quo

Directory of Open Access Repositories (OpenDOAR) is an authoritative directory of academic open access repositories in the world and the Indian output showing the proportion of repository by country-wise is depicted in the following chart. It is observed that United States of America dominates in the proportion of repository contributions with 16.7% and India shares very less 10th position in the world and 61 organizations have registered institutional repository.





Developing an institutional repository has become sometimes a fashion or because somebody is carrying out or hosted, but rather it should encompass as a value added service and one should feel its significance in an academic setup to foster the research tempo. Sometimes, it becomes ridiculous to carryout Institutional repository without having library automation. It is a serious note to the librarians particularly colleges and universities (state) to have library automation as the first priority then one can go for Institutional repository.

To fetch better accreditation from the **National Assessment and Accreditation Council (NAAC)**, developing Institutional repository by the colleges or Universities would be an added value services and for which library has to take initiative in developing its own institutional repository revealing scientific publications.

The major institutional repositories in Karnataka particularly Universities in Karnataka are

University	URL	Software	Accessibility
University of Mysore	http://eprints.uni-mysore.ac.in/	ePrints	Internet
Bangalore University, Bangalore	T.D. Kemparaju and Ramesha, Bangalore University have undertaken major research project, UGC and developing Institutional Repositories for Scholarly Communication of Karnataka State Universities particularly Library and Information Science professionals.		Campus Intranet
Kuvempu University, Shimoga	B.S. Biradar (2010-2012) carried out major research project supported by UGC on Design and development of Institutional repositories in Kuvempu University.		Campus Intranet
Karnataka State Women's University, Bijapur.	Primitive stage & planning for establishing IR		-
Karnataka University, Dharwad	Primitive stage & planning for establishing IR	-	-
Mangalore University, Mangalore	Primitive stage & planning for establishing IR	-	-

Tumkur University, Tumkur	Primitive stage & planning for establishing IR	-	-
Gulbarga University, Gulbarga	http://172.27.102.246:8080/jspui	dspace	Campus Intranet
Vijayanagara Sri Krishnadevaraya University, Bellary	Primitive stage planning for establishing	-	-
Institutional Repositories in Research Institutes, Karnataka			
Digital Library at Indian Statistical Institute, Bangalore	http://library.isibang.ac.in:8080/dspace/	Dspace	Internet
DSpace at Vidyanidhi	http://dspace.vidyanidhi.org.in:8080/dspace/	Dspace	Internet
Electronic Theses and Dissertations at Indian Institute of Science	http://etd.ncsi.iisc.ernet.in/	ePrints	Internet
National Aerospace Laboratories Institutional Repository	http://nal-ir.nal.res.in/	ePrints	Internet
Indian Institute of Astrophysics (IIA)	http://prints.iiap.res.in/	ePrints	Internet
Indian Institute of Science, (IISc) Bangalore	http://eprints.iisc.ernet.in/	ePrints	Internet
Raman Research Institute (RRI)	http://dspace.rri.res.in/	Dspace	Internet

It can be noted from the table that it is only the University of Mysore that has really taken a step forward in creating and hosting its Institutional repositories (IRs) on the Internet from the perspectives of Universities in Karnataka.

Bangalore University is concentrating on development of IRs confined to scientific productivity of library and information science covering the state universities in Karnataka. Similarly Kuvempu University has developed IR and should be noted that both universities i.e. Kuvempu University and Bangalore University has initiated by esteemed faculty sponsored by major research projects, UGC and they are accessible under campus intranet.

Gulbarga University's institutional repository can be accessed @ http://172.27.102.246:8080/jspui within campus intranet and online through remote access. However, the other universities particularly Karnataka University, Dharwad; Mangalore University, Mangalore; Tumkur University, Tumkur and Karnataka State Women's University, Bijapur are planning to establish such institutional repositories and is in process for such establishment.

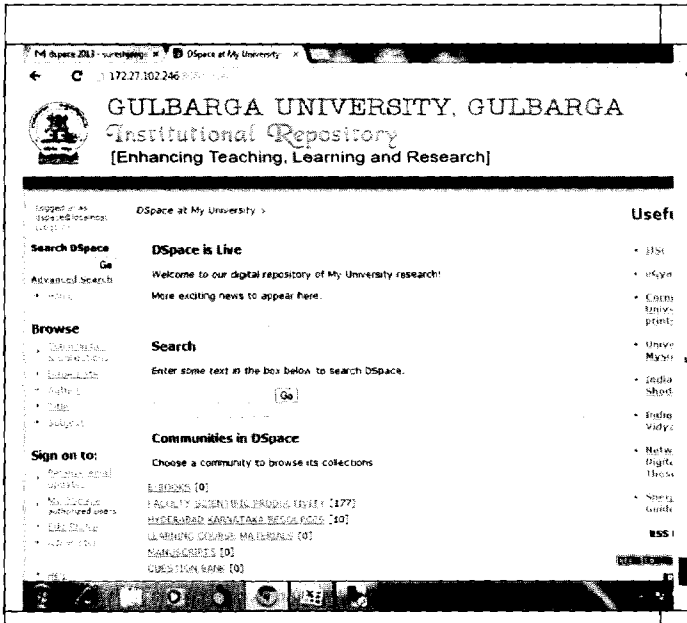
Institutional Repository @ Gulbarga University, Gulbarga

The Gulbarga University Library is at the core of research and learning at the University. Virtual Learning Resource Center and Digital Library (VLRC & DL), with 150 computer systems and three main servers, a giant leap into information age is at the heart of the

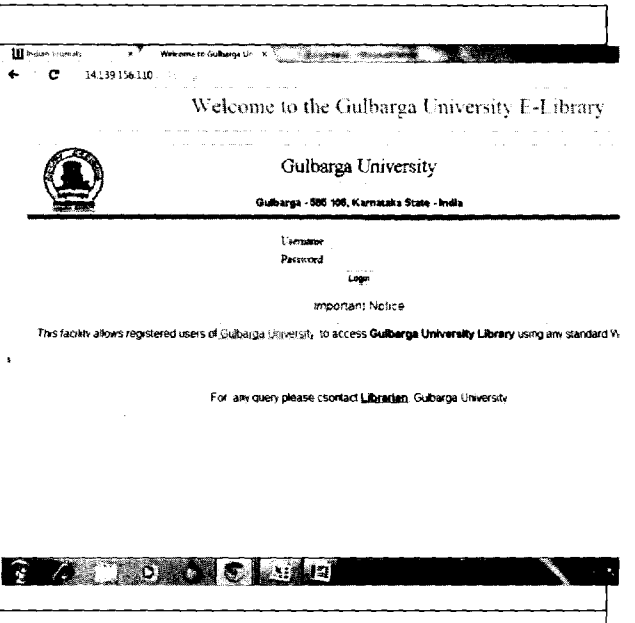
University Learning experience supporting e-LTR (e-Learning Teaching and Research), provides access to UGC INFONET e-resources (10,000 e-journals+ & databases), Internet and e-learning, course materials and e-books. Remote access facility, Virtual Reference through Question Point Service, OCLC-USA, Institutional Repository, Career Planning and User Sensitization Programs are a few unique services rendered to promote the optimum use of library resources.

Gulbarga University Library has initiated the process of establishing Institutional Repository with Greenstone, then tried with eprints and finally hanged on with dspace. For the practicing librarians within the limited manpower and technical competencies, development of livecd would be a great boon to install the software at one stretch and that has stimulated for dspace.

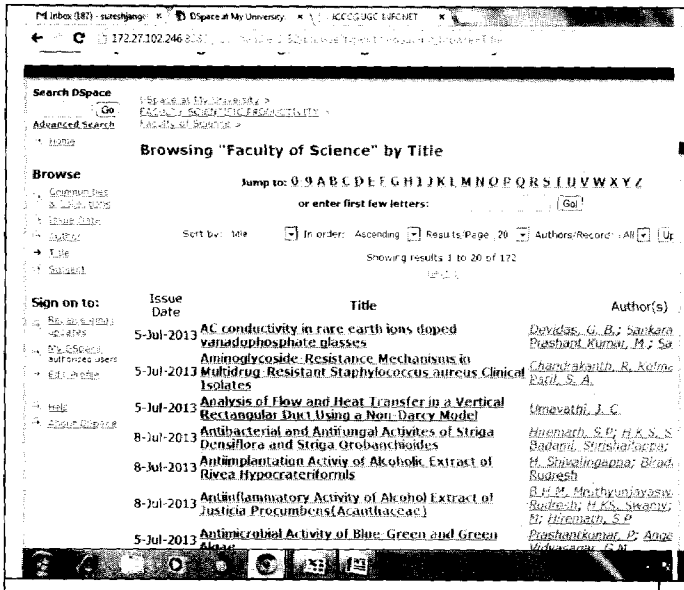
Institutional Repository covers research publications of the Faculty, e-Thesis and Dissertations, rare manuscripts, question banks, syllabus, university publications, Hyderabad Karnataka e-resources, statistical/ government reports (free) and e-books (free & WPL) using LibLiveCD using Ubuntu 10.10 and DSpace 1.7.0 and is made accessibly campus intranet @ 172.27.102.246:8080/jspui. The screenshots shows the modalities of IR @ Gulbarga University as under.

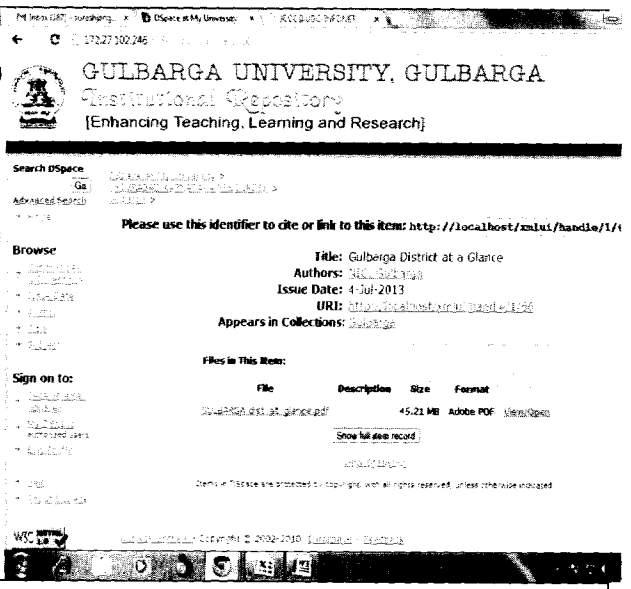


IR @ http://172.27.102.246:8080/jspui



IR through Remote Access for Registered Users





Faculty Publications	Hyderabad Karnataka Resources

4. Challenges Ahead

Prospects and challenges are two sides of a same coin. Creating an institutional repository of a college or university will have better visibility of library and appreciation, which would be prospects and growth of a librarian and on the other hand, maintaining, providing access, user orientation, usage and updating will be a great challenges ahead for the librarians. There is always a criticism and chances of creating confusion about the type of content being deposited on the Institutional Repository and for which one can always refer SHERPA guidelines (http://www.sherpa.ac.uk/guidance/).

Universities in Karnataka particularly state universities have to create institutional repository of its own institution either within campus intranet or Internet. This would be a great value added services particularly in organizing and providing access to Faculty publications, on-going and completed research projects, learning course materials and instructional courseware's including presentations/ lesson plans, Question-banks and administrative reports like annual reports, newsletters, Convocation addresses, proceedings etc. Due to the Live-CD's, most of the technicalities involved in installing and configuring the software's have reduced considerably and become more user friendly and requires little IT skills to the librarians. This sort of creativity will definitely show the existence and better visibility about the strength of library professionals to the academicians and administrative machinery. It is up-to the library to concentrate on automation of library as a first priority and then creation of institutional repository in the interest of our users and tools like Team-viewer can be utilized to trouble shoot any problem through remote access by seeking help from experts in the field of information science.

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Public Libraries and Digital Scholarship

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Abstract: Today, the world is a world full of information. Public libraries are developing innovative portals taking the advantage of convergence of media, computing and communication technologies, interactivity and social networking tools, and new possibilities to provide a world class medium of resources and services to its users. The resources and services of the public library are oriented to all age groups, with the relevant material, from the recreation to research informational needs, by organizing and presenting information; integrating the open access and licensed newspapers, journals and databases, text, multimedia, and other relevant sources. Public libraries as a local gateway to knowledge are facilitating for lifelong learning, independent decision-making and cultural development of both the individual and thereby contributing to the information society.

Keywords: Public libraries and Open access; Public libraries and scholarship; open access resources and public libraries; Digital Scholarship.

1. Introduction

The public libraries are the local centers of information, making all kinds of knowledge and information readily available to its users. Library professionals bridge the gap between the users and the vast ocean of knowledge and information and also match the information and its users, present it in a functional mode. They are the collectors and promoters of the heritage; they are organizers of the knowledge in the materials and add value by cataloguing, classifying and describing them; and, as public institutions, they assure fairness of access for all citizens. They take the knowledge of the past and present, and lay it down for the future.

From the middle of the 20th century, the invention of modern information technology has made radical changes in every aspect of human life including libraries. Libraries are facing challenges to cope with the transition to the digital age. Traditional libraries have transformed from paper to digital multimedia; thereby providing access to global information easier, faster and instantaneously. In the past, library, according to Aina (2004), *'is a store that stocks all kinds of knowledge and information carriers that are meant to be consulted and used by readers with little or no expense on their part'*. This is changing. Akintola and Olayiwola (2004) affirm that libraries must understand the revolutionary change and evolve a strategy of linking organizational form to the pace of change.

In the present digital era, diminishing budgets, increasing costs of infrastructure and resources, availability of diverse formats of global information in various languages, physical constraints and information overload are making libraries to face an increasing challenge to provide relevant information to diverse populations with differing needs, while competing with Web search engines like Google. The digital age marked a decline for libraries. Text is no longer the sole source for information. Users are opting and interested in multimedia formats. They are looking for quick and direct access to the best information.

2. ICT and Public Libraries

In the new Internet era, library websites are hubs for users to find services and locate resources, study guides, etc. The rapid evolution in Information Communications Technologies, ICT, is providing new tools and efficient opportunities for communication of information and interacting with citizens. Emergence of web-based content, licensed resources, born-digital documents, and institutionally significant digital collections are empowering libraries to create new discovery tools and access points for users to quickly locate information in a reliable way using the technologies. Library portal is the best discovery tool to provide online access to multimedia collections. Library portals support one stop solution for the discovery and retrieval of local and remote resources such as books, journal articles and digital objects. Public libraries are developing innovative portals taking the advantage of convergence of media, computing and communication technologies, interactivity and social networking tools, and new possibilities to provide a world class medium of resources and services to its users.

The library portals or websites can be designed making the libraries resources organized intuitive with a simple search box that would automatically search all the resources so that the users should feel comfortable and accept it as an information tool of choice. The search must allow filtering for a specific format, date range or locating only those items that are immediately available on the shelves or online from the collection.

The resources and services of the public library are oriented to all age groups, with the relevant material, from the recreation to research informational needs of the communities, by organizing and presenting information; integrating the open access and licensed newspapers, journals and databases, text, multimedia, and other relevant sources.

One may need information on a variety of topics, including biography, history, health, news, science and technology. Information about an event will appear overtime in different types of resources. In Minutes and days on ***Web***, in a day or days in ***Newspapers***; in a week or fortnightly in ***Popular Magazines***; in a month or Quarter in a ***Scholarly Journals***; in a year or years in ***Books and Reference works***. One can search multiple e-resources or a single resource. One can also read books and newspapers, listen to music or watch videos online. With an aim of giving the *best reading for the largest number at the least cost*, managers and policy makers of Public libraries can use open access resources that are freely available on the web. Specialized websites and databases can help to provide authoritative information by looking at particular groups of resources instead of the entire web. There are various directories of open access valuable resources available on the web free of cost. The library managers as curators, facilitators can link these resources to its users.

3. Open Access Movement and Public Libraries

Open-access (OA) solves the budget crisis for scholarly journals. Librarians can help users find the information they need, regardless of the budget-enforced limits on the library's own collection. Open-access (OA) literature is digital in form, available online, free of

charge, and free of copyright and licensing issues. Public libraries, if through their websites, link to the directory of open access journals, the users of that public library can have 10,289 Journals,6,139 searchable at Article level from 136 Countries out of 1,842,943 Articles as on 3rd March 2015. This online directory is a readymade source to provide access to quality open access, peer-reviewed journals with indexes. OpenDOAR provides a quality-assured listing of open access repositories around the world. There are around 2600 listings of open access (OA) repositories available on the web, which are organized by discipline or by institution. *Open*DOAR staff harvest and assign metadata to allow categorization and analysis to assist the wider use and exploitation of repositories.

There are various websites giving links to thousands of e-books on various subject both fiction and non-fiction e-books available under free licenses such as Creative Commons license, Project Gutenberg License and other freedom to use.

Today the world is a world full of information and news. To stay ahead in the world of cut throat competition a person needs to be informed about the changes taking place around him in the world. The best way of information is through Newspapers. It is practical not possible to buy all newspapers published throughout the world. Though all leading newspapers provide information on their sites it becomes where difficult to remember the name and site address of all such papers. There are dedicated websites for global newspapers to browse and read hundreds of full content premium newspapers and magazines from around the globe by selecting the choice of Region, Language, Category or Periodicity. These websites provide most convenient, complete and cost-effective way to read all the favorite publications in daily newspapers in all languages around the world on one site with just a free- registration. The mission is to satisfy all age group of users, students, researchers and intellectual curious with unlimited access to books and information available on web, free of cost.

President of India, Hon'ble Pranab Mukherjee, while launching the National Mission on Libraries referred public libraries as "the people's university". Mr. Mukherjee emphasized on up gradation of libraries providing services to the public and appealed libraries to contribute in promoting inclusive and sustained development of the people. Public library websites through a search interface give a facility to search and link to most of the e-resources including online catalogs of library print holdings, full-text materials from electronic journals, databases, and websites of directory of journals, reference sources, multimedia databases, institutional repositories, and other specialized collections that meet the needs of the local research community.

Almost or many of these dynamic websites are indexed and organized incorporating the Web 2.0 features and online services. Digital technologies can increase the content in the public libraries by linking its website to various free e –resources like newspapers across the globe, e-journals or e-books, reference sources or research sources, citation sources or gaming sources, listen to music, speech, lesson or watch an interview, movie or surgery, with descriptions of articles and citations.

In order to make use of these resources and facilities, regular and frequent orientation programs to the users is very much essential. Arranging workshops, hands on training and posting video tutorials, the users must be informed about the new resources and services.

4. Conclusion

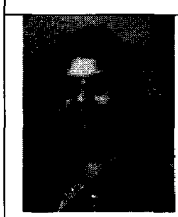
Public libraries can make a lot of information available online *via* their library websites from home computer connected to internet for accessing hundreds of high quality books, journals and other required information 24 hours a day, 7 days a week. Public library as a local gateway to knowledge is facilitating for lifelong learning, independent decision-making and cultural development of both the individual and thereby contributing to the information society.

Therefore, Open Access resources help public libraries to increase and accelerate the broad dissemination of valuable information in digital form, free of cost, to their audience and impact, and help the community raise its digital scholarship.

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Research Data Curation in Higher Education Institutions of India

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Abstract: For the purpose of research in various fields, datasets are created, processed and the results, if good, get published. Most of the initial datasets and the intermediate results are generally discarded after a period of time. Even if they are retained by the researcher, it remains out of reach for the other researchers in the same area, leading to duplication of efforts in dataset creation. In this paper, some successful data curation efforts are analyzed and essentials for combined effort are presented for research data curation in India with active role of libraries.

Keywords: Data curation, digital curation, data sharing, data science, research data management.

1. Introduction

Research activities cover a wide range, from the lone Ph.D. researcher doing research work for Ph.D. degree, to the international collaborations on an identified project of international importance. Researchers are now producing, storing, and disseminating digital data, which is the basis of the research reports, in much larger volumes than the text. These researchers collected small, precious parcels of data after investment of huge amount of time and money. Data are being recognized as intellectual objects that can undergo quality checks, peer review, distribution and reuse. The reuse of data contributes as much to society as the reuse of a concept in a journal article with appropriate attributions. So, the digital data our researchers create should be stored, found and re-used or repurposed. Lehrer (2010) argued that scholarly articles are certainly of great value, if we can validate that data are accurate and that conclusions are true when we have direct access to the original data. Getting to the original data is even more critical because of the observation that it appears that original strong findings tend to get weaker if replicated later.

Due to obvious reasons of digital form of data being the common form, the terms "data curation" and "digital curation" are being used interchangeably. The Wikipedia article for digital curation defines it as "selection, preservation, maintenance, collecting and archiving of digital assets" and it refers to "the process of establishing and developing long term repositories of digital assets for current and future reference by researchers, scientists, historians, and scholars" (Wikipedia, 2015a).

The activity of replication and validation is a basic principle of the scientific research method. In 1620, Francis Bacon strongly stated that experiments and observations must be replicable and open to evaluation (Bacon, 1620/1830). Research data are made open for two purposes. One is to provide evidence that the research was conducted properly with factual basis and the second is to provide data for reuse and the generation of further

findings and outputs. Scientific research data might have release restrictions, such as, an embargo period imposed by the data originator for protecting the researcher's intellectual property rights before publishing. During this period, the original data creators may publish their findings before others have access to the data. The dataset may then be released with condition of appropriate attributions.

Internationally, open access to research data is being given increasing importance within research establishments and higher education institutions and they are, increasingly, being required to ensure the implementation of explicit research data management frameworks. Advancements in instrumentation and computerization enable scholars and civil servants to collect data with volumes equal to the text content of the entire Library of Congress in a matter of days (Baraniuk, 2011). However, providing sufficient contextual information to enable data reuse is also a significant challenge for quantitative research projects (Faniel et al., 2010).

2. Literature Review

The term "data curation" started appearing regularly in LIS literature as early as 2000. As can be expected from a new area of specialization, a majority of the literature has been of a descriptive nature and focuses primarily on the concept of curation or offering different opinions on why data curation services are important.

The Atkins Report (Atkins et al., 2003, p. 43) acknowledged the need for "trusted and enduring organizations to assume the stewardship for scientific data" and said that "Stewardship includes ongoing creation and improvement of the metadata by people cross-trained in scientific domains and knowledge management". But, it assumed that much of this work could be automated with the development of "middleware, standard or interoperable formats, and related data storage strategies". The report concluded that "each discipline is likely best suited to creating and managing such repositories and tools". It noted that "interoperability with other disciplines is essential", but it implied that this problem could be largely resolved by technological means.

Anna Gold (Gold, 2007) pointed to the growing importance of research data by stating that data is the currency of science, even if publications are still the currency of tenure. To be able to exchange data, communicate it, mine it, reuse it, and review it is essential to scientific productivity, collaboration, and to discovery itself. Some authors have opined that research libraries traditionally have controlled access to research data in the form of published documentation, and that it, therefore, would be a natural extension of that function if they were to control direct access to the research data in raw form (Lewis, 2010; Shearer et al., 2010; Heller et al., 2011). Heller et al. (2011) advocates integration of and access to large datasets with the purpose of identification, retrieval, sharing, and recycling, require description, organization, and consistent control and treatment according to harmonized rules, formats, and protocols. This is precisely what research libraries do today in relation to documents. Weber et al. (2012) argued that research data often are complex datasets of very different kinds of information, and that they are domain-, context- and provenance-dependent. The maintaining of such datasets requires scientific knowledge of

the domain and advanced technological knowledge in order to store and organize the data so that it can be properly preserved so that other researchers are able to effectively query the information.

3. State of Affairs in Data Curation

Increased recognition of importance of research data has caused governments as well as individual institutions, both research and higher education, to venture into data curation practice and research. There are research data repositories involved in curation of data generated by institution's research activities, and also registries of research data repositories. Prominent international initiatives and the present scene in India have been discussed below. The contribution of research data repositories is also discussed.

3.1 International Initiatives

Among the first initiatives, the Digital Curation Centre (DCC) was launched in March 2004 at National E-Science Centre of University of Edinburgh to help solve the extensive challenges of digital preservation and digital curation and to lead research, development, advice, and support services for higher education institutions in the United Kingdom (Rusbridge et al., 2005). On September 28, 2007, the U.S. National Science Foundation's Office of Cyberinfrastructure announced a request for proposals with the name "Sustainable Digital Data Preservation and Access Network Partner" (DataNet). The request solicited to create a set of exemplar national and global data research infrastructure organizations, dubbed as DataNet Partners, that provide unique opportunities to communities of researchers to advance science and/or engineering research and learning (NSF, 2007). The two prominent partners of DataNet are DataONE and Data Conservancy. DataONE (Michener et al., 2015a) at University of New Mexico covers ecology, evolution and earth science. The Data Conservancy (Choudhury et al., 2015a) at Johns Hopkins University covers astronomy, earth science, life sciences and social science.

The Australian National Data Service (ANDS) was established in 2008 to help address the challenges of storing and managing Australia's research data, and making it discoverable and accessible for validation and reuse. In October 2012, Thomson Reuters launched a new citation database, Data Citation Index, on its Web of Knowledge platform (Thomson Reuters, 2012). This new index is concentrated solely on digital, web-based resources. It selects and index data repositories, which are databases or collections comprising data studies and datasets to store and provide access to raw data. Constituent data studies, and sometimes individual data sets, are tagged with metadata to provide context for the associated raw data.

In addition to the above mentioned prominent initiatives in the field of data curation, there are some registries hat offers researchers, funding organizations, libraries and publishers, an overview of existing international repositories for research data. Following a paper by Brase et al. (2009), DataCite, an international not-for-profit organization, was founded in 2009 by organizations from 6 countries aiming to establish easier access to research data on the Internet, increase acceptance of research data as legitimate, citable contributions to

the scholarly record and support data archiving that will permit results to be verified and re-purposed for future study. After this initiative two prominent registries came into being as "Databib" by Purdue University Library and "re3data.org" by German Research Foundation (DFG). The two services are in the process of merging, and in the future the combined service will be absorbed into DataCite (DataCite, 2015a).

3.2 Initiatives in India

The data repository registries of Databib and re3data.org have registered 27 databanks from India in their registry of research data. It is worthwhile to note that none of these 27 databanks belong to higher education institutions of universities and colleges present in India. It is reflected that the universities and colleges in India are not sharing their research databases among the research communities.

The Department of Science & Technology, Government of India has framed National Data Sharing and Accessibility Policy (NDSAP) - 2012. The earlier policy was based on "open series data model", in which any data not specifically included in the "Open Series Dataset" remains inaccessible for public use. The NDSAP envisages a migration towards "Negative List" of data. All the data holding organizations will be re-classifying their data and prepare a negative list of sensitive data, keeping in view, the broad guidelines of RTI Act, 2005 (NDSAP, 2012). Under this policy, the web platform of www.data.gov.in provides access to 13714 datasets contributed by 86 government agencies, as on March 3, 2015. Another prominent source of economic data is the Database on Indian Economy (DBIE) provided by the Reserve Bank of India through its web postal www.rbi.org.in.

The research data collected by research groups and individual researchers in universities and colleges of India are more or less confined to their private ownership. With International Workshop on "Data Curation in the University: Libraries, Research and Learning" organized in March, 2013 at JNU, New Delhi, the participation of universities and colleges is expected to grow for research data curation pertaining to research activities conducted by their researchers.

4. Essentials for research data curation

The increasing importance of data management in an academic context requires higher education institutions of universities and colleges in India to consider the essentials of data curation, as the first steps towards delivering research data management support services. Presented here are the essentials of research data curation for higher education institutions. The essential preparations should comprise of following, so as to promote the research data curation in higher educational institutions:

- **A policy framework:** Before embarking on the nationwide research data curation programme, a policy framework suitable for curation of research data should be in place. The NDSAP-2012 has been designed keeping in mind the datasets with the government departments. So, the need of a separate policy framework, specifically

for research data curation is needed. The policy framework should also address the concerns of research groups belonging to higher education.

- **An inter-institutional coordination authority:** An inter-institutional coordination authority covering the universities, colleges and research institutions should be in place to coordinate between the institutions for standards, manpower training and other coordination activities for research data curation.
- **Set of technological standards:** Various technological standards, e.g. database technology, file formats, exchange formats, metadata standards, etc., should be in place. As the institutions have heterogeneous research practices, for data sharing among the institutions, either a specific standard for each activity should be used or mapping between heterogeneous standards should be developed. As a higher educational institute deals with a wide array of knowledge areas and the datasets belonging to different knowledge areas need different file formats and exchange formats, the technological standards should be designed to promote interoperability of the varied formats.
- **Manpower planning:** The practice of data curation involves human expertise in contrast to automated data mining activities. The datasets need to be carefully prepared with proper metadata. The manpower needed for such a specialized work should be expert and needs to be prepared with proper manpower planning. A higher education institution deals with many specializations, the personnel should be able to coordinate with researchers belonging to completely different knowledge areas.
- **Advocacy and user education:** Although the realm of research data curation is widely considered as beneficial to society, a group of researchers may think otherwise. Even if agreed, a researcher may not be able to utilize the full potential offered by the data curation. Establishing the awareness, education, and support of research communities is one of the biggest challenges facing the successful capture, documentation, dissemination, and reuse of research data. Hence, a programme of curation literacy, education and advocacy will be needed.
- **Role of Institutional Libraries:** The activity of research data curation in a higher education or research institution needs to be internally coordinated among various departments, units and research groups. There already exists a central academic coordination centre, which we call as library, in all the higher education and research institutions. It has always been the job of academic librarians to know about and be familiar with relevant databases, to advise users as to their proper and ethical use, and to include them in the bibliographic guides. The role of libraries is to collect, preserve, and disseminate the intellectual output of the society. The library can easily coordinate the research data curation activity with records management, giving processes/techniques that are relevant to them, for example, file plans, helpful naming conventions, version control, distribution control, security and backup, permissions management, and appraisal, retention and disposal. As data archives developed, a specialized profession of data librarian/archivist emerged, blending knowledge and skills from information technology, librarianship, statistics,

and the social sciences. Moreover, the librarianship has already transformed from the role of document manager to information managers. Therefore, it is imperative upon the higher educational institution to give the responsibility of research data curation to the institutional libraries.

5. Conclusion

Research data curation has been acknowledged as an important activity for helping and promoting research in various fields of knowledge. The developed countries are now actively involved in curation of research data. They are also collaborating on various fronts to share their data among the research communities. In India the datasets created by government organizations and some research institutions are being curated. But, the higher educational institutions of universities and colleges are lagging behind. Therefore, a need has been identified for these institutions to start the activity of research data curation. The collaboration is expected to be beneficial, as the collaborating institution will be able to get readymade datasets from other institutions as well as refine their own research activities. Librarians and data managers act as advisors for researchers. They help to identify the project data management needs and map these needs to existing tools for data curation either inside the source institution or in disciplinary repositories. Therefore, the library may be entrusted with the responsibility of running research data curation activity in a higher education institution.

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Role of UGC – Infonet Digital Library Consortium in the Study of Life Sciences

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Abstract: Presents the role of UGC – Infonet Digital Library Consortium in the Study of Life Sciences. It deals with INFLIBNET Centre, UGC-INFONET Digital Library Consortium, Objectives of UGC-INFONET Digital Library Consortium and the number and name of journals in discipline of life sciences of various publishers/aggregator made available through UGC – Infonet Digital Library Consortium. Biological Sciences, Botany and Zoology together are the major subjects (80 %) under Life Science discipline to which UGC-Infonet Digital Library Consortium is providing access. JSTOR, Science Direct, Springer and Wiley Blackwell Publishing are major publishers/aggregators who are providing access of approximately 90 % of the journals in Life Sciences discipline.

Keywords: E-Journals, E-Resources, UGC – Infonet Digital Library Consortium, Biological Sciences, Microbiology, Biology, Botany, Zoology, INFLIBNET, etc.

1. Introduction

The field of study which involves the scientific study of living organisms such as microorganisms, plants, animals, human beings and their relation with environment is called Life Science. This discipline is composed of biological science and environmental science. Biological Sciences is an exciting and rapidly developing subject area in which the study of living things has undergone tremendous expansion in recent years, and topics such as cell biology, neuroscience, evolutionary biology, etc are rapidly developing. The Biological Sciences is composed of biology, biochemistry, microbiology, botany and zoology. The environmental science is a multidisciplinary academic field in which environment and solution of environmental problems are studied. It includes aquatic science, ecology, oceanography, atmospheric science, etc. The other related subjects to biological sciences are forest and forestry, fish and fisheries (Wikipedia, 2015). There is considerable overlap between many of the topics of study in the Life Sciences.

Biology is a natural science concerned with the study of life and living organisms, including their structure, function, growth, evolution, distribution, and taxonomy. In general, biology recognizes the cell as the basic unit of life, genes as the basic unit of heredity, and evolution as the engine that propels the synthesis and creation of new species (Wikipedia, 2015). Biochemistry examines the rudimentary chemistry of life. It is the study of chemical processes within and relating to living organisms (Wikipedia, 2015). Ecology is the scientific analysis and study of interactions among organisms and with their abiotic environment. Ecosystems are composed of dynamically interacting parts including organisms, the communities they make up, and the non-living components of their environment (Wikipedia, 2015). Forestry is the science of creating, managing, using, conserving, and repairing forests and associated resources, in a sustainable manner, to meet desired goals, needs, and values for human benefits. The forest science has elements that belong to the biological, physical, social, political and managerial sciences (Wikipedia,

2015). Aquatic Science is the multidisciplinary study of aquatic systems, encompassing both freshwater and marine systems. Scientific investigations within this field often examine the human impact on and interaction with aquatic systems and range in scale from the molecular level of contaminants to the stresses on entire ecosystems (Wikipedia, 2015). Microbiology is the study of microscopic organisms-unicellular, multicellular or acellular (lacking cells). It encompasses virology, mycology, parasitology, and bacteriology (Wikipedia, 2015). Botany is the science of plant life and a branch of biology. It is also called as plant science or plant biology (Wikipedia, 2015). Zoology or animal biology is the branch of biology which deals with the animal kingdom, including the structure, embryology, evolution, classification, habits, and distribution of all animals, both living and extinct, and how they interact with their ecosystems (Wikipedia, 2015). Fisheries Science is science of managing and understanding fisheries. It is a multidisciplinary science encompassing limnology, oceanography, freshwater biology, marine biology, conservation, ecology, population dynamics, economics and management. A fishery may involve the capture of wild fish or raising fish through fish farming or aquaculture (Wikipedia, 2015).

2. UGC-INFONET Digital Library Consortium

With globalization of education and competitive research, the demand for the journals has increased over the years. Due to scarcity of funds, libraries have been forced to discontinue the scholarly journals, which have great impact on the users. In order to provide the current literature to academician, UGC initiated the UGC-INFONET E-journal consortium. Now this consortium is named as UGC-INFONET Digital Library Consortium. Timely initiative of UGC is a great boon to academician in the country, which enables them to access large number of scholarly journals from reputed publishers, aggregators and society publications. At present, the Consortium provides current as well as archival access to more than 9000+ core and peer-reviewed journals and 10 bibliographic databases from 26 publishers and aggregators in different disciplines across the globe. The whole programme has been implemented in different phases based on the establishment of network facility to access these resources. So far 421 members comprising 196 Universities, 204 Associate members, 6 IUCs and other Institutions and 14 National Law Scools/Universities coming under the purview of UGC, have been provided access to these journals and databases. This facility is also extended to affiliated colleges through a separate initiative called N-List programme (Inflibnet, 2015).

3. Subject Coverage under UGC-INFONET Digital Library Consortium

The UGC-INFONET Digital Library Consortium covers all areas of learning. It further aims at covering all fields relevance to various Universities including Arts & Humanities, Social Sciences, Physical and Chemical Sciences, Life Sciences, Computer Science, Mathematics, Statistics, etc.

The overall picture shows that there has been equal distribution of journals and databases subscribed in the project having 48% collections in Science and Technology, 46% collections in Social Sciences and 6% collections in the area of Humanities (Cholin, et al., 2006).

4. Presentation of Data

This consortium is providing access to 1199 journals in the discipline of Life Sciences comprising 649 in Biological Sciences, 148 in Botany, 147 in Zoology, 77 in Ecology, 71 in Microbiology, 57 in Biochemistry and rest 50 in Fish & Fisheries, Forest & Forestry and Aquatic Science as it is evident from Table 1.

Table 1: Subject wise No. of Journals Accessible via UGC-Infonet Digital Library Consortium

Sl. No.	Name of Subjects	Number of Journals
1.	Aquatic Science	13
2.	Biochemistry	57
3.	Biological Sciences	649
4.	Botany	148
5.	Ecology	77
6.	Fish & Fisheries	19
7.	Forest & Forestry	18
8.	Microbiology	71
9.	Zoology	147
	Total	1199

The publisher-wise number of journals accessible in discipline of Life Sciences through UGC-Infonet Digital Library Consortium is presented in Table 2. This consortium is providing access of 351 journals from JSTOR, 293 from Science Direct, 232 from Springer Link, 153 from Wiley Blackwell and rest from other publishers/aggregators.

Table 2: Publisher wise No. of Journals Accessible via UGC-Infonet Digital Library Consortium

Sl. No.	Name of Publishers	Number of Journals
1.	American Chemical Society	09
2.	Annual Reviews	12
3.	Cambridge University Press	20
4.	JSTOR	351

5.	Open Journal Systems@Inflibnet	01
6.	OUP Archive	10
7.	Oxford University Press	08
8.	Portland Press	10
9.	Project Muse	01
10.	Royal Society of Chemistry	02
11.	ScienceDirect (10 Subject Collection)	293
12.	ScienceDirect Archive (Basic Sc Collection)	13
13.	Springer Link	232
14.	Taylor and Francis	84
15.	Wiley Blackwell Publishing	153
	Total	1199

The publisher-subject-wise number of journals available in Life Sciences through UGC-Infonet Digital Library Consortium is shown in Table 3.

Table 3: Publisher-Subject-wise No. of Journals Accessible through UGC-Infonet Digital Library Consortium

Sl. No.	Name of Publishers	Number of Journals									Total
		Aquatic science	Biochemistry	Biological science	Botany	Ecology	Fish & Fisheries	Forest & Forestry	Microbiology	Zoology	
1.	American Chemical Society	-	-	09	-	-	-	-	-	-	09
2.	Annual Reviews	-	-	06	03	-	-	-	01	02	12
3.	Cambridge University Press	05	-	13	02	-	-	-	-	-	20
4.	JSTOR	-	-	228	47	04	-	01	-	71	351
5.	Open Journal Systems@Inflibnet	-	-	01	-	-	-	-	-	-	01
6.	OUP Archive	-	01	05	03	-	-	01	-	-	10
7.	Oxford University Press	-	-	04	03	-	-	01	-	-	08
8.	Portland Press	-	01	09	-	-	-	-	-	-	10
9.	Project Muse	-	-	01	-	-	-	-	-	-	01

10.	Royal Society of Chemistry	-	-	02	-	-	-	-	-	-	02
11.	ScienceDirect (10 Subject Collection)	-	47	187	17	-	03	04	29	06	293
12.	ScienceDirect Archive (Basic Sc Collection)	-	03	09	01	-	-	-	-	-	13
13.	Springer Link	02	01	78	32	43	03	11	29	33	232
14.	Taylor and Francis	06	-	48	18	-	05	-	-	07	84
15.	Wiley Blackwell Publishing	-	04	49	22	30	08	-	12	28	153
	Total	13	57	649	148	77	19	18	71	147	1199

5. Analysis and Interpretation

The UGC-Infonet Digital Library Consortium is providing access of 649 journals in subject area of Biological Sciences which is more than 54 % of total journals in Life Science discipline. The Botany and Zoology is the 2nd and 3rd subject in which consortium is providing access of 148 (12.34 %) and 147 (12.26 %) journals. This is evident from the figure 1. The UGC-Infonet Digital Library Consortium is providing access of 351 journals from JSTOR which is approximately 30 % of the total journals in Life Science discipline. Science Direct which is the product of Elsevier Science is covering approximately 25 % of total journals while Springer Link is covering approximately 20 % of total journals in Life Sciences. This can be seen in figure 2.

From the above analysis and discussion it can be interpreted that Biological Sciences, Botany and Zoology together are the major subjects (80 %) under Life Science discipline to which UGC-Infonet Digital Library Consortium is providing access. JSTOR, Science Direct, Springer and Wiley Blackwell Publishing are major publishers/aggregators who are providing access of approximately 90 % of the journals in Life Sciences discipline.

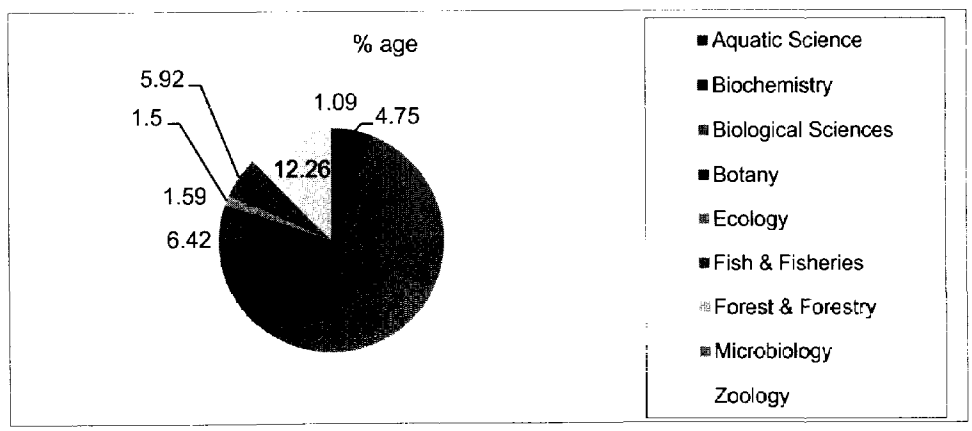


Figure 1: Subject-wise number of journals accessible through UGC-Infonet Digital Library Consortium

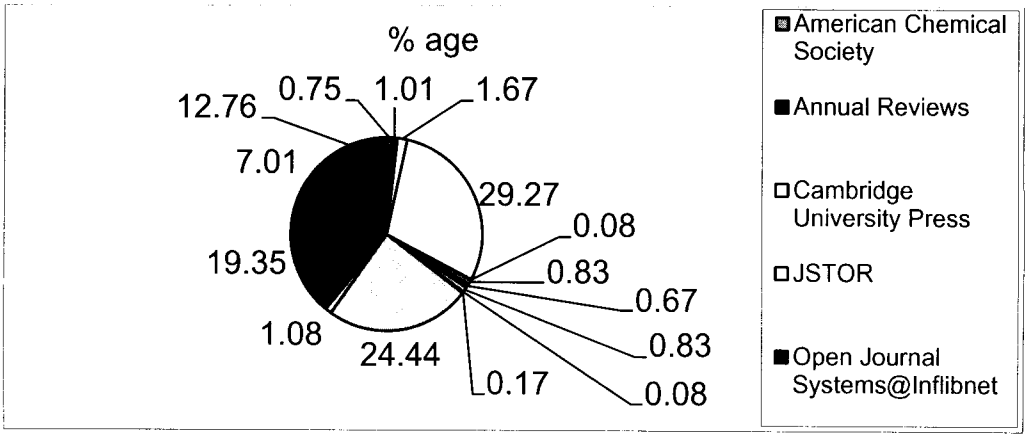


Figure 2: Publisher-wise Number of Journals Accessible through UGC Infonet Digital Library Consortium

6. Conclusion

The initiative taken up by University Grants Commission to provide electronic access to scholarly journals and databases through Inflibnet Centre has started making a very good impact on the research and academic community. The UGC is providing good number of journals to the scientist and academician working in the field of Life Sciences.

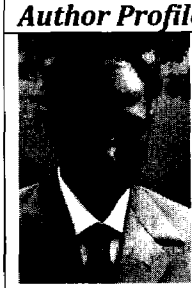
The Biological Sciences along with Botany and Zoology are the major subjects in Life Science discipline covered in UGC-Infonet Digital Library Consortium. The JTSOR, Science Direct, Springer and Wiley Blackwell Publishing are major publishers/aggregators who are providing access of maximum number of journals in discipline of Life Sciences through UGC-Infonet Digital Library Consortium. However, there is great need to further improve the access in terms of network infrastructure within the universities and the bandwidth support will further enhance over the usage over the years. The results strongly indicate that in the consortia arena the levels of information use has raised through desktop electronic access. At this early stage, the users have probably not yet fully absorbed what the UGC-INFONET Digital Library Consortium can do for them, but INFLIBNET is on its mission to reach out to them and provide necessary guidance time to time in improving the access base.

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Author Profile



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Search Engines for Information Retrieval: *A Comparative Study of Google, Yahoo, Altavista, Bing, Lycos*

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Abstract: A Search Engine (SE) is a program that searches documents on the Internet for specified keywords and returns a list of the websites of the documents. World Wide Web has become an indispensable source of information for any one, it needs to understand how people search and retrieve information as search engines have been playing an important role in finding the required information from ever growing internet. Search Engines (SEs) on internet have improved continually with application of new methodologies to satisfy their users by providing them with relevant information. The paper explores on how Search Engines discover web pages, indexes content, and provide search results. The paper discusses about the technological evolution of SEs, and working process of SEs. The paper also explores the search features of Popular Search Engines i.e Google, Yahoo, AltaVista, Bing and Lycos. Finally paper presents conclusions and suggestions for further research.

Keywords: Search Engines, World Wide Web (WWW), Web Searching, Search Features

1. Introduction

A Search engine retrieves web resources from its database by matching the keywords entered by the user. The web has plenty of useful resources, but its dynamic unstructured nature makes them difficult to locate, the quality of search in web pages. The growth of the Web is an unprecedented phenomenon. The search engine technologies are sophisticated technologies, and the sophistication is increasing day-by-day. Thus, there is a considerable trend in the technologies that are related to search engines. Effective use of Search Engines is a challenging task for Library and Information Science Professionals. The main problem is displaying only important pages relevant to the keyword(s) typed by users. Each search engines has its own algorithm. The importance of a web page can be judged based on the content specified in it or based on link information. Searching for information on the World Wide Web (WWW) is done in much the same way that you look for information in a library, using an on-line catalog system (the updated version of the old index card system). The difference-and the advantage-is that you can get information from all over the world,

instead of from a single library collection. The term "search engine" is typically used to describe all of the different programs that allow people to search the World Wide Web.

2. Objectives

- To explore the genesis of search engines technology.
- To find out the Architecture and working process of search engines.
- To find out the search features of select search engines.

3. Statement of the Problem

The present study has been undertaken to answer what is web search engine, how web search engines works, an individual simply cannot read billions of pages available on the web, so he need help from search engines to zoom in to a small number of pages worth looking it.

4. Significance of the study

Web search engines have become an indispensable tool in our everyday life. When we seek information we often go to our favorite search engine and look at the returned pages. In this context we felt it is essential to have a study of usage and impact of web search engines. This study would help to assess the working process, technological evolutions of SEs.

5. Methodology

The study is based on an extensive review of literature available in the print journals, online journals on internet to investigate about the search engines technology, and how search engines retrieve the information from their databases.

6. Limitations of the Study

Search Engines are available globally but the present study is confined to the search engines trends and technologies, Development of search engines, working process of search engines, search features of the select search engines only i.e Google, Yahoo, AltaVista, Bing, Lycos.

7. Review of Related Literature

Web search is now a major interdisciplinary area of study, including the modeling of user behavior and web search engine performance. Studies on Web search engine crawling and retrieving have evolved as an important are of Web research since the mid-1990s. There are a number of studies related to the use of web search engines. There are many factors which affect the use of web search engines. The related studies discuss some of these issues. The present study is conducted in the light of the previous studies

Egri and Bayrak (2014) in their paper entitled, 'The Role of Search Engine Optimization on Keeping the User on the Site' mentioned that 93% of internet traffic is managed by search engines, exploring the potential of search engines is crucial, it shows the critical role of search engines on routing users to the right websites. Due to the important effects of search engines, search results are getting more crucial for websites to compete with other rivals. Kim and Tse (2014) in their article entitled 'Search engine competition with a knowledge-sharing service' compared the competition between an inferior search engine and a superior search engine with the option to introduce a knowledge-sharing service. White (2013) made a study on search engines and published it with the title 'Search engines: Left side quality versus right side profits'. He stated that Search engines face an interesting trade off in choosing the way to display their results. While providing high quality unpaid, or "left side" results attracts users, doing so can also cannibalize the revenue that comes from paid ads on the "right side". Shafi and Rather presents the result of a research conducted on five search engines- Altavista, Google, Hotbot, Scirus and Bioweb for retrieving scholarly information using bio-technology related search terms. The search engines are evaluated taking the first ten results pertaining to scholarly information for estimation of precision and recall. It shows that Scirus is the most comprehensive in retrieving 'scholarly information' followed by Google and HotBot. Biradar and Sampath Kumar found that Altavista searched more number of sites while Excite searched least number of sites. In case of relevancy of search engines majority of relevant sites were found in case of Google (28%) followed by Yahoo (26%) and Altavista (20%). Further analysis shows that more number of irrelevant sites was found in case of Hotbot (61.6%), Lycos (59.6%) and Altavista (54.8%). 7.6 Lewandoski et al study measures the frequency with which search engines update their indices. Thirty eight websites that are updated on a daily basis were analysed within a time-span of six weeks. Found that Google performs the best overall with the most pages updated on a daily basis, but only MSN is able to update all pages within a time-span of less than 20 days. In terms of indexing patterns, MSN shows clear up date patterns, Google shows some outliers and the update process of the Yahoo indexes seems to be quite chaotic. Thelwall study compared the applications programming interfaces of Google, Yahoo! And Live Search 1,587 single word searches the hit count estimates were broadly consistent but Yahoo and Google reported 5-6 times more hits that Live Search. Yahoo tended to return slightly more matching URLs than Google and Live Search returning significantly fewer. Yahoo retrieved URLs included a significantly wider range of domains and sites than the other two, and there was little consistency between the three engines in the Number of different domains. Google is recommended for hit count estimates but Yahoo is recommended for all other Webometric purposes. Uyar investigates the accuracy of search engine hit counts for search queries using Google, Yahoo and Microsoft Live Search and the accuracy of single and multiple term queries. The results of the study shows that the number of words in queries affects the accuracy of estimations significantly. The percentages of accurate hit count estimations are reduced

almost by half when going from single word to two word query tests in all three search engines. With the increase in the number of query words, the error in estimation increases and the number of accurate estimations decreases. The Page Rank Citation Ranking: Bringing Order to the web 1998 explains that every page on the World Wide Web into a single number, its Page Rank. Page Rank could be used to separate out a small set of commonly used documents which can answer most queries. Page Rank may be a good way to help find representative pages to display for a cluster center. Page Rank suggests that the structure of the Web graph is very useful for a variety of information retrieval tasks.

8. Search Engine Trends and Technologies and Chronological Development

In the beginning search engines were very primitive and they had rudimentary general search options, from general search options there was a trend of developing advanced search features and thus evolved Meta Search Engines, subject directories, etc. and they did not stop there. Presently the trends towards Federated search and semantic web search engines. The search engine technologies are sophisticated technologies, and the sophistication is increasing day-by-day. Eventually, this trend seemed to be profitable and the demand for better search engines has resulted into a big business.

Chronology of Search Engines Development: (1990 -2013)

Sl.No	Year	Search engine Development
1	1990	Alan Emtage developed Archie at McGill University in Montreal. (The first world Wide Web software was created by Tim Berners-Lee)
2	1991	Mark McCahill developed Gopher at University of Minnesota
3	1992	University of Nevada launched Veronica
4	1993	Matthew Gray created World Wide Web Wanderer at MIT
5	1993	Mosaic, Lynax, Jugahead released.
6	1994	David Filo and Jerry Yang started Yahoo at Stanford University.
7	1994	In Pinkerton introduced Webcrawler
8	1994	Lycos search engine launched by
9	1994	Infoseek becomes default search engine for Netscape
10	1995	Excite search engine launched
11	1996	Rediff.com launched as an Indian Search Engine.
12	1998	Larry Page and Sergy Brin founded Google Search Engine
13	1998	Microsoft Launched MSN search engine.
14	1999	Yahoo buys Geocities
15	2001	Go to renamed as Overture
16	2003	Overture buys Altavista
17	2003	Yahoo buys overture
18	2004	Amazon launches A9 search engine
19	2004	Google Scholar launched
20	2005	Google introduced maps feature, books search, translation facility.
21	2006	Microsoft Live search (sept.2006)
22	2007	Wikiseak search engine launched
23	2008	Cuil search engine launched
24	2009	Microsoft launched "Bing" search engine (june 2009)

25	2010	Yandex Search Engine (Russia)
26	2011	Yacy P2P Web Search Engine
27	2012	Volunia (Inactive)
28	2013	Halalgoogling (Islamic Search Engine)

Source: Searchenginehisotry.com

- **Search Engine Architecture and working process**

Search Engine Gathers the contents of all web pages (using a program called a crawler or spider) Organize the contents of the pages in a way that allows efficient retrieval (indexing). It takes the query and determines which page matches the query and show the results finally (ranking and display of results).

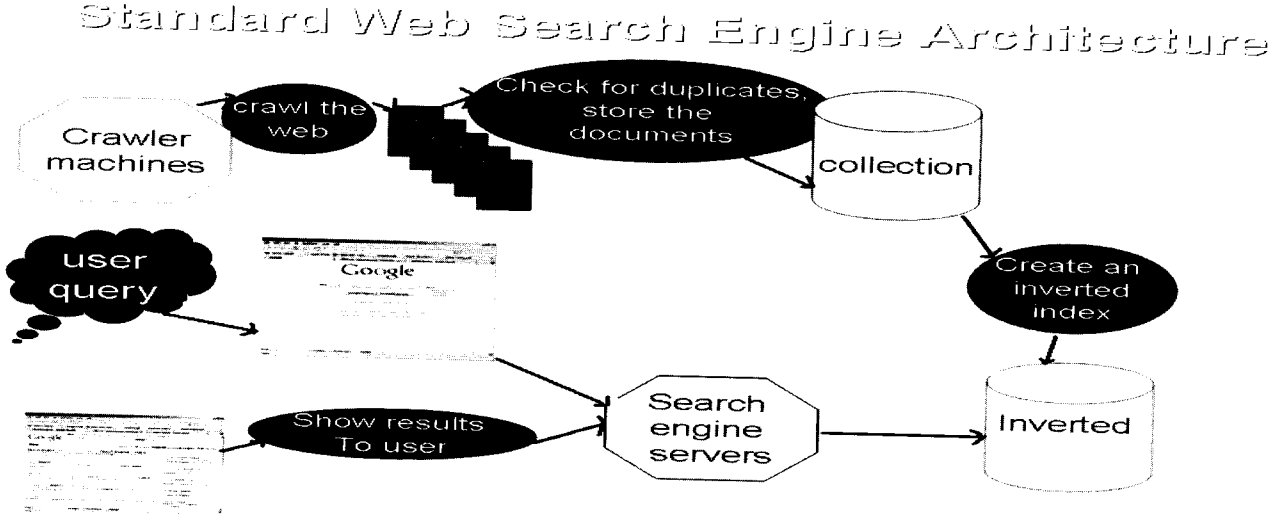


Figure 1 - Standard web search engine architecture

- **Working Process of Search Engines**

Search Engines allow the user to enter keywords that are run against a database. Based on a combination of criteria, the search engine retrieves WWW documents from its database that match the keywords entered by the searcher. "Search Engine works on the four main principles:

- Web crawling,
- Indexing web pages,
- Ranking the results, and
- Search and display the results.

For searching process, search engines, simultaneously adopt "Best match searching" as the default mode of operation with "Boolean Searching" as an alternative and advanced

retrieval options. A single search engine cannot cover every available web resource, but may do contain references to millions of resources and thus results may vary from one search engine to another.

- **Search Features of Google, Yahoo, AltaVista, Bing, Lycos Search Engines**

Search Features of Google, Yahoo, AltaVista, Bing, Lycos Search Engines

Search Engine Features	Google (1998) www.google.com	Yahoo (1994) www.yahoo.com	AltaVista(1995) www.altavista.com	Bing (1998) www.bing.com	Lycos (1994) www.lycos.com
Founders	Sergy Brin & Lary Page	Jerry Yang & David Filo	Louis Monier	Steve – Ballmer	Bob Davis
Current Status	Active	Active	Defunct 08.07.2013	Active	Active
Type of site	Search Engine (SE)	Web Directory/ SE	SE	SE	Web portal/ SE
Boolean Searching	Yes	Yes	Yes	Yes	Yes
Phrase Searching	Yes	Yes	Yes	Yes	Yes
Truncation	Yes	Yes	Yes	Yes	No
Stop Words	Yes	Yes	Yes	Yes	No
Available Languages	123	41	13	41	120
Display per page	10	10	10	10	10
Media Search (Image & video)	Yes	Yes	Yes	Yes	Yes
Outstanding Special Features	Weather, Spell checker, Stock quotes, File formats, Domain search, Unit conversion, Numeric ranges, Area code etc..	News, Sports, Astrology Shopping, Country wise Search, File Format, etc..	Anchor search, Applet, Domain, Host, Natural Language, etc.	Tiger indexing technology, Redesign side bar, Design language Metro, etc.	Ybrant Digital, Tripod, Angel Fire, HotBot HTML Gear, Webon,etc.

Other searchable Databases	Maps, Books, Blogs, News, Shopping, Earth, Patents, etc	Maps, Jobs, Directory, Creative commons People, Travel, etc.	Bibliographic Meta Data, Babel Fish Translation service, Multilingual search. Etc.	Explorer pane, cached pages, integration with apple, etc.	Games Ville, Lycos Television Lycos Video (Blinkx), etc

8. Selection of Search Engines (SEs)

As the number of SEs available on the internet increases, so it is very difficult to find out the right SEs for a user's need. The central aim of search engine selection is to accurately profile each search engine. It is impossible to manually track and index all SEs as their number is in hundreds of thousands. As more and more specialist search engines are becoming available electronically, the need for SEs research will increase. The importance of search engine selection has grown rapidly as more and more databases are migrated to the web each day.

9. Conclusion and Suggestions for future research:

This paper understands the endless vistas on Web Search Engines and their Information retrieval features. We need to welcome web search engines for information retrieval. Searching the entire Web in less than a second is a challenging task for information professionals. Rapid growth and evolution of web is posing new challenges to SEs. Emergence of Web 2.0 services like social networking, weblogs, RSS feeds, and increase in non textual information like podcasting, online videos and convergence of non convention forms of communication such as mobile phones with interest will require easy information retrieval in these areas. The possible extension of this work is an urgent need to dig deep web (non-indexable) to develop a new ranking method or new search mechanism that can potentially identify high quality pages and exact search results in the web.

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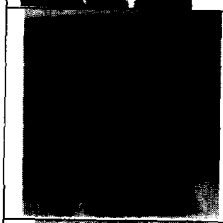
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Successful Implimentation of Open Source Software In Libraries

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Abstract: As the costs of frequently emerging technologies go up day by day, minimizing the disparity of resources between well-off and less wealthy libraries is a real challenge. With the free source code, simple customization, and growing user community, OSS is a viable tool that can help the libraries for the fundamental alteration. By utilizing open source solution as a part of the library, cost that generally would be spent on proprietary solutions can be utilized for other resources or services or can be diverted to hire educated, technical support that provides patrons with the know how to better use already existing resources. This paper aims to point out the benefits of the open source software and the signifying end of the proprietary driven model that has prevailed for more than 20 years or more.This also includes the successful implementation 0f open source solutions to the parent library.

Key Words: Open source software,Digital Library, Library Automation,Dspace

1. Introduction

In the present digital era of information dissemination and most of the library services are based on information technology as well as resources available in electronic formats. For many libraries, organizing information sources like books and other media can be a challenging task, especially as the library grows with more resources. Now just because the world has been blessed with wonderful software solutions that make everything easier to do, **doesn't mean that every library is using these solutions** .However, the high price of such software prevents most of the libraries from using them. So as to deal with this issue, and for the benefit user communities of libraries, organizations and individuals have developed software, which are distributed free of cost. Known as free/open source software, these are extensively available on the internet and can be downloaded, installed, modified and distributed.

2. Implementation of OSS in libraries

- **Requirements:** The selection of open source software for library activities is driven by the nature of collection, availability of skilled staff, budget, and management support. Thus while considering the OSS for libraries, they have to focus on the following factors.
- **Implementation costs**: For some software, implementation is quite easy, and will take a staff person 10-30 minutes to install. More complex applications take days of staff and/or consultant time to implement, and convert information from an old system. When evaluating the options for a particular solution, be aware that in some cases open source projects can be more difficult to install than their proprietary counterparts, especially if the folks doing the installing are new to Open Source Software.

- **Software Acquisition Cost**: Some proprietary products have very low software acquisition costs. Other products can have high acquisition costs. In some cases, non profit organizations can get many software packages or web-hosted applications donated or at reduced costs, which may reduce or eliminate the acquisition cost for the software. Sometimes, however, organizations are limited in how many copies of a product will be reduced-price or donated. Virtually all open source software is available for no acquisition cost whatsoever, and no multiple licenses are needed.

3. Tips for successful Implementation

- If you are adapting the OSS first time then maintain both for few months so that your library can run smoothly. But if you are switching from proprietary software to OSS, then take the back-up regularly, work with the OSS in back-end. After successful testing for every aspect, you can quit the last one and make the OSS full-functional.
- If you're interested for completely switching operating systems, you can start by simply using open source applications that work for Windows.
- See how the new solution impact on the user community.
- Re-check frequently to see if more open source applications have been adapted for Windows (if you haven't yet switched to Linux).
- Educate your staff! Select a few programs your library wishes to host or promote and familiarize the library staff with them, so that they will be able to answer user queries.
- Be mindful that you're downloading the latest version of a product. Older versions are likely to have bugs in them or might not work properly. Older versions are kept around to monitor the changes that have been made to the open source software, but often have old errors that cause problems, which have been fixed in newer
- Be aware of OSS limitations. "There are three major issues in using or re-using open-source software; quality, documentation, and licensing terms." Read more on this here.
- Check activity level: When was this software last released? Do developers keep a current forum about changes?
- Teach patrons Do patrons bother asking how to use it? Do patrons seem interested? Look out for opportunities! Listen to what patrons want, not what brand names they use.
- Advertise within the library! Hold events like lectures or hands-on tutorials to teach patrons about various software options.

4. More about the different types of OSS related to Library

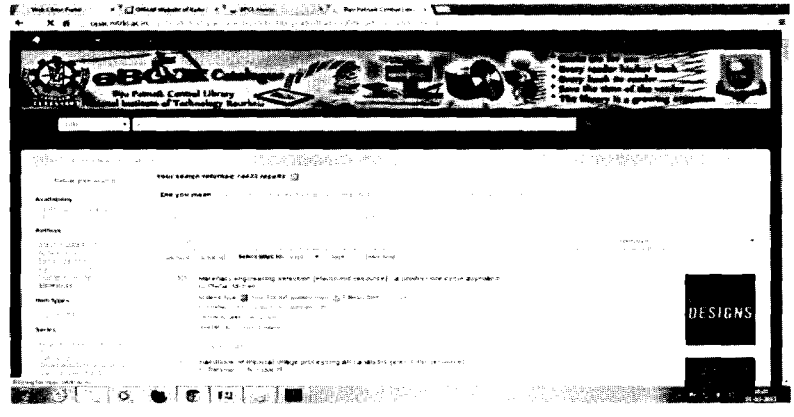
In the culture of of open source software, few are listed in the table shows in which way library can be benifited from those OSS.

List of OSS for Libraries

Sl. No	Category	Name of the OSS	URL	Desctiption
1	Library Automation	CDS/ISIS, Winisis Koha • LibLime • Koha Support Evergreen New Gen Lib	http://portal.unesco.org/ www.koha.org www.liblime.com http://koha.org/support www.open-ils.org http://www.newgenlib.com/	Intigrated Library Software
2	Digital Library Software	D-Space E-Print Green Stone Fedora	www.dspace.org www.eprint.org www.greenstone.org	Institutional Repository Software
3	Content Management	Drupal Joomla Word Press Weebly	www.drupal.org www.Joomla.org	Web portal/website design
4	Lib 2.0	Blogger Facebook Google Sites Skype	www.blogger.com Facebook www.facebook.com www.google.com/ www.skype.com	Extending Library Services

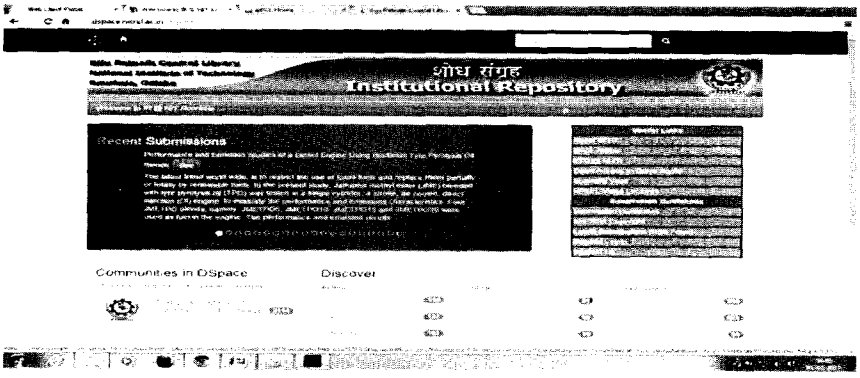
5. More about the OSS running successfuly at Central Library, NIT-Rourkela

5.1. Koha integrated library management software: There are so many open source library software are available such as CDS/ISISE,vergreen, Koha and NewGenLib for different operating systems. KOHA open source software for library management is now adopted by most of the libraries and also at BPCL,NITR for management of e-books and Periodical due to its unique architecture, features like Simple, clear interface for librarians and members, Circulation and borrower management and Cataloging module with integrated Z39.50 client of the software and support of the open movement community developer. In use worldwide, its development is steered by a growing community of libraries collaborating to achieve their technology goals. Koha's impressive feature set continues to evolve and expand to meet the needs of its user base. The current version of KOHA is 3.18 as on Feb-2015. This screen shot is the e- book catalogue of NIT, Rourkela



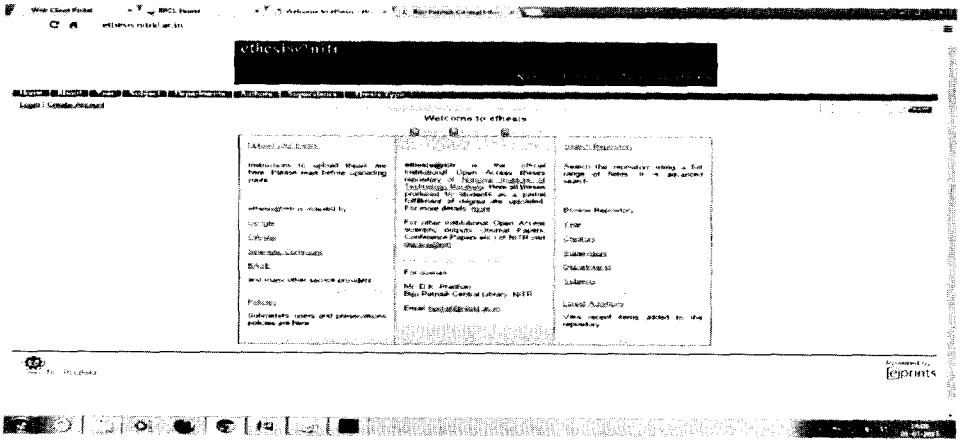
5.2. Dspace as Institutional Repository software

DSpace is the software of choice for academic, non-profit, and commercial organizations building open digital repositories. It is free and easy to install and completely customizable according to the needs of any organization/institutation. DSpace preserves and enables easy and open access to all types of digital content including text, images, moving images, mpegs and data sets. It facilitates as ever-growing community of developers, committed to continuously expanding and improving the software.We are using Dspace in our institution as a repository to Scolarly publications(Journal article,conference paper,book chapter, etc.) of NITR community. Below is the screen shot of the home page of Dspace@nitr .



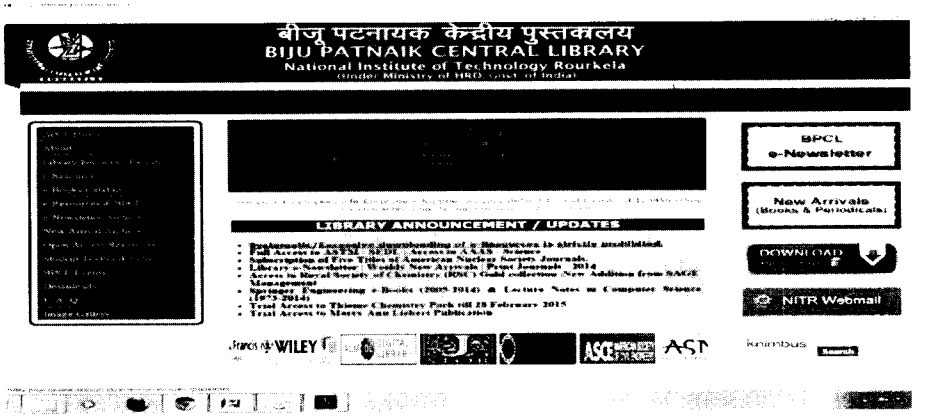
5.3. E-Print

E-print is first and one of the most widely used open digital library software. It is a Web and command-line application based on the LAMP architecture. is primarily used for institutional repositories and scientific journals. In our institution we are using this OSSas a repository to thesis and desertions. Below is the screen shot of the home page of etd@nitr .



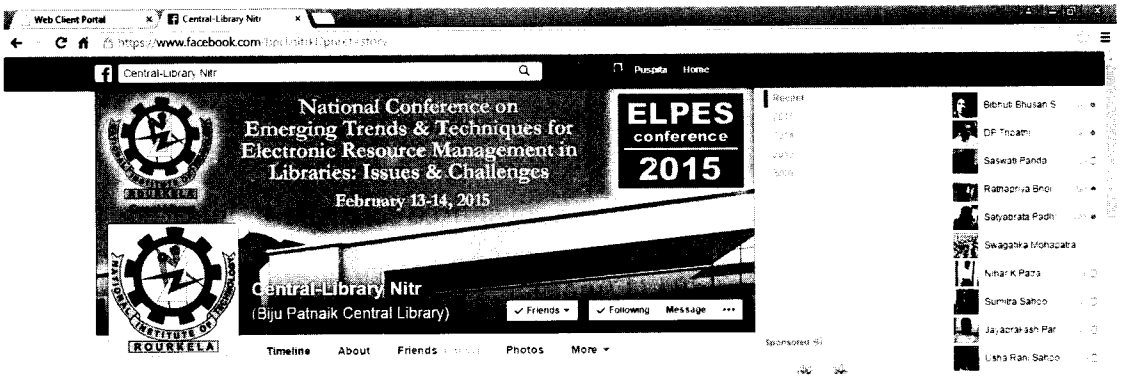
5.4. Joomla

Joomla is an Open Source Content Management System(CMS) popular all over the world for everything from simple websites to complex. It is an easy to install, simple to manage, and reliable. It uses only open source software for installation and use.Biju pattanaik Central Library has developed its own website using this. . Below is the screen shot of the home page of can be seen at http://library.nitrkl.ac.in/ .



5.5. Facebook as a social media for information dessimination at BPCL, NITR

Basically we can use Facebook to make direct person to person direct contact with people who work in other libraries or organisations thrugh interaction – that whole process of communication. For built a good communication withthe users and the same clients, we have to set up a Facebook page for the library. The below screen shot is the Facebook page for BP central Library , NITR.



6. Conclusion

The open source Culture likewise gives a chance to library staff to be effectively included being developed ventures, to improve their abilities and to utilize an extensive variety of technological application for library functions. On the other hand, the implementation of OSS on a wide scale will generally rely on long-term commitments by the associations. Libraries and library experts need to empower themselves with required innovative aptitudes, andaddress conceptual, social, monetary, specialized, human issues in a collective way for more prominent productivity and expense funds. Librarians need to understand open source license for promotion the use of Open Source Software. This is the best way to face the difficulties postured by business programming in the market. It will likewise expand the self-governance and control of the expert over programming arrangements. The advent of open source library software has change towards a revolution in the field of library and information resources management, and has become popular choice for most library and information professionals because of their numerous benefits and valuable gimmicks.

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The Legal Aspects of Data Protection in Digital Libraries

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Abstract: The advent of digital information technology and high-speed computer networks have brought a new wave of digitization in every sectors of the economy including the offices, workplaces, Institutions, companies with an effect of increase in electronic databases. This rapid advance of information and communication technologies (ICT) has led to the creation of digital libraries. Digital libraries provide better and enhanced services to their end-users besides retaining the basic library services. Digital libraries offer wider choices of resources whether in-house or online external resources. This study attempts to find out the level of awareness of the library personnel and library users on privacy and data protection and to discover the library users' perceptions with regard to the collection and use of their personal data. In addition, this study also examines the policies and practices adopted by libraries in relation to users' privacy.

Keywords: Digital library, Data protection, Data privacy. Digital era

1. Introduction

The library plays the role of the brain of institutions; India is being seen as an emerging information society, where more people are engaged in activities in relation to collecting, processing and disseminating information. It is largely a post liberalization phenomenon which began in the early 1990's. The contribution of the information technology sector to the Indian economy has been immense. The laws however have not been able to keep up with the changing scenario – so much so that the Information Technology Act, 2000 did not have any specific provision to deal with issues relating to privacy and data protection, although it has been amended in 2008.

Privacy is a fundamental human right and denotes an individual's right to control dissemination of information about himself or herself as it is his own personal possession with increasing number of databases being created about the clientele by many businesses, a great threat to the individual privacy can easily be foreseen, along with it new forms of crimes also developed dealing with the personal information eg. Credit cards frauds etc. The new information technology is increasingly coming to be recognized as a threat to privacy rights. The concept of privacy needs to be redefined and examined in the context of information society.

The existence of the digital library has moved access to the information needed electronically and made it more attractive. Applications of interactive multimedia in libraries will allow users to explore the information needed effortlessly. The library should have a privacy policy to show the concern of library management. Thus, it is important to have a professional code of ethics and conducts as a guideline. One of the sources of the professional code of ethics and conducts states clearly about confidentiality between users and the libraries is: "We protect each library users' right to privacy and confidentiality with

respect to information sought or received and resources consulted, borrowed, acquired, or transmitted".

2. Data protection

Data Protection aims to protect and personal information of individuals. It provides a regulatory protection regime around personal information privacy, or personal data. Personal data is data or information which relates to or identifies, directly or indirectly, an individual.

In this present scenario, the digitization of information combined with continuous and dazzling technological developments has increased the flow and application of data. The growth of computer industry and information and communication technology in the last two decades has been amazing. This information and communication technologies provide unique opportunities for growth and human development. It can shape and enhance a wide range of development applications- from electronic commerce to access to financial markets, from generating employment to providing opportunities for investment to entrepreneurs, in particular small and medium sizes enterprises, from improved agriculture and manufacturing productivity to the empowerment of all sections of society, from long-distance education to tele-medicine, from environmental management and monitoring to prevention and management of disasters.

The key to this information age is the swift transfer and storage of digital data. In this era of globalization, the innovative ideas and the smart use of information rather than the production and distribution of goods have made a transformation and brought about a transition in the workplace, the economy and the society at large. As the information plays such a predominant role in the present society, that it can be termed as information society. In this information society, the mass transit of information, especially of personal data by the companies and in the cyberspace gives rise the needs of protecting such databases, particularly those which are sensitive in nature.

3. Privacy and data protection in the digital library environment

Sturges et al. (2003) which used several methods including sending postal questionnaires to libraries, administering questionnaires for users and telephone interviews with software system suppliers. The findings suggested that users had low levels of anxiety about privacy when using libraries because they expected that libraries would not pass on personal data to other bodies. Meanwhile, the librarians respected privacy as a professional value in principle and did not give it a high rating against other values.

Sturges, Teng & Illife (2001) believed that privacy is strongly considered to be a human right, and it is stated in the United Nations' Universal Declaration of Human Rights, adopted in 1948. The confidentiality of the transaction between the user and the library is explicitly protected in all the most prominent statements of the ethics of the librarian. There are various types of resources which discuss ethical guidance in professional codes of ethics and conduct. One of them, the American Library Association (ALA)'s Code of Ethics states; "We protect each library user's right to privacy and confidentiality with respect to

information sought or received and resources consulted, borrowed, acquired or transmitted". (ALA, 1995).

Library services also play an important part in maintaining user privacy such as digital reference services. Neuhaus (2003) viewed that there are six types of digital reference records derived from digital reference services. They are chat reference, e-mail, web forms, librarians and computer researchers with automated reference tools, Frequently Asked Questions (FAQs) and transaction logs. He suggested the digital reference policy must be a part of the library policy because it is a good mechanism for safeguarding user privacy. He stated that the good privacy policies can address ethical issues regarding user confidentiality which are not covered by statutes.

4. Implementation of privacy and data protection in the digital library environment

The online and computer network application in the digital library also require privacy and data protection. This privacy and data protection should be included in the library policy. It will generate the information management practices more efficiently and protect privacy as a part of users' rights. Digital libraries depend on the Internet and Intranet connections. Everybody must be ready to face the transformation from an era of scientific management to systems and structural management. Sharma and Vishwanathan (2001) mentioned that the points that should be considered in changing from the traditional to the computer based system are:

- Anticipated traffic to flow over the network
- Origin and destination of that traffic
- Types of applications that will be made available on the network and
- Set procedures if part of or the whole network fails

The restriction of access will help the library to safeguard the privacy of library users. The different methods of authentication have different implications for user privacy. Each method has trade-offs between ease-of-use, privacy, manageability, and security. One of the authentication mechanisms is client authentication. Client authentication means making users prove that they are who they say they are before allowing them access to a particular area (Guenther, March 2001). It is the second step from two steps. The first step is a login or user name and the second is asking user to prove who he is with a password, a signature, or biometric identifications (using a physical attribute to prove identity, e.g. retinal scan or thumb print). She also mentioned some of the basic methods in authentication that can be chosen:

- User name and password authentication
- Cookie file authentication
- Encryption and authentication
- Digital certificates
- Smart cards

5. Conclusion

The concept of data protection is not a new concept today. The development of automatic data processing, which enables vast quantities of data be transmitted within seconds across national frontiers, and indeed across continents has made it necessary to consider issue of data protection specially personal databases. Computerization increases the social importance of information.

This manifests itself in many ways. One involves a dramatic change in the value that individuals and businesses as well as government place on the ability to handle and control personal information concerning individuals. Further, Data protection law is necessary to provide protection to the privacy rights of people and to hold cyber criminals responsible for their wrongful acts.

Data protection law is not about keeping personal information secret. It is about creating a trusted framework for collection, exchange and use of personal data in commercial and governmental contexts. It is to permit and facilitate the commercial and governmental use of personal data.

The stringency of data protection law, whether the prevailing law will suffice such needs, whether India needs a separate legislation for data protection etc are questions which require an in-depth analysis of the prevailing circumstances and a comparative study with laws of other countries. However, it is apparent that the present legal mechanism is lacking in providing a proper protection to the databases in this present digital world.

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The Technological Change and Discovery in Services in the library in Government College for Men, Kurnool (A.P.)

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Abstract: There is a great deal of potential to increase the usage of social media technology. Blogging, Face book and now micro blogging through Twitter have grown exponentially over the past two years; this technology will continue to grow, with the increase in 3G enabled phones and access to the internet becoming almost universal. Library 3.0 and the technological changes that will follow will be a vital and exciting part of how libraries develop and extend their formal and informal learning programs. They will allow us to improve our online resources, which will ensure that our services remain relevant to the communities we serve and improve access to informal self-education and lifelong learning opportunities. The Libraries should be aware of the technological changes and implementation and adopting it for the benefit of the student community. The paper deals with the trials and searches done at the Government College for Men, Kurnool is striving for the change and sustainability.

Keywords: On line resources, technological changes, self –education, Library 3.0, 3G enable phones.

1. Introduction

The changing era of traditional Libraries to the Modern Libraries from the www to the 3G enable phones there is a lot of technological revolution taken place. The Blogs, Social media, search engines and the competition among the countries, continents, people and their race towards the achievement of speed make the fast grow the Libraries and their structural change from the digital to virtual. But still the there are exceptions in the thinking and implementation of the ideas into action. There are many hurdles to come across in the way of the Library profession now and in future also especially in the Indian context. The Government College for Men (GCM), Kurnool established in the year 1972 with only B.com and B.A. The Library got the inflibnet – nlist programme from the year 2009, before Reaccreditation of NAAC. The present paper deals with the nature of the staff and students and their nature of searching when they want to get the information from their daily routine study projects, examinations ,time pass and lectures.

2. Objectives:

- To Keep the Library up-to-date with emerging technologies; through broadband Services (incorporating Online Resources) Special Interest Group and other collaborations.

- To develop partnerships with government and non-government agencies to implement best practice programs relevant to changing community technology needs
- To implement Planned Professional Development which means Libraries should be used for the further develop Staff Training Strategies in order to meet anticipated demand by the community for assistance in accessing new technologies.
- To Use the QR (Quick Response) codes to provide greater access to information services, aiding in promotion of electronic resources, services.
- Libraries need to be aware that the nature of searching for information is changing, and investigate and implement federated searching options to the best of their abilities

3. Methodology

To conduct the study, interview method and questionnaire method are used for data collection. A well structured questionnaire was designed scientifically keeping in view of objective. The questionnaires were distributed to faculty members and students to a sample of 120. However, 87(72.5%) of them responded and the same is used for analysis.

3.1. Limitations of the study

The study is undertaken in the College Library where the users (faculty and students) visit it for various purposes. The faculty does not include the contract and part-time teaching staff. The students are only under graduates doing MSCS, MPCS, B.Com, B.A, and other Science groups.

4. Data Analysis

The data is collected from the respondents for the study

Table: 1. Distribution of Questionnaires

S.No	Respondents	Questionnaires Distributed	Questionnaires Received	Percentage
1	Faculty members	40	35	40.22
2	Students	80	52	59.77
	Total	120	87	72.50

From the above table it is clear that 120 questionnaires were distributed to the faculty and students of the college in all the disciplines and 87 were received. The response rate is 72.50%.

- **Familiarity with E- Resources:**

The respondents are categorized whether they are familiar with the e-resources and other sites of the internet.

Table: 2 showing Users familiarity with e- resources

S.No	Whether Familiar with e- resources	No. of Respondents	Percentage
1	Familiar	59	67.82%
2	Not Familiar very much	28	32.18%
3	Total	87	100

It is evident that 67.82% of the respondents knew about the e- resources and 32.18% of them did not know about the e- resources much.

Table: 3 showing the usage of e- resources by the respondents

S.No	Purpose	No. of Respondents	Percentage
1	Searching for new areas/ pictures/Photographs	48	81.35
2	e- mailing	44	74.57
3	Current Affairs	31	52.54
4	Seminars/Conferences/workshops	25	42.37
5	Teaching/Research	20	33.89

From the above table it is evident that the respondents show much interest in searching for the new things and information in the net. 74.57% of the respondents expressed they use the net for e mailing followed by the Current affairs- 52.54%. The faculty 33.89% of them uses the e- resources for the purpose of teaching and research.

- **The services available in the Library**

  - The users can have the books through the SOUL software for catalogue, circulation, and acquisition and enquiry purposes of the holding of the Library.
  - On line journal services available in the campus with N-List services are used by the staff and students of the college.
  - This facility provides ample opportunities to the staff and students to down load the information from anywhere in the world. It also helps the students to pursue their future career in a planned manner.
  - The catalogue is in three separate sequences to facilitate consultation by the readers. They are 1) Author catalogue 2) Title catalogue 3) subject catalogue. This arrangement helps the students to locate their choice of information with in no time.
  - New Arrivals Rack is provided for easy identification of the newly procured books.
  - Encyclopedias are available in the Library.

- **Frequency of using the e- resources by the Respondents:**

The distribution of the respondents according to their frequency of using the e- content in the college library or in their departments is shown below

Table: 4 showing Frequency of using E-resources

S. No	Fre-quency	On line	%	Inter net	%	e-mail	%	Search engines	%	Social net work	%
1	Daily	25	28.73	26	29.88	30	34.48	34	39.08	40	45.97
2	2/3times a week	22	25.28	38	43.68	19	21.84	12	13.79	05	5.75
3	Once in a week	06	6.89	15	17.24	05	5.75	10	11.49	04	4.59
4	Once in a month	04	4.59	03	3.45	04	4.59	02	2.29	03	3.45
5	Rare use	02	2.29	----	----	01	1.15	01	1.15	07	8.04
6	Never	28	32.18	05	5.75	28	32.18	28	32.18	28	32.18
7	Total	87	99.96	87	100	87	100	87	100	87	99.98

It is clear that 45.97% of the respondents on the social network daily. It is the most used channel in the world of electronics.39.08% of the respondents use the search engines fallowed by the e-mail 34.48%. Internet used respondents are 29.88% daily and 28.73% of them use on line content daily. The users 43.68% take the advantage of internet two or three Times in week.

- **Use Frequency of e -resources by the faculty and students of the Government Degree College, Kurnool.**

Table: 5 showing the Distribution of the faculty and students in usage of e- resources

S.No	Frequency of use	Faculty	Percentage	Students	Percentage	Total	Percentage
1	Daily	04	11.42	22	42.3	26	29.88
2	2/3 times a week	18	51.42	20	38.46	38	43.67
3	Once in a week	10	28.57	08	15.38	15	17.24
4	Once in a month	02	5.71	01	1.9	03	3.45
5	Rare Use	01	2.85	01	1.9	02	2.29
6	Total	35	100	52	100	87	100

It is known that 43.67% of the respondents use the e resources 2 or three times a week whereas 2.29% of them use it very rare. Among faculty members 51.425 of them use it 2 or three times a week fallowed by 28.57% use the e- resources once in week.

The student community 42.3% uses it daily and fallowed by 38.46% use the e- resources 2/3 times a week. So, the clear difference is seen between the faculty and students in the usage of e-resources.

- **Importance of Using QR Codes in Libraries**

How can we make ourselves relevant to the community who expects instant access to all items from newspapers to technical manuals from picture books to popular titles? We need to consider what else is out there. Sometimes it's the little extra things on the market that have a large impact. QR codes or quick response codes might just be that little thing. Potentially, QR codes can be used to give direction to where items are on the shelf and if necessary, used on the shelves themselves if the physical item is out – our respondents could scan the code and reserve the item via the catalogue, or download the item immediately in the form of an eBook.

Table: 6 showing the guidance in accessing the e- resources by the respondents

S.no	Guidance in Accessing	No. of Respondents	Percentage
1	Self access without help	08	13.55
2	Help from friends	12	20.33
3	Instructions from Library staff	17	28.81
4	Guidance from computer staff	11	18.64
5	Institution joined outside	23	38.98

It is clearly shown from the table that 28.81% of them get instructions from the library staff and 13.55% of them able to access without any help.

- **Feeling of satisfaction while accessing the e –resources and whether they get the adequate information or not.**

Table: 7 showing the adequacy of information while accessing the e resources

S.No.	Opinion	No. of respondents	Percentage
1	Always	30	50.84
2	Very often	18	30.51
3	Very Rare	11	18.64
	Total	59	99.99

From the above table it is well known that the50.84% of the respondents felt the information they are getting from the e resources is always sufficient and satisfied but 18.64% of them have the opinion that they does not get the sufficient information from the e – resources. 30.51% of them have the feeling that they often got the satisfied information from the e- resources.

The ability of the accessing of the users and to give them guidance in accessing the e-resources they follow either the help of their friends, colleagues, library staff and sometimes they join the institution outside the campus or else take the assistance of the computer staff working in the college.

5. Major Findings

- It is found that 67.82% of the respondents are familiar with the e- resources available in the Library in Government Degree College, Kurnool and 32.18% of them are in touch with the e- resources and other computer services.
- It is found that the respondents show much interest in searching for the new things and information in the net.
- It is found that 74.57% of the respondents expressed they use the net for e mailing followed by the Current affairs- 52.54%.
- It is found that 33.89% of faculty uses the e- resources for the purpose of teaching and research.
- It is found that the respondents use SOUL software to get the desired information from e-resources with the help of their unique login ID and password.
- It is known from the study that 43.67% of the respondents use the e--resources 2 or three times a week whereas 2.29% of them use it very rare. Among faculty members 51.425 of them use it 2 or three times a week fallowed by 28.57% use the e-resources once in week.
- It is also found that the student community 42.3% uses it daily and fallowed by 38.46% use the e- resources 2/3 times a week. So, the clear difference is seen between the faculty and students in the usage of e-resources.
- It is found from that 28.81% of them get instructions from the library staff and 13.55% of them able to access without any help.
- 50.84% of the respondents felt the information they are getting from the e resources is always sufficient and satisfied but 18.64% of them have the opinion that they does not get the sufficient information from the e – resources.
- It is found that 30.51% of them have the feeling that they often got the satisfied information from the e- resources

6. Suggestions

- Based on the study undertaken, the following suggestions and changes are necessary in the Library of the Government Degree College, Kurnool for better use of the e- resources by the respondents.
- It came to know that 32.18% of the respondents are not familiar with the use of e- resources. They are given learner programmes and help at regular intervals to learn and access.
- As many of the students don't have access for other e-learning and online courses WI-FI is to be set up in the college for the better access of e-resources for all.
- From the study we came to that only 28.81% of them get instructions from the library staff, so many workshop programs should be conducted for them to get

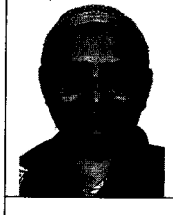
the awareness about the latest methods which are to be adopted to increase the standard.

- Training programmes are given to the Library staff for the smooth handling of the multimedia and other problems to handle while accessing the information.
- Awareness programmes are conducted by the faculty in collaboration with the Library staff to know more about the current affairs in the subject and other important measures for the best utilization of the e –resources in the College Library.
- User education programmes are to be conducted whenever the change in technology or the problem arises.

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The Transition from Print Books to Electronic Books - *A Perspective*

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Abstract: The dissemination of human knowledge is going through an upheaval with the emergence of new technologies. The growth in the availability of books, journals in digital form coupled with increased interest in electronic content, means that libraries need to respond to both the possibility and expectation of delivery of e-content. This paper reports some of the issues concerning the integration of e-books in academic libraries of India. Some features of e-books over print books are graphically illustrated.

Keywords: E-resources v/s print resources

1. Introduction

The digitalization of knowledge and information content has shaken the economic foundations of the print media. Considerable growth in the global e-book market has taken place in the last few years, while there are predictions for even higher growth in the near future (International publishing forum 2010). The literature suggests that e-books present new challenges for academic libraries as there are many questions regarding the management of the introduction and development of e-book collections and services (Vasikiou etal 2012) .

The processs and criteria that libraries apply in the selection and acqustion of e-books has significant implications in the digital market. The present study is aimed at presenting some of the advantages of e-books over print books and tries to analyze different aspects of integrating e-books in academic libraries.

2. Literature review

E-books are commonly perceived as offering great potential for teaching and learning (Armstrong etal 2006), they are attractive to scholarly communities (Nicholas etal 2007) and have great potential to change information landscape (rowlamd etal 2007). Some studies show that the use of e-books lay well behind that of other resources such as e-journals and there is a sense that e-books are not yet fully embedded in academic practice (Mckiel 2007).

A broad international review of e-books in academic libraries was presented by Tedd (2005). The review (Blummer and Kenton, 2012) tracked literature from 2005 that focused on academic librarians best practices for acquiring, cataloguing, maintaining and promoting e-books at their institution. In (Vasileiou etal 2012) e-book management in academic libraries is examined and framework of the stages in the e-book management process is generated summarizing the key activities and associated issues and challenges for each stage.

3. Observation and Findings

- **Pricing:** Many publishers are offering different types of pricing. They are offering yearly or perpetual access. i.e that particular library can own it life time. The pricing is different from publisher to publisher. Some give pricing for each book as similar to that of the printed

book ,as pick and choose but they stress on taking minimum number of books. Another type is bundle offer where the publisher gives no choice for the libraries, he mentions the number of books and the price is fixed.

- **Usage:** The ebook can be accessed by any number of users simultaneously. They cannot download or take any print out. Some publihsers are providing printing and downlaod options also. The useage of ebooks is now increasing slowly. Many ebooks are available freely in different websites. In future the libraries will shift from print books to ebooks.
- **Space Saving:** Ebooks eliminates physical space. No stacks are required and simplified user search is also available in ebooks. This helps the libraries to reduce the costs, damage and loss of books can be avoided.
- **Search:** An E book are used more effectively as it helps the user to search the books more in simplified manner, easire and faster and is also available 24x7 and can be downloaded easily.
- **Usage:** In print books only the elementary useage statistics typically exist. But where as in ebook collection the actual useage is known, the number of times that particular books has been read and download etc.
- **User Analysis:** Users are of the view that immediate permanet, 24x7 simultaneous access is made avialable in ebooks. Ebook users are citing availability, convience, content fresheness and navigation and search capabilities as the foremost advantages.
- **E-Books Rating:** E-Book Benefits on Scale 1-7 Enhanced User Access enhanced functionally, and access to greater amounts of content areas all scored highly as areas in which e Books provides clear advantage over print.

4. Procurement of E-Books

Ebooks are priced through bulk order is more efficient and cost effective. We get more ebooks with less price liciencing and agreement is becoming complicated in procruing ebooks. The cost of processing acquired through print and that of electronic books are almost equal. The libraries need not stick labels any more on the books but stock taking procdure is more or less the same as that book enters the library accession register.

5. Infrastructure

Ebooks save shelf space, but there is no savings in the cost which may increase due change in the dollar rate. The price normally increases 5 to 10 % every year.

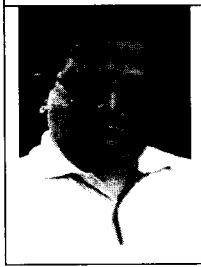
6. Conclusion

The ebooks are seen as future books rather print books which may disappear. E books saves time cost and are available 24x7. The drawbacks is that there must be propers internet, computer, LAN connectivity and power back etc., which are ostly and in the country like India the cost of ebooks is more and all the libraries cannot afford to pay specially public libraries users reported that there are obstacles to using e-books that are controlled by e-books vendors such as requiring an online profile to fully use their content and limitations on printing or copying. Librarians and library associations can advocate for fewer limitations on printing or copying and for the elimination of online profiles for content use. There are many free books are available in internet.

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Capacity Building of Library Professionals

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Abstract: The paper deals with the capacity building, that is, development of professional competencies in organizations including the libraries and information centres.The various aspects of enhancing the professional competencies have been dealt with. The process of continuous staff development has also been highlighted. The concepts of 'time management' and 'stress management' have been discussed. How time can be managed and the various jobs can be completed within the stipulated time has been dealt with in detail. The antecedents of stress and the ways of stress management have been emphasized.

Keywords: Capacity building, Professional competencies, Staff development, Time management, Stress management

1. Introduction

The purview of this paper encompasses one of the most vital areas of management of an organization, which is, human resource management or HRM. The two most important factors of an organization are human and non-human factors. The optimum utilization of the non-human factors, such as the physical resources of an organization very much depends on how the human resources or the personnel of an organization are managed. In cases of libraries or the information centres also, the same concept holds good. The optimum utilization of the information resources depends to a large extent on how efficient are the library personnel in satisfying the user needs.

2. Professional Competencies of the Personnel

With the question of professional competencies is very much related the importance of human resource management or HRM. The competent personnel can help an organization achieve its goal quickly, effectively and efficiently. The organization requires to provide a healthy working environment so that the personnel can contribute their best to the organization. The successs of an organization largely depends on the knowledge, skills and ability (KSAs) of employees which help to set core competencies, that is, the activities an organization performs well when compared to its competitors and through which the organization adds value to its products and services over a long period of time Effective human resource management helps to develop the potential of the employees to rise. F. W. Taylor advocated scientific management for increasing the efficiency and speed of employees. The concept of scientific management indicates the breaking down of a particular job into smallest units and assigning each task to the employee who is perfectly matched to it. In other words, it is the process of job analysis. This helps to increase the competency of an individual worker in performing a particular task. On the other hand, the 'Competency Approach to Job Analysis' enables the workers to develop role-based competencies, that is, the knowledge, skills and abilities required to play various roles instead of being boxed into a particular job. The

professional competency can also be enhanced by the application of behavioural science techniques. It was proved by Hawthorne experiments conducted by Elton Mayo in 1930s and 1940s that the employee productivity was affected by certain social and psychological factors besides the manner in which a certain job is designed and how an employee is economically rewarded. The previous experience in the same capacity in any other organization also adds to the enhancement of professional competency. The professional attitude is another factor for gaining professional competency. One should have a clear understanding of one's own job responsibilities and duties. The TQM, that is, the total quality management approach can also contribute to the enhancement of professional competency. The ideas of TQM to be customer-oriented and to work for the continuous improvement of quality of service or product compels an employee to take initiative to enhance his professional capacity since it is directly related with serving the customer efficiently and with improving the quality of product or service.

Now, a library or information centre is a non-profit making organization which differs in many aspects from a profit-making organization. But, the question of professional competency of employees is of utmost importance. The libraries and information centres consists of several sections, such as, acquisition, technical, circulation, periodicals, reference, etc. Thus, the concept of job analysis is applied in the libraries and the entire library-work process is divided into these sections. As a result, the employees of each section becomes competent in the work of their respective sections. But many libraries, in the present era have taken up the process of automation. Although, majority of the libraries in our country, are still lagging behind in this respect. In this automated environment, a library personnel may have to perform the multifarious tasks, such as, acquisition, circulation, online information retrieval and the like. So, the competency approach to job analysis has become very relevant in these days of library automation. The TQM approach is also applicable in the libraries for enhancing professional competencies. The idea of being user-oriented and to work for the continuous improvement of the quality of service urges an employee to make effort continuously to satisfy the information needs of the users more effectively and efficiently. This, continuous endeavour, in turn, contributes towards the competency of the employee. In a library, there should be close interaction between the superior and the subordinate staff members regarding the various problems and working environment. In this way, the solution of various job-related problems of the library would become possible which will help in augmenting the competency of the professionals. Thus, it is evident that the application of behavioural science techniques is also possible in a library in developing the professional competency.

3. Continuous Staff Development Programme

The staff development programmme of an organization is closely related with the professional competencies. It is necessary to prepare the employees for higher-level jobs or promotion. The employees require refresher training to keep themselves abreast of the latest developments in their fields of work. This is essential in the face of rapid technological changed. Development programme helps one to improve his or her performance level and achieve career goals easily. The employees become versatile and can be employed in varied tasks on the basis of organizational needs. The development programme helps the employees to gain acceptance from peers due to the enhancement of their efficiency. The development programme imparts knowledge which enables

the employees to gain proficiency in decision-making and problem-solving. The development programme which is an ongoing process aims at improving the total personality of the employees. Development is aimed at the future needs of the job and the individual. It is future oriented training and emphasizing the personal growth of the employee. The executive development programme falls within the purview of the continuous staff development meant for managers. This process helps to develop their conceptual and analytical powers to manage.

In case of the libraries also, there are various means of staff development programme. Various training and orientation programmes, refresher courses, seminars, conferences and the like are organized by various institutes, organizations and professional bodies in the field of library and information science with the aim of professionally upgrading the library professionals. It is necessary for the professionals to participate in these programmes for their promotion and other upgradations.

4. Time Management

Now, the world is changing very fast. To keep pace with this fast changing world, time management is gaining importance day by day. One of the best ways of time management is to resort to team work. When a group of people work together with the target of achieving an organizational goal, the goal is reached much more quickly. Whereas, when the employees keep on working individually towards achieving the goal, each one performing a specialized task, time consumption increases. Some of the helpful guidelines for time management may be as follows:

- At the beginning of a working day, a list of 'to-do' for that day is to be prepared to keep track of the work progress.
- The minor works should be delegated to the subordinates.
- The most difficult assignment should be scheduled for the time period when one does a work best-morning or afternoon.
- The telephone calls should be made between 4:30 and 5:00 p. m. since during this time period, people tend to keep their conversations brief since they are in the hurry of going home.
- One should not feel guilty about those things that have not been accomplished. They should be kept at the top of 'to-do' list for the next day.

In the libraries, the information needs of the users are increasing day by day in this information age as well as they are getting more complex. These information needs are to be met expeditiously. So, the concept of team work is very much demanding nowadays to manage the time of satisfying the information needs of the users effectively and efficiently. Again, since the libraries have entered the age of automation, the technical works and the information retrieval tasks have expedited decreasing the time consumption. Thus, taking resort to automation is an effective way of time management in the libraries and information centres.

5. Stress Management

The concept of 'stress' is directly related to time management. One of the major causes of stress comes from time pressures. Even though the individuals in an organization perform their tasks as fast as possible, they are not able to complete their work. This situation ultimately results in stress.

Ivancevich and Matteson define stress as "an adaptive response, mediated by individual differences and/or psychological process, that is a consequence of any external (environmental) action, situation, or event that places excessive psychological and/or physical demands an a person". Again Beehr and Newman define job stress as "a condition arising from the interaction of people and their jobs and characterized by changes within people that force them to deviate from their normal functioning".

There can be two broad categories of stressors - organizational stressors and life stressors. Organizational stressors are the factors that cause stress in an organization. The sets of organizational stressors are:

- task demands
- physical demands
- role demands

- **Task demands**: are stressors related to a specific job a person performs. Some jobs are more stressful than the others. ii) Besides, specific task-related pressures, some other aspects of a job may pose physical threats to a person's health. Unhealthy conditions exist in jobs like coal mining and toxic waste handling. iii) Security is another task demand that can cause stress. If one always has the fear of losing jobs, it may cause tremendous stress. iv) A final task demand stressor is overload. The overload may be quantitative, that is, one can think that he or she has too many task to perform or too little time to perform the tasks. Again, it can be qualitative, that is, a person may think that he or she lacks the ability to perform a certain job. The following figure shows that very low task demand can result in boredom and apathy just as high level of stress can cause tension and anxiety. The optimal or moderate level of workload – related stress leads to high energy and motivation.
- **Physical demands** of a job are the physical requirements on the worker. If one works outdoor in extreme temperatures or in an improperly heated or cooled office, it can lead to stress. The other factors which may lead to stress are poorly designed office, inadequate lighting, etc. The poorly designed office may affect privacy or social interaction. Too much social interaction may distract a people from his or her work. Again too little interaction may cause boredom or loneliness, causing stress.
- **Role demands**: can also be the cause of stress in an organization. A role is a set of expected behaviours related to a particular position in an organization. Different people perceive role expectations with varying accuracy. While executing the roles, errors can creep in, thereby resulting in stress inducing problems.

Many strategies are there for managing stress in an organization. Some are for individuals and the others are organizational. The individual stress coping strategies are as follows:

- Exercise: The people who exercise regularly tend to become less stressful, have more self-confidence and are optimistic.
- Relaxation: It is another effective way of managing stress. One can relax by taking regular vacations. After vacations one's efficiency tends to become more.
- Time Management: Time management can help in reducing stress since one would be able to complete one's work effectively within the stipulated period of time.
- Role Management: In this strategy, one should avoid overload, ambiguity and conflict. For example if one does not know what his or her role is, he or she should not sit quietly but ask for clarification from his or her boss.
- Support Groups: It is a very helpful strategy for managing stress. It is a group of family member or friends with whom a person can share problems during his or her crisis and relieve stress.

The organizations are also coming forward in relieving the stress of their employees since they are at least partly responsible for creating the stress.The two strategies of the organizations are:

- Institutional Programmmes: In this strategy, initiatives are taken through organized mechanisms, such as, properly designed jobs and work schedules for the purpose of reducing stress.
- Collateral Programmes: These programmes are specifically designed to help employees deal with stress.Organizations have adopted health promotion programmes and other kinds of programmes. For example, many organizations today have employee fitness programmes which encourage the employees to exercise which is effective in reducing stress.

In the libraries also, the concept of stress management is becoming relevant. Day by day many libraries are opting for automation and as a consequence the employees, especially, the employees who are on the verge of retirement, may feel overburdened in their attempt to cope up with the automated environment. This situation can give rise to a stressful working environment for them. The library authorities should design the jobs in such a way so that the employees can feel comfortable in the new working environment. The authority can also arrange some sort of counseling programme for the employees so that they can be psychologically motivated for their new type of job. These steps would ultimately help in reducing stress.

6. Conclusion

The capacity building of the employees of an organization, be it profit-making or non-profit making, has gained utmost importance nowadays. Various means of staff development programmes are prevalent for continuous enhancement of professional competencies. With this concept of 'capacity building', the notions of time and stress management have become embedded. In a nutshell, the

time and the stress, both are to be handled effectively in order to retain the professional competencies of the employees in an organization.

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EDI Library and Information Centre: *the Focal Point for Nascent Entrepreneurs*

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Abstract: This paper gives a brief overview on information sources available at EDI Library and Information Centre (EDILIC) This enables entrepreneurs, practitioners, academicians and researchers to access the EDILIC resources effectively. This paper serves as a how to guide to EDILIC uses on provides the information services offered.

Keywords: Entrepreneurship, EDI Library and Information Centre, Information Sources, Information Services.

1. Introduction

One of the critical roles of the Entrepreneurship Development Institute of India Library and Information Centre (EDILIC) is to disseminate information on the latest business opportunities to potential entrepreneurs. Most potential entrepreneurs suffer from several constraints, which prevent them from making the entrepreneurial move that leads to setting up of an enterprise. Lack of information and knowledge in identifying and selecting the right kind of business opportunity in keeping with the present day needs and trends is one of the major constraints faced. To identify an opportunity, an entrepreneur needs a lot of information. Young graduates, technical employees, less educated traders, etc. are generally entering business without basic know-how. Identifying the right kind of business opportunities, therefore, becomes a dilemma for them. It is also observed that sometimes evaluation of techno-economic viability of an already existing opportunity becomes difficult due to lack of adequate information.

An entrepreneur can harness information from personal and other sources such as printed literature on existing entrepreneurs, consultants and so on. A number of organizations and publications give valuable information about new business opportunities and products. There are primary and secondary sources of information. Primary sources include information collected directly from the market, whereas secondary sources are those which are published by government organizations, consultants, agencies, publishers, etc.

2. Objective

The main objective of EDILIC is to provide an entrepreneur, with a large number of information sources to enable identify business opportunities and scrutinize them.

3. About EDILIC

Entrepreneurship Development Institute of India is a national resource organization, committed to entrepreneurship development activities through education, training and research. In order to serve the diverse needs of EDI faculty, staff, students, entrepreneurs

and participants of various short term and long term programmes, EDILIC was set up way back in 1983. Enriched with updated information sources on Entrepreneurship and related subjects, it is an information resource centre of national and international repute.

The Library Advisory Committee (LAC) consisting of four faculty members play a key role in shaping the role and functioning of EDILIC. LAC develops policy documents & recommendations. Once the policies are approved by the Director of the Institute, the Librarian is responsible for implementation of same. The Library is managed by a professional Librarian with faculty status supported by five professional colleagues who are qualified in the library and information science field. In order to cater to the needs of its users, the library functions from 8.00 AM to 12.00 AM (midnight) i.e. 16 hours daily on all seven days of a week.

- **Library Automation**

EDILIC has been fully automated through LibSys Software. EDILIC uses Bar Code Technology for its housekeeping and lending service. Bibliographic information about Library holdings can be accessed through "Online Catalogue" through the institutes' websites (**www.ediindia.org** / **www.ediindia.ac.in**).

- **Library Collection**

EDI's library is equipped with a large number of text and reference books on entrepreneurship and related subjects. The EDILIC endeavors to support the teaching, research and academic needs of the faculty, students and participants of the programmes, through books, journals and other reading material. The total collection of EDILIC is more than 30000 which includes books, CDs, back volumes and other materials, selected after carefully scrutinized by the Library Advisory Committee.

4. Reference Material

EDILIC has fairly strong reference materials consisting of:

- Text Books
- Reference Books
- Research Reports
- Handbooks
- Directories
- Serial Publications
- Encyclopedias
- Dictionaries
- Working Papers

- Economic and Industrial Surveys
- Press Clippings
- Biographies of Entrepreneurs
- Project Profiles on Products
- Business Opportunities

5. Journals/Periodicals/Newspapers

EDILIC is subscribing 160 national and international journals in the field of entrepreneurship and related subjects. EDILIC also subscribes to 30 Newspapers published within the country.

6. Audio-Video Collection

EDILIC has a collection of 200 videocassettes produced by EDI and other organizations and 2500 CDs/DVDs/VCDs. The library offers the facility of in-house viewing of video cassettes and CDs/DVDs.

7. Online Databases

EDILIC is subscribing the following online journals/databases:

- **Crisil Research Services**: It provides a one-stop resource for data, information, analysis and outlook on the economy and across industries with an understanding of the macro-economy and extensive sector coverage. It provides unique insights on micro-macro and cross-sectoral linkages.
- **Prowess Database**: This database is provided by Centre for Monitoring Indian Economy and contains a highly normalized database on over 17000 companies. The database is complemented with powerful analytical software tools to enable extensive querying and research.
- **kompass.com:** This database is the world's leading Business-to-Business information in 76 countries. It helps to identify suppliers of products and services, potential partners, research competitors and analyze market sectors for potential opportunities.
- **Emerald Management First 120** is an online library featuring the latest ideas from some of the world's top companies and business schools. It brings a wealth of resources – including over 680 articles, 1,000 case studies, 360 interviews and over 250,000 article reviews. It covers 120 peer reviewed journal articles.
- **Gale Cengage Business & Company Resource Center (BCRC) and Business Insight Global (BiG) BCRC**: It is a journal database which includes brand and trade information, investment reports, stock prices, press releases, etc. BiG is an online

resource which provides business intelligence powered by statistical data. It contains case studies, interactive live charts, global company and country overviews, global industry research reports, academic journal articles, industry overviews, company histories and market share data.

- **J-Gate**: It is an electronic gateway to e-journal literature and it provides access to 6700 indexed and free full text 2000 articles.
- **Indiastat.com**: It provides an oceanic depth of India-specific socioeconomic statistical facts and figures.
- **Trims.com**: It helps to identify the suppliers of machine manufacturers.
- **OECD iLibrary Education:** It is the online library of the Organization for Economic Cooperation and Development (OECD) featuring its books, papers and statistics and is the gateway to OECD's analysis and data. Also, it contains content published by the International Energy Agency (IEA), the Nuclear Energy Agency (NEA), the OECD Development Centre, PISA (Programme for International Student Assessment), and the International Transport Forum (ITF).

8. Information Sources

EDILIC disseminates information through the following sources:

- Product Information Bank (PIB)
- New Product Information
- List of Directories
- Clipping Service on Business Opportunity
- Company Information, Overviews and General Industry Information
- Technology Related Information
- Market Information
- Statistical and Financial Information
- Online Information

All the bibliographic information is available on the Intranet. Members of EDILIC can freely access bibliographic information through LibSys, a user friendly software.

9. Library and Information Services

The Library regularly provides the following services to entrepreneurs:

- Lending Service – Books and Back volumes of Journals are issued to all library members.

- Article Database – Article database contains information on selected articles from core journals subscribed by EDILIC.
- Reference Service – All library members are helped in getting their information instantly.
- Product Information Database – This database contains information on about 6000 product profiles published by various organizations.
- Industrial Information Service – Specific information on product profiles, feasibility study reports, industrial and economic statistics, trade statistics, as also directory information on manufacturers and industrial organizations is provided to users.
- Information and Documentation Services – Information services such as Current Awareness Services (CAS) and Selective Dissemination Services (SDI) are also extended.
- Press Clippings Service – Latest news items pertaining to business and industry are scanned from 18 leading daily newspapers.
- Referral Services – As need be, Library users are directed to other libraries and information centres to get additional/specific information.
- Photocopying Service – EDILIC provides photocopying services to its users at nominal charges.
- Inter-Library Loan Service – Through this service, EDILIC borrows books from other libraries on request by users. Also EDILIC issues books to other libraries of mutual interest.

- **Institutional Membership**

EDILIC is an institutional member of Indian Library Association (ILA), Indian Association of Special Libraries and Information Centres (IASLIC), Management Libraries Network (MANLIBNET) and The British Library, Ahmedabad. Apart from this, EDILIC regularly uses the services of the Ahmedabad Library Network (ADINET) and Information and Library Network Centre (INFLIBNET).

- **Library Membership to External Users**

EDILIC membership is primarily given to the EDI faculty, staff members, students and programme participants of the Institute. In order to fulfill the demands, raised by several institutions and individuals, the EDILIC extends membership to outside users such as Academic Institutions / NGOs / Entrepreneurship Development Cells / outside faculty / entrepreneurs / corporate executives / students, EDI Alumni and OLPE Alumni on payment basis.

10. Conferences/Seminars Organized by EDILIC

- **MANLIBNET 2013:** EDI organized and hosted 15th MANLIBNET 2013: International Conference on Entrepreneurial Approaches to Librarianship jointly with Management Libraries Network (MANLIBNET), New Delhi during December 26-28, 2013. A volume containing 88 papers, published by Bookwell, New Delhi was released during the inaugural function of the conference. Besides papers received from academicians from across the country, seven papers were received from Nigeria, one paper each from Iran and USA. Overall, 200 delegates participated from IIMs, IITs, leading Business and Management Schools, Corporate Sectors, etc. at the conference. The conference aimed at documenting the current state of entrepreneurship in libraries, inspiring future entrepreneurial pursuits among the librarians and providing a roadmap and inspiration for future endeavors.
- **ADINET 2013:** Celebrating Librarian's Day Seminar in the month of August is a tradition followed by ADINET (Ahmedabad Library Network) since long, to salute the father of Library Science Dr. S.R. Ranganathan. During 2014 the Librarian's Day Seminar was organized by EDI jointly by Ahmedabad Library Network (ADINET) and Information Library Network (INFLIBNET) with the theme Redefining Libraries to Create Next Generation Libraries on 10th August, 2013. Eleven papers were presented during the seminar and more than 250 delegates from all over Gujarat benefited from this seminar.
- **MANLIBNET 2008:** EDI has organized the first roundtable conference of MANLIBNET on 17th May 2008. The theme of the roundtable conference was Management Librarians and Their Role in Promoting Research. Over 100 library professionals from across the Gujarat has participated in the conference. In addition to the above the Librarian is also looking after the institutes Biennial Conferences and Alumni Association. He is the Coordinator of the EDI's Biennial Conferences and successfully organized five conferences in 2005, 2007, 2009, 2011, 2013 and 2015.

The Librarian has also conducted various events for Alumni since its inception in 2007.

11. Future Plans

- The EDILIC is proposing to launch a one year Diploma Programme in Entrepreneurial Approaches to Librarianship jointly with MANLIBNET.
- To inculcate entrepreneurial competencies among LIS professionals, EDI Library and Information Centre (EDILIC) conducting the following training programmes for LIS professionals
    1. Entrepreneurial Marketing for Librarians
    2. Librarian Development Programme (LDP) under MANLIBNET
    3. Seminar on Library and Information Science and Knowledge Management

- Digitization of Institutional Repository materials

12. Conclusion

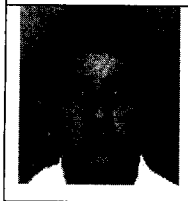
For an entrepreneur, identification of a single or multiple project ideas is crucial for the purpose of converting the entrepreneurial urge into a recognizable form. Search for ideas is a beginning, the first and most significant step in the actual entrepreneurial journey. The EDILIC facilitates entrepreneurs, trainers, teachers, industry officers, small business consultants and others to select and identify the right kind of business opportunities. Concerted efforts are also constantly directed towards updating all aspects of the Library so that it becomes a one-stop, state-of-the-art centre for complete information on the national and international world of business.

Note: The above paper is a revised version of the article entitled *EDI Library and Information Centre: the Focal Point for Budding Entrepreneurs* published in ADINET Newsletter, Vol. 12 No.1, 2005.

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Evaluating the Employee's Performance Appraisal System in College Libraries of Mahendergarh District in Haryana

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Abstracts: This paper focus to appraise the performance appraisal system in college libraries of Mahendergarh District of Haryana; identify the effectiveness of the appraisal process and identify challenges facing the existing appraisal systems in college libraries employee's motivating to perform to develop personal capabilities, and advantage and disadvantage of performance appraisal and to improve future performance is influenced by feedback of past performance.

Keywords: Performance Appraisal Systems; College Libraries; Appraisal Process; Challenges facing.

1. Introduction

Mahendergarh is equipped with good number of educational and technical institutions like 05 Engineering Institutions , 18 degree colleges , 12 polytechnic institutions,27 Teacher Training college and one Central university as well as institutions of repute such as RPS Group of Institutions (Engineering ,Management, Degree and Education), Balana . There are also numbers of government and private organizations along with library and information centers where all the knowledge resources are kept for its utilization. The study covers the attempts of college libraries and the survey covers the Librarians, Assistant Librarians, Library Assistants and others. Performance appraisal (PA) has remained an important topic of investigation among organization researchers (Poon,2004:322) performance appraisal also called performance review, performance evaluation ,performance assessment, performance measurement, employee's evaluation , Staff assessment, services rating, etc. Performance appraisal is an assessment of an employee in performing his job. Performance appraisal provides an opportunity to communicate to employees the mission, strategy, vision, values and objectives of the libraries. Performance appraisal is an important managerial tool to clarify performance criteria and to enhance future individual performance. Performance appraisal or Performance management is one of the oldest and most universal practices of management .Effective performance appraisal should also recognize the legitimate desire of employees for progress in their professions. Performance appraisal is an important basis for changing performance plan, including performance criteria. It involves the following:-

- Setting new expectations to improve performance during the years.
- Establishing performance plans for next years.

2. What Is Performance Appraisal?

Performance appraisal defined:-

- Performance appraisal is a process of systematically evaluating performance and providing feedback upon which performance adjustment can be made. (Schermerhorm et.al. 2004).
- Performance appraisal may be defined as any procedure that involves (I) setting work standards ;(II) assessing the employee's actual performance relative to these standards; and (III) providing feedback to the employee with the aim of motivating that person to eliminate performance deficiencies or to continue to perform above par. (Dessier 2002).
- Performance appraisal is the system whereby an organization assigns some score to indicate the level of performance of a target person or group. (DeNiSi 2000).
- Performance assessment is the process that measures employees' performance. It involves deciding (I) what to assess,(II)Who should make the assessment,(III)which assessment procedure to use, and (IV)how to communicate assessment results.(Milkovich and Boudreau 1998).
- Performance appraisal is the process of evaluating the performance and qualification of the employees in term of requirement of the job for which he is employed, for purposes of administration including placement, selection for promotion, providing financial rewards, and other actions which require differential treatment among the member of a group as distinguished from actions, affecting all members equally. (Heigel 1973).

3. Review of Literature

Some relevant studies conducted earlier includes Lamptey,Richard Bruce and Agyen – Gyas,Kwaku (2012) conducted a study on Performance Appraisal as an Effective Management Tool in the State owned University in Ghana. This study discussed the impact of performance appraisal on libraries in six state owned university library in Ghana. In particular, it explains the concept of performance appraisal, methods used in appraising employees and how far it is being implemented in the state owned university libraries in the country. The challenges facing these institutions in implementing effective performance appraisal strategy are highlighted.

Okpe I. John, (2012) in their study "Annual performance appraisal of practicing librarians: A case study of academic Institutions in Nigeria". This paper investigated annual performance appraisal questionnaire administered by individual academic institutions in Nigeria, examined professional job specifications for academic librarians serving in these institutions studied to establish the annual performance appraisal style adopted by the academic institutions. Survey method was adopted using self structured questionnaire to personally collect data from the respondents, comprising fifty-one academic institutions across Nigeria. The result shows that, different department in the studied institutions was changed with the responsibility of carrying out Annual Performance Assessment, discuss performance evaluation purpose and values, higher number of the respondents suggested that Librarians should be evaluated on the bases of their job specifications and that the

planning and execution could be done centrally or within the Library system. Finally, conclusion and recommendations were provided on how best Annual Performance Assessment practice could be improved upon by organizational leaders to enhance productivity.

Edwards, Ronald G and Williams, Calvin, J (1998) " Performance appraisal in academic libraries: Minor changes or major renovation" and found performance appraisals generally occur to provide documentation generally occur to provide documentation for current and future personnel decision such as promotions, salary increases, staff development, and disciplinary reasons. After surveying library literature, it is apparent that most academic library administration implement some type of performance appraisal, but a disparity exists regarding the process itself, the ultimate goals sought and those actually achieved. This situation emanates from the lack of objectives adhered to in conducting performance appraisal. This article will address the diversity existent in the performance appraisal process and the reasons for these differences.

OWUSU-ANSAH, Samuel and GOGO ASHIRIFIA, (2014). "Effect of performance appraisal system on staff performance in Ghanaian academic libraries". This study adopted the survey approach to gather data from library staff located in the University of Cape Coast Library. Using the descriptive statistics, it was found out that library staff (76.8%) affirmed the existence of a performance appraisal system in the library. From the participants view, performance appraisal system was necessary to assist in determining the input of staff, bring motivation to workers and ensure effective work by the staff. The majority of the library staff (70.2%) stressed that their immediate boss was responsible for appraising their work output in the UCC library.

Jiezhu Nie 1, a, Qiuwen Huang 2, b, Ganghua Zhang 3, c (2013). "Performance Appraisal of Human Resources in University Libraries --Taking the Library in Jiangxi University of Science and Technology as an Example". This paper has analyzed performance appraisal (PA) principles of human resources (HR) in universities, listed out PA indices and their significance, and structuralized PA model in theory. This model has been employed perfectly in evaluating the year 2011 annual performances of the HR in the library of Jiangxi University of Science and Technology (JUST) in China, which has greatly enhanced the PA quality and satisfied the staff in the school library.

The paper of Akua, Asantewaa Aforo and Kodjio - Asafo-Adjei Antwi (2012) shows that academic libraries a performance appraisal system comprising setting of goals, feedback, participation and incentives for performance. This study aimed at evaluating the performance in the KNUST and GIMPA libraries in Ghana and give recommendations on improving the system. The article of Javed Igbal, Samina Naz, Mahnaz Aslam, Saba Arshad (2012), offers a survey of selected literature on performance management. It is found that performance management processes, evaluation, its impact and factor are key themes.

4. Objectives/Purposes of Performance Appraisal

They serve several purposes (Kumar, 2005:02; Millmore et al., 2007: 527). These Purposes include:-

- To let subordinates know formally how their current performance is being rated.
- To identify subordinates who deserve merit raises.
- To locate individual who need additional training.
- To identify candidates for promotion.
- To identify the scope for performance improvement and means to achieve it.
- To serve as a source of information for management to make decisions about promotions, Salaries, training needs, and training support.
- As a means of managerial control, through the setting objectives; and
- To facilitate personal improvement and development.

Broadly, performance appraisal serves four objectives- (i) developmental uses, (ii) administrative uses/decisions, (iii) organizational maintenance/objectives, and (iv) documentation purpose.

Hence, organizations need to rate their employees so that people can be identified to assume positions of leadership or be acknowledged for reward when appropriate (Gibbons and Kleiner,1994).However, Becker et al. (2001) emphasize that performance appraisal systems are incoherent in terms of what is measured and what is important.

5. Principal of Performance Appraisal:

Performance appraisal should be based on certain principles as stated below-

- Corporate goals are translated in to individual, team, departmental and division goals.
- It should not be linked with only financial rewards.
- Performance improvement is an ongoing process and improves over time.
- Consensus and co-operation needed, not control and coercion.
- Transparency is needed at every stage.
- It should cover all employees.
- It is a system and not a piece of work.
- Make it simple and easy.

6. Advantages and Disadvantages Performance Appraisal:

6.1. Advantages

- The employee whose performance is appraised may develop an increased motivation to perform effectively.

- The job of the employee being appraised may be clarified and better defined.
- Valuable Communication can taken place between the manager and the employee.
- Organizational objectives can be made clearer and they can be readily accepted.
- Rewards Such as compensation and promotion can be distributed on a fair and credible basis.
- Valuable appraisal information can allow the organization to do better human resource planning, test validation, and development of training programmes.

6.2. Disadvantages

- The self –esteem of the employee being appraised and manager doing the appraisal may damage.
- Large amount of time may be wasted.
- The relationship among individuals may be permanently worsened, thereby creating organizational conflicts.
- Performance may be lowered for many reasons; including the feeling that poor performance measurement means no rewards for performance, that is, biased evaluation including favoritism towards some employees.
- Money may be wasted on form, training, and a host of support services.

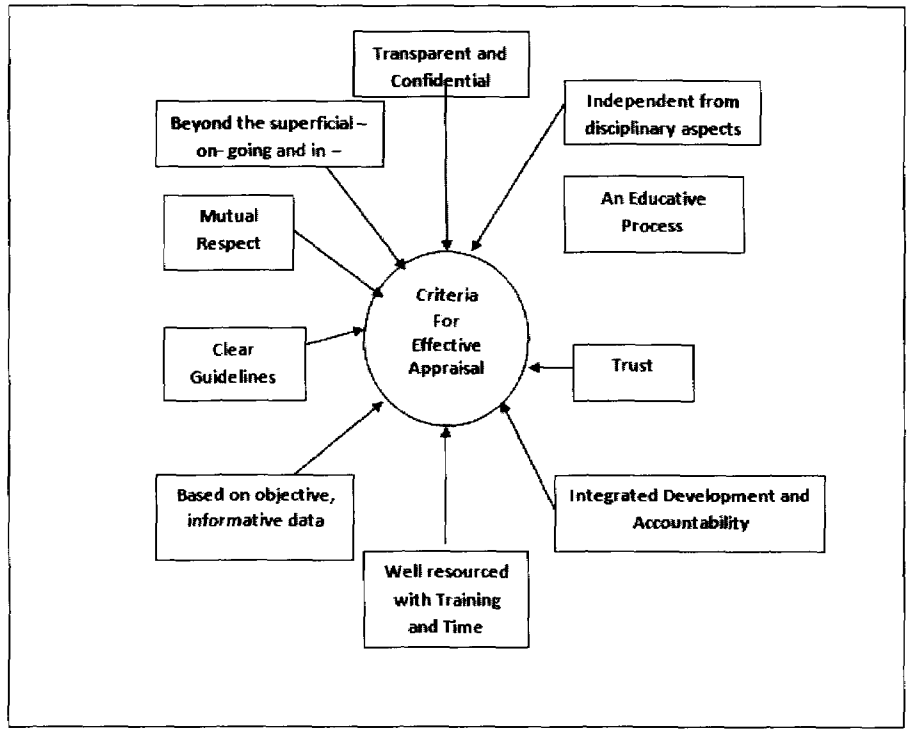


Figure 1 - Elements of Appraisal Effectiveness (Source: Eileen Piggot-Irvine (2003; 173)

7. Essential Features of an Effective Performance Appraisal System

Appraisal systems possess certain definitive useful functional and strategic information and results for the organization, its manager, and its employees. However, development of an effective appraisal system is not an easy chore (Boice and Kliener, 1997).According to Piggott-Irvine (2003) "Effectiveness occurs when the appraisal interactions are non-controlling and non-defensive, but are supportive, educative and yet confidential. Effective appraisal is underpinned by relationship of respect and has outcomes directly linked to improved learning and teaching. He narrates that effectiveness is also linked to appraisal process and information that has clarity, objectivity and high integrity, where deep development is a goal rather than a quick-fix expedience. "See figure 1.

8. Appraisal Process:

Figure outlines the performance appraisal process. Each step in the process is crucial and is arranged logically. The Process as shown in figure-is somewhat idealized many organizations make every effort to approximate the ideal process, resulting in first-rate appraisal systems. Unfortunately, many others fail to consider one or more of the step and, therefore, hiveless-effective appraisal systems.

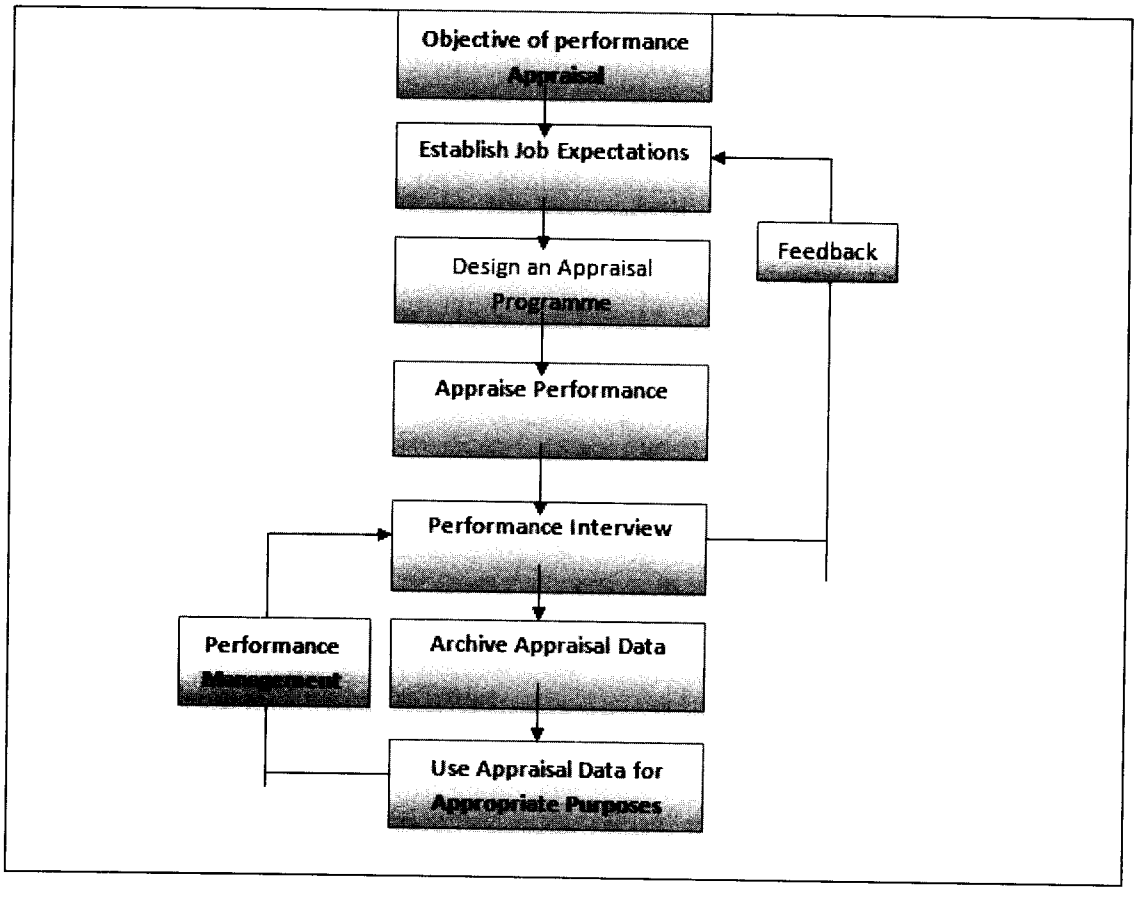


Figure -2 Performance Appraisal Process

(Source:-Human Resource Management: Text and Cases – Aswathappa (2014: 327)

9. Challenges of Performance Appraisal

With the increased significance of performance appraisal, Challenges confronting the system are mounting. One serious challenge facing the performance appraisal system relates to assessment of self- managed teams. Popularly- called empowered teams, these self –managed teams create special challenges for performance appraisal – empowered teams perform without supervisors. Historically, if one recalls, it is the supervisor who assesses the performance of his or her subordinates. Another challenges is that both, individual and team performance, need to be measured. A suitable device needs to be developed to assess the performance of empowered teams because more and firms use such teams to enhance productivity. Contains other challenges of performance appraisal:-

- Create a culture of excellence that inspires every employee to improve and lend himself or herself to be assessed
- Align organizational objectives to individual aspirations
- Clear growth paths for talented individuals
- Provide new challenges to rejuvenate careers that have reached the plateau stage
- Empower employees to make decisions without the fear of failing
- Embed teamwork in all operational processes
- Debureaucratise the organization structure for easy of flow of information

A Major and recurrent criticism of performance appraisal systems is their openness to subjectivity and discrimination, subjectivity is more likely to arise from the day to day behaviors and practices of those involved in the process of appraisal than the policies and procedures developed to guide that practices (Brown and Heywood, 2005).PAS is often judged subjectively because performance in many jobs is not amenable to objective assessment. Such subjectivity enables a rater's personal agenda to drive the appraisal rating process. (Ferris and Judge in Poon; 2004:323). Hence, the implementation of an effective performance Appraisal Programme is complicated by the difficult task of obtaining a truly fair and accurate appraisal of an employee (Poon, 2004:323, Gibbons and Kliner, 1994).Problems associated with the performance Appraisal (PAS) include the lack of agreement on appropriate appraisal criteria, concerns over the validity and reliability of evaluation methods, and the negative perception of employees towards the appraisal system (Peterson, 2000).

10. Procedures/Methods

A descriptive research design, cross-sectional in nature, was applied in the investigation. The approach was used because of need to obtain the employees' perception and experiences pertaining to the existing performance appraisal system (Creswell, 2007; 40)

A questionnaire was distributed to the random sample of 59 respondents from the 11 colleges. Stratified ensured that better representativeness of the employees.

Total No. of Libraries	Total Employees	Respondents
32(Thirty Two)	59	50

The survey questionnaire was chosen since it was found to be efficient and a tested means of assessing information about large employees of college libraries of Mahendergarh. The questionnaire had a combination of both open-ended and closed questions. A drop-off and pick –up method of questionnaire was adopted.

11. Response Rate

Total 59 questionnaire were distributed to participating employees but only 50 were received/returned completely, thus 84.7% response.

12. Demographics

The demographic information of the respondents included the academic qualification, work experiences, gender and age. The analysis of data on the purpose of performance appraisal revealed that the system was used to identify employees for promotion (61.25 %) and to decide on salary awards (92.75 %). Contrary to common belief, 79.2 % of the respondents indicate that the appraisal system was not used to weed out incompetent.

Effectiveness – on the effectiveness of the employees of college libraries' performance appraisal system, 49 % of the respondents indicated that appraisal based on work related and 32% of the respondent indicated unfair in the systems. 63 % of the participants indicate that performance rewards did not always show a positive reflection of the performance appraisal outcomes.

13. Distribution of Respondents

The gender demography showed that fifty thirty-three (33%) percent, of the library employee are female while sixty seven (67%) percent, are male gender. Majority of the library employees fell in the age group 31-50 (72.8%). Majority of the library employees acquired professional qualification Graduate and Post Graduate in Library and Information Science the result showed that eighty-two (82.9%) and respondents finding that shows seventeen (17.1 %), those who have joined before 1985-1990 not having professional qualification and seven (7 %) has first degree (BA, B.Lib.I.SC and M.Lib.I.Sc.).

14. Discussion

The response to the research question on what specific functions the appraisal process served in the college libraries received mixed result. Both librarians and their subordinates believed that the appraisal process served one or more of the following:

- Allowed employees of the libraries to provide input about their jobs.
- Informed employees of where they stand.
- Helped to Clarify the employees 'performance and objectives ; and
- Facilitate to discussion of the employees development.

Given employees needs for feedback, direction, role clarity, job involvement, and development, these were positive finding.Futher; the survey revealed that the system was used to decide on salary award (92.75 %) with 92.75% of respondents indicating that the system was not used when identifying employees for development. It also emerged that the system was not used to determing whether the libraries' policies were being implemented or to weed out incompetent employees (92.75%).

Therefore, the empirical results have shown that the respondent have a negative view regarding the performance based appraisal system. They view the system to be unfair and not transparent. Lastly, an assessment of the responses on the open ended questions revealed the following negative outcomes of appraisal that included the feeling that it had led to poor relationship between appraisers and that they found the prospect of appraisal threatening and subjective. Some employees claimed that appraisals had led to de-motivation and low morale in certain departments due to differential rewards based on budgetary allocations.

15. Results/Findings

Finding from the survey data were presented and analysis to construct an understanding of the existing appraisal systems in the college libraries. The empirical result covers the employees' demographic profile; purpose of performance appraisal; appraisal process, essentials of performance appraisal; challenges of performance appraisal and employee attitudes towards performance appraisal in the college libraries.

16. Conclusion

Based on the responses that performance appraisal systems are satisfactory in college libraries of Mahendergarh. Performance appraisals are essential for the effective management and evaluation of the staff. The appraisal process should aim at judging the performance of the employee rather than the employee himself. Lastly, organizations should have appraisal appeal procedures. An appeal process would seem to serve three purposes (1) It protects employees from unfair appraisals; (2) It protects the organization from potential charge of unfairness; and (3) It helps assure that appraisers to do a more conscientious job of evaluation. The study revealed that the college libraries employees felt that: "proper feed-back is important for performance improvement; appraisal encourages accountability; appraisal identifies areas of weakness and strengths and that appraisal motivated employees and increase awareness of the job requirements. Performance appraisal is in all organizations, especially in highly labor –Intensive organization like libraries.

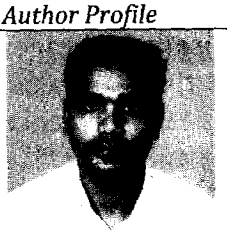
Based on the result of the survey, the following recommendations have been suggested: (I) the libraries should consider adoption of new system of assessing performance such as multi-rather feedback. (II) To avoid inconsistency. (III)The libraries should provide training to both the evaluators and the employees on the pay-based appraisal system.

There is need for a comparative study with other similar Libraries (i.e. University Libraries/College Libraries).

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Growth and Development of Teachers Education Colleges in India, With Special Reference Karnataka: *A Study*

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Abstract: This paper presents the brief summary of several stages in growth and development of teacher education in India in general Karnataka State in particular. Various commissions and committees appointed by the pre- and post independence periods in India. These commissions starting from the Sadler's Calcutta University Commission appointed in 1917 up to the National Policy on Education-1986 have stated about the teacher education as well. They also covered library and laboratory facilities and in particular emphasised on the role of the Libraries in higher education. The chapter also made a brief mention on the Department of Secondary Education Research and Training (DSERT) in Karnataka and also highlights the importance given to teacher education.

Key words: teachers education system, national policy on education

1. Introduction

The teacher education system formally began in India during British rule. In order to train the primary teachers, British rulers established many training centres in the country known as Normal Schools. In 1802, the Danish Mission established a formal training centre at Serampur (West Bengal). It is known to be the first step in formal training of teachers in India. After this, some teacher training institutes were established at Madras, Bombay, Calcutta, Pune and Surat. With the increase in number of primary schools, to meet the demand for teachers, normal schools were established for training of teachers at Agra (1852), Meerut (1856), and Varanasi (1857). Woods Despatch of 1854 recommended establishing teacher-training institutions and adopting teacher training system of England, to suit the Indian conditions. This led to the creation of teacher training schools in all presidencies of the nation. To improve the quality of teaching, the Stanley's Despatch of 1859 provided considerable

2. Development of Teacher Education Before Independence

After the development of training facilities for primary teachers, need was felt to prepare secondary teachers. To achieve these objectives, classes were added to Govt. Normal School, Madras and Central Training School, Lahore (Now in Pakistan). In the beginning, classes were added to the existing normal schools, but later on separate colleges were also created to train secondary teachers. To prepare secondary teachers, first training college was set up at Saidapet in Madras in 1886, followed by the opening of a secondary department in Nagpur Training School in 1889. In 1904, Lord Curzon emphasized on the need to educate teachers in the art of teaching. The Government of India's Resolution on Education Policy provided that a teacher shall not be allowed to teach unless he has a certificate that he has qualified for it. As a result of this, the number of teacher training

colleges was increased in the institutions, having no concern with universities. The University Education Commission Report (1950) states that "A Secondary Training College in Bombay was founded in 1906 and prepared secondary teachers for its own diploma, known as Secondary Training College Diploma (S.T.C.D.), until it was affiliated to the University in 1922 for Teaching courses leading to the B.T. degree." Based on the recommendations of Hartog Committee of 1929, education system was revised and a new degree of B.Ed. was started by Andhra University in 1932. In 1936, Bombay University was the first to start master's degree in education.

3. Post-independence Scenario

Arora and Panda give a narrative account of Teacher Education in Post-independent India (Arora & Panda). After independence, Government of India appointed two important commissions – the University Education Commission in 1948 and the Secondary Education Commission in 1952. The two commissions were headed by eminent educationists, Dr. S. Radhakrishan and Dr. A. Lakshmanswami Mudaliar.

The University Education Commission pointed out lacunas and different aspects of teacher education. It suggested to increase the number of professional colleges in the country and also recommended to make B.Ed. course adaptable to local conditions. The Secondary Education Commission on the other hand suggested improvements in secondary education. In order to design new syllabus for secondary teacher training, Pires Committee was appointed in 1956. Both of the aforesaid commissions and committees made many recommendations to raise the standard of teacher training. The Kothari Education Commission (1966) considered teacher education as the most crucial sector for development of our nation. It emphasized that, "A sound programme of professional education of teachers is essential for the qualitative improvement of education." The commission recommended having agencies, both at centre and state levels in order to maintain high standards in teacher education. While suggesting for other facilities in good libraries and one of the important facilities supporting teaching, learning and practice.

4. Establishment of National Council of Educational Research and Training (NCERT)

The National Council of Educational Research and Training (NCERT) New Delhi was established in 1961 to do research and create support facilities like production of textbooks school education. It is also intended to assist and advise the central and state governments on academic matters related to school education. Among its many objectives it also emphasised on Production of teaching-learning experience and Improvement in teacher education. The NCERT is conducting All India survey in which it also looks into the need for teacher education and library facilities and also appointment of Librarians. The work of NCERT was more on academic and research matters in school education and therefore there was need for a special body to look after the Teacher education and this was accomplished with the establishment of National Council on Teacher Education in 1973.

5. Establishment of National Council for Teacher Education (NCTE)

The National Council for Teacher Education (NCTE) came into existence in 1973 as an advisory body to the Centre and State Governments on all matters concerning teacher education. The National Education Policy 1986 provided to give NCTE a statutory status. In pursuance to the recommendation of National Policy on Education, 1986, The National Council for Teacher Education Act, came into effect in 1993, and the NCTE became a statutory body on 17 August 1995. It lays down the Norms and Standards for teacher training institutions in order to ensure quality education. Each college of education in India is required to get recognition from NCTE to run teacher education programmes.

5.1. Objectives of NCTE

The main objective of the NCTE is to achieve planned and coordinated development of the teacher education system throughout the country, the regulation and proper maintenance of Norms and Standards in the teacher education system and for matters connected therewith. The mandate given to the NCTE is very broad and covers the whole gamut of teacher education programmes including research and training of persons for equipping them to teach at pre primary, primary, secondary and senior secondary stages in schools, and non-formal education, part-time education, adult education and distance (correspondence) education courses.

5.2. Organisational Structure of NCTE

NCTE has its headquarter at New Delhi and four Regional Committees at Bangalore, Bhopal, Bhubaneshwar and Jaipur to look after its statutory responsibilities. In order to enable the NCTE to perform the assigned functions including planned and co-ordinated development and initiating innovations in teacher education, the NCTE in Delhi as well as its four Reginal Committees have administrative and academic wings to deal respectively with finance, establishment and legal matters and with research, policy planning, monitoring, curriculum, innovations, co-ordination, library and documentation, in-service programmes. The NCTE Headquarters is headed by the Chairperson, while each Regional Committee is headed by a Regional Director.

6. Education and Teachers Education in Karnataka:

As it is well known the state of Karnataka before reorganisation in 1956 was in part attached to; Bombay, Madras and Hyderabad provincial rules. The Mysore and some neighbouring districts like Bangalore were the part of the Princely state. The beginning of school education is profiled for these areas under different provincial rules. The beginning of modern education in Karnataka could be traced to the establishment of Free English School at Mysore in 1833. The two Marathi Vernacular schools were started at Dharwad and Hubli in 1826 in the Bombay region. The schools in Mangalore, Udupi and Bellary started in 1838, and the Darul Uloom at Gulbarga in 1853 by Sir Salaarjung; the two Anglo-Vernacular Schools at Madikeri and Virajpet and a Kannada School at Ponnampet by the Government in 1834. Christian Missionaries played a major role in starting schools and

imparting English education during the 19th century. After Independence and after state reorganisation the status of education in the state like in other parts of the country also changed significantly. Let us now begin with the Teacher education in Karnataka.

6.1. Teachers Education in Karnataka

Teacher Education has a long history in Karnataka. The first training college was started in Dharwad in the year 1857, in order to train school teachers. In the erstwhile State of Mysore, steps were initiated as early as 1860 for the training of teachers with the establishment of a training school at Mysore. A normal school was also started at Darwad in 1867 which later became a post-matric training college. With the introduction of Hobli School System in the erstwhile Mysore State, these institutions were at that time shifted from place to place after completion of training of teachers of that place. These institutions were later converted into Vernacular Normal schools. Two Normal Schools were opened in 1897 at Kolar and Tumkur, followed by three more at Bangalore, Hassan and Chitradurga. The Wesleyan Mission started a private school at Tumkur. Teacher's training classes were started for women at Maharani's College, Mysore in 1888. The Zanana Normal School for Urdu Teachers was begun at Mysore in 1916. The first course for training Middle School men teachers was started in Mysore in 1913 and a similar one for women was started in 1928 at Maharani's Women Training College. By 1931-32 there were eleven training institutions in the state of which nine were government ones, one aided and the other unaided. Of these 8 were for men and three for women. These institutions imparted four kinds of training courses;

- Upper Graduate training course ii) Upper Secondary Training course iii) Lower Secondary Training Course (all three of one year duration) and the revised iv) Vernacular Training Course of two years duration.
- The last three courses were revised in 1933 and a single course of Vernacular training extending over a period of three years was begun. It was reduced to two years duration in 1950 and was re-named as Teachers Certificate Lower Course (T.C.L.). The Nomenclature of Under-graduate training course was changed to Teacher's Certificate Higher course (T.C.H.) of one year duration.

Both TCL for teachers with Class 8 qualification and TCH for teachers with SSLC qualification with one year duration - courses were existing prior to the reorganization of states in 1956. The duration of TCH course was increased to 2 years and curriculum was revised in 1966. P U C (XII class) qualification was made a pre requisite qualification for the entrance for TCH course in the year 1987 - 1988. Before 1914, there was no provision in the state for the training of graduate teachers. They had to go to the teacher's College at Saidapet, Madras for L.T. course. A training course for graduate teachers was started in the Normal School, Mysore in 1914. The Mysore University which was started in 1916 introduced the B.T. degree in 1925. In 1947, a Teacher's college with practicing schools was started by the Government in Mysore. The faculty of education was begun in the University of Mysore in 1952 and in 1956 M.Ed. course was also introduced. By the time of re-organisation of the state (1956) there were seven colleges of education in the state, one each at Mangalore and Mysore.

6.2. Growth of Teacher Training Institutions in Karnataka

The Year wise growth of these teacher training institutions is reproduced here:

Year	1890 1952	1911 1961	1912 1962	1921 1971	1922 1972	1931 1981	1932 1982	1941 1991	1942 1992	1951 2000
Nos.	03	04	06	06	17	39	58	77	134	134

The Government lifted the ban on establishment of new training institutions in 2003 - 04. This led to the establishment of a large number of new institutions in the subsequent years. The importance for secondary education and the relatively to the teacher education was achieved with the establishment of a separate Department of State Educational Research and Training (DSERT) on the lines of NCERT at the Centre. The profile of DSERT with some indications on its objectives of teacher education is presented below.

7. Department of State Educational Research and Training (DSERT)

The Department of State Educational Research and Training, (DSERT) is the academic wing of the Department of Public Instruction. It aims at providing academic leadership in school education as well as improving the quality of education provided in primary and secondary schools in the state.

The DSERT was formed as a small academic unit of the Department of Public Instruction. It was then known as the State Institute of Education (SIE), and it originally started functioning from the northern district town of Dharwar in 1964. This unit was later shifted to Bangalore and the other academic units of the department of public instruction — State Institute of Science (SIS), State Educational Evaluation Unit (SEEU) and Educational Vocational Guidance Bureau (EVGB), were merged in 1975 to form a single monolithic Department of State Educational Research and Training. The Directorate of Text Books was attached to DSERT in 1983. Later the Teacher Education administrative Unit was detached from the office of the Commissioner of Public Instruction and attached to DSERT.

The National Policy of Education 1986 gave special importance to teacher education with special emphasis on giving quality training to primary teachers. In 1993 eight District Institutes of Education and Training (known as DIETs) were set up in the state. Subsequently DIETs were set up in all the 20 revenue districts of the state. In 2006 seven more DIETs started functioning in the state. Similarly to improve the quality of secondary teacher education, 6 Government Colleges of Education in the state were upgraded to the status of Colleges of Teacher Education (CTE) to provide both pre service and in service education in the secondary education sector. In 2006, the CTE at Gulbarga was upgraded as Institute for Advanced Studies in Education (IASE). In the private teacher education sector, R V teachers' College, Bangalore was upgraded to the status of Institute for Advanced Studies in Education (IASE) with a mandate to provide adequate and qualitative resource support to teacher educators and train teacher educators to take up education research. Four private teachers' colleges (MES teachers' College and Vijaya Teachers' College,

l3angalore, Kotturswamy Teachers' College, Bellary and MLMN Teachers' College, Chikkamagalore.) were also upgraded as Colleges of teacher Education.

8. Conclusion

Indian society, from the time immemorial, has regarded knowledge as the highest virtue of man. Since the dawn of civilization, great saints and seers have shown to the entire world the path of enlightenment leading to the ultimate truth. During the Vedic and Upanishadlc periods, India was bestowed with some prominent institutions of higher learning which attracted scholars from distant places and from different parts of the world came to India in pursuit of knowledge. It is well known fact that Nalanda Vallabhi, Vikramshila, Taxila Ujjain and Kanchi were often quoted as the centres of learning in India and also featured as having good libraries too. The past was a glorious era that made the process of learning and teaching a noble profession. Due to foreign invasion and colonial rule till the middle of 20th Century the state of higher education in India shows a very deflected situation except from mid-19th Century as British rulers made some efforts to start colleges and universities.

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Stress management by library and Information science professionals in University libraries of Bihar: *a Study*

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Abstract: Stress is the changes which our body experience as we adjust to our continually changing environment. Many aspects of the daily life and library profession in particular, can create feeling of stress, infact, is a normal experienced headaches, flu, chronic psychological tensions, drug abuse and personal or interpersonal problems. The study used survey method of research and selected samples from library and information science professional working in university libraries of Bihar.

Keywords: Stress management, librarians, health tips, job performance.

1. Introduction

Generally stress is the changes, which our body experience as one, adjust to the continually changing environment. Stress has become the defining malaise of modernity until a few years ago, the term was used exclusively to refer to the "fight or flight" mechanism in a specific medical context. Stress is produced from lack of regards for physiological, psychosocial comfort and psychological from the equipment use in working, relationship and other considerations that can be found in the working environments. Comfort is achieved when a person neither feels nor show any sign of fatigue or Stress. Special library association (2008) identified the roles of libraries to include development and maintenance of a portfolio of cost effective, client valued information services that are aligned with the strategic directions of the organization and client groups.

Efforts to tackle job stress and other occupational related problems among Bihar University Library Professionals began since the last year. A survey report was cleared to develop of occupational health service, medical inspection of work places. It also recommended safety measures against occupational problems. Indeed, librarians have many roles to perform in the library and any of the roles could be stressful as every tasks in the library needs to be executed while considering the human factor in undertaking it. Therefore, any work conditions that do not recognizes the abilities, capabilities and needs of the worker could result in stress.

2. Nature of Stress

Stress is a pressure that is exerted on something, for example, a piece of metal, which causes the object to respond the metal, for instance, may bend. The events that cause stress are known as 'stressors' The term 'stress' is also used to describe the individual's response

to pressure. The response can be psychological and/or behavioural. Some stress is necessary in that it assists us in achieving both work and personal goals. However, too much stress can make those goals harder to achieve. People respond differently to stress. Some people function well under significant stress while others do not. A worker's ability to cope with increasing workplace stress is also affected by the amount of stress they are subjected to from stressors outside of the work place. Trouble at home may reduce their ability to cope with pressure at work.

3. Types of stress in Libraries

- **Technological stress**: The development and application of information technologies in libraries is the major stress for library professional. Due to rapid change in computer hardware & software obsolescence of existing hardware & software is a common phenomenon in almost all libraries. Besides the change in information storage media, from print or electronic, then digital medias have resulted in the storage space facilities.
- **Physical stress:** stress can manifest itself physically as the body tries to find a way to manage the emotional issues the person in feeling. Increases in blood pressure and heart rate can happen almost immediately. Due to this sitting in front of computers for a long hour, working in air conditioned environment etc have also resulted in the physical stress and illness.
- **Job stress**: Occupational stress has become a common problem throughout the industrial world. The application of Information Communication Technologies (ICS) has compelled the library professionals to acquire new knowledge along with the traditional library functions and services. On the contrary, there is limited scope for them to undergo in service training programme higher studies, refresher course etc, which has increased a considerable amount of stress among professional. Further, with the increasing instruction and appointment of IT/computer science people into the library profession have created fear among LIS professionals about their job security in future.

4. Objectives

- To study the stress management of LIS Professionals in University Libraries of Bihar.
- To find out the problems faced by LIS professionals to manage the stress.
- To identify the criteria of solving the problems.
- To identify the types of services used by the professionals in University Libraries of Bihar.

5. Methodology

The study surveyed LIS professionals in University libraries of Bihar determine the prevalence of stress in University libraries of Bihar. Library Professionals working in the

library were used as subjects. However, in order to ensure the selection of a representative sample, members of the sample were drawn only from the professionals cadre taking note of their geographical spread throughout the country. The instruments used for data collection in the study were questionnaire and interview. These are relevant in the survey study which normally involves large group or scattered population.

6. Analysis of the Data

The researcher distributed 200 copies of questionnaires in 09 University libraries of Bihar out of this number 140 (70%) were returned duly completed representing 70%.Which is considered adequate for meaningful analysis. it is difficult in a survey of this nature to obtain hundred percent (100%) return of questionnaire as not all the respondents may give their response. Therefore, it is the belief of the researcher that 70% response rate can give reasonable representation of data to reach conclusion in the study.

7. Common causes of stress among LIS professionals in University libraries

There are many causes of stress in Bihar University libraries as observed by the study. Some of the causes have been observed to be severe while others are not but both have been observed to be producing negative or uncomfortable feelings among the librarians. Some stresses have been observed to be linked directly to tasks librarians.

Table1: common causes of stress among librarians in University libraries of Bihar

CAUSE OF STRESS	FREQ	%
Attitude of users	19	13.57
Lack of promotion / advancement	13	9.28
Lack of adequate remuneration	11	7.85
Dual role of family responsibility vs. paid work	10	7.14
Work over load	10	7.14
Death of a spouse or loved one	9	6.42
Financial problem	9	6.42
Time pressure / deadline	6	4.28
Work under load	8	5.71
Illness	8	5.71
Pregnancy	8	5.71
Bad relation with colleagues	5	3.57
Bad relation with superiors	5	3.57
Marital problem	5	3.57
Leadership styles of the chief librarian	4	2.85
Lack of information sources to process	3	2.14
Lack of feedback as work is performed	2	1.42
Lack of control in work pattern	2	1.42
Lack of adequate working space	2	1.42
Lack of job satisfaction	1	0.72
Total	140	100

From table I below the most prevalent cause of stress is attitude of users which records 13.57% (19) response rates. The attitude of the users perhaps relates to the behaviour of the users towards the librarians as some users used foul and abusive language against the personality of the librarians. The work related causes relates to the problems encountered while performing the work and the personal causes relates to personals problems of the librarians which are all influencing the attitude of the librarians to work.

8. Periods and duration of stress occurrence among librarians in University Libraries of Bihar:

The period of stress occurrence refers to the time of the day in which stress occurs or happens. The duration of stress refers to the time taken to get out of stress. It has been observed that librarians working in Bihar University. Libraries work for 06 hours a day between 10: A.M. to 4: P.M. TABLE -2 below indicates the period and duration of stress occurrence among the librarians in University Libraries of Bihar.

Table 2 – Period and duration of stress occurrence among librarians

TIME OF THE DAY	DURATION							
	10 - 19 mins.		20 - 29 mins		30 - 39 mins		Above 40 mins	
	Freq	%	Freq	%	Freq	%	Freq	%
12 – 2 pm	46	19	12	5	22	9	7	3
2 – 4 pm	26	11	65	27	50	21	12	5

- **Consequences of Stress on job performance of librarians in University Libraries of Bihar:**

Consequences refer to the effects being produced by stress on the librarians and which in causing harm to the librarians. Such consequences may include fatigue, headache, eye strain, muscle pain, hypertension, etc. The data presented from the responses of the librarians in table 03 below, Show that stress does not affect the job performance of the librarians. The data show that (85) 60.72% of the librarians indicated that they noticed no change in their task performance.

The implication of this finding is that through stress is not producing any noticeable effect on the libraries; it could be affecting the services of the library since it is present within the library environment. Auerbach and Gramling (2003) confirmed this finding where stated that stress influences mental health as well as physical health .That people who experienced high level of stress for librarians which will later their health. Any exposure to stress may affect the library staff to make them ineffective and inefficient in assigned roles. Any stress related disorder is suppose to be taken seriously and treated with urgency before it causes harm on the librarians.

Table 3: Consequences of stress on job performance of the librarians:-

CONSEQUENCES OF STRESS	FREQ	%
No change in performance	85	60.72
Unable to work	24	17.15
Absent from work	16	11.42
Late to work	8	5.71
Unable for full days work	5	3.57
Break work to rest	2	1.43
Total	**140**	**100**

Table 4 Methods Used by Librarians to cope with or handle stress

METHOD/TECHNIQUE	Freq.	%
Develop interest in clientele	16	11.42
Develop consideration for others	14	10.00
Develop interest in work	14	10.00
Direct attention away from source of stress	13	9.28
Maintain life within tolerable limits	11	7.85
Remove source of stress	11	7.85
Talk about the problem with others	10	7.14
Learn to do things one after the other	9	6.43
Cooperate with all in the library	8	5.71
Change to task that allow your mind to wonder	8	5.71
Build good relationship with superiors	6	4.28
Compartmentalize work and home life	6	4.28
Engage in hobbies or leisure activities	4	2.85
Engage in sports or physical exercise	4	2.85
Plan time	2	1.42
Rest to take a nap	2	1.42
Seek for counseling	1	0.71
Take vacation	1	0.71
Total	**140**	**100**

9. Methods of coping with stress among librarians in University libraries of Bihar:-

In this study various methods of techniques have been identified to be used by librarians working in university library in Bihar to cope with stress. The methods identified are presented in table 4 above. Form the above table tasks the study identified 18 methods used by librarians to cope with stress. The most common of the methods used by librarians is to develop interest in clienteles, with response rate of (16) 11.42: this corroborates with the earlier finding in the study that the common cause of stress is attitude of stress. The least method used by the librarians to cope with stress is taking a vacation with response rate of 0.71% (1) as indicated in the table.

Indeed, there is no one single method the librarians could use to cope or counter stress and pressure of work. Every librarian can use the method he can handle it best, which is at his

disposal and is appropriate to the situation. However, in order to control stress effectively the library management needs to provide resources on training and education on stress management practices.

10. Conclusion

One reality of 21st century, stress in University Libraries relates to the difficulties encountered by the librarians in task performance. Stress comes from external sources such as the users who are the main beneficiary of the library. In this context the LIS Professional have two choices, either to manage and / or control the events that impact their work and produce stress, or to allow stress to manage them. Librarian themselves could reduce stress in the library by adopting time management to reduce the pressure on them. Working life should also be separated from personal life to avoid conflict of interest and pressure. The period when librarians encounter stress should be identified so that they could adjust their time to cope with the stress when it occurs. Stress among the librarians in Bihar University Libraries is not causing any harm on their health and well being. But no matter how minute it exist it is not suppose to be left out. There is no fixed methods of cope but librarians could use any method depending on their ability to handled it and result it could produce.

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Stress Management and Library and Information Professionals: *Some Insights*

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Abstract: Stress is part of human and professional life. Professional stresses are different from personal, family and environment. Since LIS professional has to work in different environment and accountable for organization, users and society as a whole. In this context stress management is most important component for LIS professionals for smooth running of libraries, services and institutions as a whole. In this paper authors presented some overview on professional stress, causes for stress and how to overcome stress though proper mechanism.

Keywords: Stress Management, Library and Informational Professional

1. Introduction

Stress is a self developed pain by thoughts. When a person expects more than what he actually deserves for his work, or when a person thinks it is beyond his capability, and still continues to do, he gets a mental illness. This illness could be stated as stress. There are chances for this stress to break a person, both, internally and externally, and so, it is wise to adapt the ways to handle it, at the right time. What is stress? Stress is said to be a physical, mental, or emotional response to events that causes physical or mental tension. In simple words, stress is an outer force that has a command over inner feelings. Stress is the changes which our bodies experience as we adjust to our continually changing environment. It has been an integral part of our daily life since prehistoric times and Library & Information science profession are not exception to this. LIS professionals have generally expected library administrators to experience high stress because administrators bear most of the burden for planning, procuring, preparing and budgeting. The Stress among the Librarians increased in frequency and duration, the sources of stress such as coworkers, patrons, workload, management, schedules, lack of positive feedback, lack of training, technology and equipment, physical facilities, bureaucracy, unchallenging work, uncertainty or feeling of failure and Lack of Budget or resources.

2. Objective of the paper

The objective of this paper is to identify the perceived area and causes of stress among the library and information professionals. And find out how these professionals are managing their stress and then identify the support system available.

3. The two main classifications of Stress

Dr. Lazarus suggested that there is a difference between eustress and distress.

- **Eustress** is a positive stress. It is caused by continuous success and when expectations become higher. This develops the sense of urgency and alertness needed for survival when confronting threatening situations. And stresses to hold their position becomes more.
- **Distress** is a negative stress. It is caused due to disappointments, failures, threats, embarrassment and other negative experiences. This can result is distrust, rejection, anger and depression which eventually may turn out to get headaches, stomach upsets, rashes, insomnia, ulcers, high blood pressures, etc. And this can have harmful effects over one's physical, mental and spiritual health.

4. Different events which are responsible for stress of Library and Information Professionals :

- **Technological Change**: The technostress causes are Information overload, Changing Technology, Rapid change in software/ programmers, ICT application Frequent updation need, Networking Problem, Vendor Products like databases, Updation of Institute/Library Website, Updation of Services over Net, New things to learn, Digital Delivery. It affects both staff and users of libraries.
- **Changing Library Environment**: Libraries are changing from older manual system to automated systems and more recently to newer more sophisticated digital library systems. Staff members must unlearn old habits and procedures and learn to understand the new system.
- **Change in Type of Document**: Most libraries are now acquiring some materials in alternative Electronic or digital formats. These materials, which were once handled on an ad hoc basis, must now be incorporated into the normal acquisitions workflow.
- **Change in Library Physical facility:** Changes in Library physical facilities have become a vital problem in today's libraries. With the increased use of electronic formats, the library authorities are reluctant to expand facilities to cope with increasing space requirements. Some libraries are actually moving into new facilities with less space or losing space to other functions. But the hybrid type of libraries having both print and non-print documents face much problems relating to change in physical facilities of the library.
- **Changing users demand:** In the age of information explosion, users attitude towards information have changed. Accordingly the acquisition, organization and retrieval of information in quickest possible time have given a tremendous amount of stress in the mind of library professionals.

5. Remedies for Stress

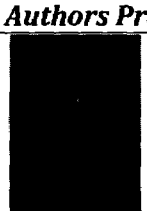
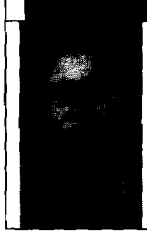
- LIS professional should be aware of their capability. They should analyze their skill level.
- Every LIS professional has to take up a SWOT analysis test to know his/her current level of capability.
- Taking up SWOT analysis test also helps to enhance the skills possessed in the current situation.
- Planning an effective time management surely helps through the stress. A well planned work is half done. Similarly, a very well managed time avoids most stress.

6. Conclusion

LIS professionals are faced with constant challenges in their working environments. This is particularly true for LIS professionals of digital Library Environment, not only because of the role they play inside their libraries but because users expectations always seems to exceed library's capacity in terms of documents, infrastructure facilities, finance, staff etc. In this context the LIS professionals have two choices, either to manage and/or control the events that impact their work and produce stress, or to allow stress to manage them. A certain level of stress is positive and can inspire and motivate. Also important is recognizing that stress and its sources are unique to the individual and his situation.

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Techno-Stress Management among Library Personnel in Degree College Libraries of Uttar Pradesh (INDIA)

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Abstract: The present study highlights the concept of stress and techno-stress among library personnel. In the present study total 144 library personnel selected from 48 Degree College Libraries affiliated to Dr B. R. Ambedkar University Agra. Thus the framed questionnaire (with related questions) distributed and collected from three library personnel (48*3=144) from each Degree College library. The data analysis is made in tabular and graphic form. The researcher found after data analysis that library personnel are feeling techno-stress on them. At the last of study some recommendation and suggestion are suggested for management the techno-stress.

Keywords: stress management, library personnel, techno stress,

1. Introduction

Now all ICT has entered in all subjects of knowledge to facilitate to its users and ICT make all jobs easy to perform. With this ICT has also entered in libraries in its full sworn. This makes all the functions and services of libraries very easy but also produce challenges to personnel of libraries. In Indian librarians the most of working personnel of libraries are not trained and some personnel not having any interest in ICT due to near their retirement or some other reasons. The most important thing is that technology hanging its face every second and coup these changes are not an easy job. These new technologies have created stress among library personnel. This stress (instinctive due to ICT) is called techno-stress. The present study is confined to the working personnel of college libraries. Uttar Pradesh is the largest state in Indian in population. There are 530 colleges (Degree, Engineering, Management and Medical etc) are affiliated to Dr B. R. Ambedkar University, Agra. Thus the college libraries caters to need of a large group of users. The academic library is the heart of any institute and it caters the needs of a very large groups of users. School, college, university libraries and library attached to an academic institution are the academic libraries. Now the all college libraries are moving toward automation, digitations and e-libraries to facilitate its users. The library personnel are facing new challenges in this ICT era and these personnel also feeling techno-stress on them.

Techno stress is a reaction to technology and unsettled due to influence of these technologies. The following are some definitions of techno stress:

"Techno stress is a feeling of anxiety or mental pressure from overexposure or involvement with (computer) technology". "Techno stress is the negative psychological link between people and the introduction of new technologies. Whereas ergonomics is the study of how humans react to and physically fit with machines in their environment, techno stress is a

result of altered habits of work and collaboration that are being brought about due to the use of modern information technologies at office and home situations."

2. Objectives of the Study

The following are the main objective of the study:

- To find out the ICT infrastructural development in College libraries.
- To find out the training development program for the personnel as well as for users.
- To find out the techno-stress level among library personnel.
- To find out the methods of management of techno stress.

3. Scope

The study is confined to degree college library personnel in Uttar Pradesh especially to personnel of Degree College libraries affiliated to Dr B. R Ambedkar University Agra. There are 507 Degree College (Govt. Aided and Private) affiliated to Dr B. R. Ambedkar university. In the present study library personnel of 48 Degree Colleges have been taken for the study.

4. Review of Related Literature

The review of literature has been made from various sources print and electronic like journals, e-journals, websites, search engines etc. and found that no study is same with this topic. Some reviews of literature are as follow:

Clute (1998) explore the roots of techno stress as unaware with computers, presentation anxiety, absence of training/inadequate training, organizational aspects, lack of staff, information explosion and overload, fast changing technologies. Clute also explain all these roots of technostress in details. She found that most of the crucial factor behind the technostress is lack of training of ICT and lack of funds. **Mahalakshmi and Sornam (2011)** say that ICT and computer application in libraries had been increased in current decayed and these technologies have increased health risks due to techno-stress. The study is conducted on library personnel of engineering college libraries affiliated to Ann University, Tamilnadu. The study found that roots behind due to technological changes and this physical discomforts. A questionnaires is distributed among library professional with demographic detail and ergonomics stress. In the last of the study authors make some recommendations for their problems. **Prabhakaran and Mishra (2012)** say that the advancement of technology have brought many changes at workplace. Author say that these technologies are faster moving and creating stress among employees and to coup these technologies are not so easy and the implementations result are not certain of these technologies. These new technologies are required new skills and training of personnel in an efficient way. Organizations like libraries are non-profit organization and need to require authority attention in training and development of library personal without any financial output. **Okebaram, Sunday Moses (2013)** in his study author regulate the foremost reasons, indications and effects of technology stress. For achieve the purpose of

the study a survey has been made among 27 respondents through distribution of a questionnaire and 21 responded retuned the filled questionnaire back. The data is analyzed in tabular form and graphic form in the study.

5. Data Analysis

In the present study total 144 library personnel selected from 48 Degree College Libraries affiliated to Dr B. R. Ambedkar University Agra. Thus the framed questionnaire (with related questions) distributed and collected from three library personnel (48*3=144) from each Degree College library. The data is analyzed as below in tabular and graphic form:

Table 5.1- Response

Response		
Govt. Aided College	Private College	Total Responses
24	120	144

The table no 5.1 reveals that total responded from Govt aided college is 24 and from private college is 120. Private college is more in comparison to Govt. Aided College.

Table 5.2 -Techno stress due to Institutional Factors

S.N.	Reasons	Level				
		100%	75%	50%	25%	Not at All
1	Lack of Computers	66	36	23	19	00
2	Lack of funds to purchase ICT infrastructure	71	48	15	10	00
3	Slow Internet Speed	32	36	72	04	00
4	Old Computer	35	78	30	01	00
5	Lack of Library Software	72	56	4	2	10
6	Indifferent attitude of Authority toward ICT	28	68	22	18	08
7	Lack of trained Staff to implement ICT	71	23	18	17	15
8	Lack of Proper Building for ICT environment	44	63	21	11	05
9	Lack of Suitable Physical Environment for ICT	41	76	17	10	00

66 (46.58%) library personnel say that they face technostress due to 'lack of computer' in their library up to 100%. **71 (49.30%)** library personnel say that they face technostress due to 'lack of funds to purchase ICT infrastructure' in their library up to 100%. **72 (50%)** library personnel say that they face technostress due to 'slow speed of internet' in their library up to 50%. **78 (54.16%)** library personnel say that they face technostress due to 'old computer' in their library up to 75%. **72 (50%)** library personnel say that they face technostress due to 'lack of library software' in their library up to 100%. **68 (47.22%)** library personnel say that they face technostress due to 'indifferent attitude of authority toward ICT' in their library up to 75%. **71 (49.30%)** library personnel say that they face

technostress due to 'lack of trained staff to implement ICT' in their library up to 100%. **63 (43.75%)** library personnel say that they face technostress due to 'lack of proper building for ICT environment' in their library up to 75%. **76 (52.77%)** library personnel say that they face technostress due to 'lack of suitable physical environment for ICT' in their library up to 75%.

Table 5.3 - Reasons of Techno stress among library personnel

S.N.	Reasons	Level				
		100%	75%	50%	25%	Not at All
1	Unawareness with computers	21	25	71	17	10
2	Fast and Frequent Change in Technology	74	42	16	12	00
3	Lack of Insufficient Training	69	41	21	11	02
4	Lack of Basic Knowledge of ICT	39	72	29	04	00
5	Information Explosion	26	62	52	02	02

71 (49.30%) library personnel say that 'unawareness with computers' is the reason of techno stress in their library up to 50%. **74 (51.38%)** library personnel say that 'fast and frequent change in technology' is the reason of techno stress up to 100%. **69 (47.91%)** library personnel say that 'lack of insufficient training' is the reason of techno stress up to 100%. **72 (50%)** library personnel say that 'lack of basic knowledge of ICT' is the reason of techno stress up to 75%. **62 (43.05%)** library personnel say that 'Information Explosion' is the reason of techno stress up to 75%.

Table 5.4 - Views regarding management Techno stress

S.N.	Manage Techno stress	Level				
		100%	75%	50%	25%	Not at All
1	Adequate Training in ICT and New Innovations	**82**	23	18	17	04
2	Adequate Funds for ICT	48	**65**	16	15	00
3	Meditation	31	**58**	48	07	00
4	Positive attitude of Authority	34	42	**62**	06	00
5	Adequate Staff	32	39	**69**	04	00
6	Appropriate Building	23	31	**44**	35	11
7	Appropriate Physical Environment	21	32	**51**	34	06
8	Proper Library Websites	23	36	**52**	21	12
9	Recurring Maintenance of ICT	29	**68**	41	06	00

82 (56.94%) library personnel say that technostress may be managed with 'adequate training in ICT and new innovations' up to 100%. **65 (45.13%)** library personnel say that technostress may be managed with 'adequate funds for ICT' up to 75%. **58 (40.27%)** library personnel say that technostress may be managed with 'proper library websites' up to 75%. **62 (43.05%)** library personnel say that technostress may be managed with 'positive attitude of authority' up to 50%. **69 (47.91%)** library personnel say that technostress may be managed with 'adequate staff' up to 50%. **44 (30.55%)** library personnel say that technostress may be managed with 'appropriate building' up to 50%. **51 (35.41%)** library personnel say that technostress may be managed with 'appropriate

physical environment' up to 50%. **52 (36.11%)** library personnel say that technostress may be managed with 'appropriate physical environment' up to 50%. **68 (47.22%)** library personnel say that technostress may be managed with 'recurring maintenance of ICT' up to 75%.

6. Recommendations

As table 5.2 shows that institutional resources of ICT is not proper in concerned libraries as computers, library software, slow internet speed, old computers and other ICT infrastructure are not up to satisfaction level. **It is recommended** here that libraries should improve and update this infrastructure level. It is also evident form this table that attitude of library managing authority regarding the application of ICT is positive. **It is recommended here** that authority should keep positive attitude toward the application of ICT in libraries. There is lack of ICT trained staff in libraries. **It is recommended** here that library should appoint trained and skilled staff for improvement.

As per table no 5.3 library personnel feel technostress due to fast changing technologies as they have not any proper and recurring training to coup these fast changes. **It is recommended** here that there should be proper and recurring training for the working library personnel in these libraries. Libraries should organize workshop of new innovations in libraries.

It is also recommended on based on views of library personnel that there should be a proper and user friendly websites of concerned libraries. The fund position of the concerned libraries is not sound, it is true fund is like blood in a human body. **It is strongly recommended** here that managing authorities of libraries should arrange more funds to these libraries for purchase ICT infrastructure and e-resources. **It is also recommended** here that physical environment of libraries should be proper there should be air-conditioned environment in libraries for suitable working.

7. Conclusion

As ICT (Information Communication Technology) one side is more useful and provides accurate results in minimum time and other side it created challenges against library personnel. ICT is changing very fast (computers, network memories, media, format etc) and coup these fast changing technologies is required funds and adequate training. It is also true that new recruited (younger) employee know the use of information communication technologies in a better way in comparison to retired person re-employee in private colleges. In the present study most of the employees of college libraries required an adequate training of ICT. There is need of up-gradation of ICT infrastructure to facilitate user and decrease the technostress. Library managing authorities should also arranged yoga camp (meditation), workshops, conference and seminar on stress management in their premise. Library personnel should be motivated in participation in conference, workshop and refresher courses.

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Assessing Library Service Quality (LSQ) at Rajiv Gandhi National Law University, Patiala

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Abstract: The present study aims to assess the library service quality (LSQ) and user satisfaction at Rajiv Gandhi National Law University (RGNLU), Patiala (Panjab), India. Survey method was used for collecting data. Library service quality was measured by using LibQUAL scale. A total of 116 questionnaires were analyzed. The findings of the study show that there is significant difference in the desired andperceived level of respondents about LSQ .Further significant difference was also noted in the perceived level of LSQ across the status of respondents. All the three LSQ dimensions i.e. Affect of service (AS), Information control (IC), and Library as a place (LP) were positively correlated with the degree of user satisfaction. Regression analysis reveals thatIC and LP significantly predict user satisfaction account for 47.1% of variance.

Keywords: User Satisfaction, LibQUAL, Library Service Quality (LSQ), RGNLU, Patiala

1. Introduction

University Libraries play a vital role to achieve academic excellence and realize the overall mission of its parent organization by providing comprehensive resources and services to meet the research, teaching, and learning needs of the University community. The primary aim of an academic law library is to meet the academic and legal research requirements of their specific community of patrons. Since libraries are the service providing institutions therefore, it is essential to assess the expectations & perceptions of library users to determine the Library Service Quality (LSQ). Moreover, success of any library depends upon how well a service satisfies the demands placed upon by the users. Feedback form library users would help libraries to find the areas where improvement is required and hence ultimate goals can be achieved. Therefore, there are a number of reasons convincing libraries to evaluate quality of library services from user perspective.

2. Literature Review

A number of studies have been carried out to assess Library Service Quality and user satisfaction using SEVQUAL, SERPERV, LibQUALmodels etc. Selected studies have been reviewed here, which were carried out using LibQUAL+ survey. Asemi et al. (2010) conducted a comprehensive research study aims to urge the new culture of assessment of the quality of library services among Iran academic libraries and to measure the overall services quality of libraries from the users' perspectives based on the LibQUAL model.

Larijani and Sadat Hosseini (2010) assessed the quality of library services in the Governorate of Golestan province, as judged by the user perspective measured through the LibQUAL assessment tool. The population of study was members of County Library and includes internal and external corporate users, researchers, students,faculty and students.Mardani(2014) measured service quality at Tehran University of Medical Sciences libraries using LibQUAL+ model. The results show that the quality level of services in these libraries is lower as the services superiority gaps for all the services in the libraries were negative. Pedramnia et al. (2012) investigated the quality assessment of services provided by the MUMS libraries and determining user satisfaction and expectations of library services in the LibQUAL dimensions. On the basis of Gap analysis they found that the quality of libraries is lower than expected.In his study Kemp(2002) examined the service quality of Texas Tech University Libraries based on LibQUAL+ survey. Findings reveals that the service quality was below the minimum acceptable level.Rehman (2012) studied the expectations of Pakistani libraries users and reported that users level of expectations of service quality is very high. The highest expectations were found on LP dimension and lowest were related to AS dimension. Furthermore it was found that minimum expectations were significantly different from desired expectations. The present study is conducted to assess the library service quality at Rajiv Gandhi National Law University, Patiala.

3. Objectives of the Study

The main objective of this study was to evaluate the LSQ in RGNLU and to answer the following research objectives:

- To assess the desired and perceived level of LSQ.
- To explore the significant difference between desired and perceived level of LSQ.
- To examine the degree of users satisfaction.
- To identify the relationship between user satisfaction and perceived library service quality.

4. Hypotheses

- There is no significant difference in desired and perceived level of LSQ and its dimensions.
- There is no significant difference in the gap between desired and perceived LSQ and its dimension in respect of status of users.
- There is no significant difference in perceived level of LSQ and its dimensions in respect of users' status.
- The level of user satisfaction is not more than average level of satisfaction.
- There is no significant relationship between perceived level of LSQ and its dimension with degree of users' satisfaction.

- Perceived level of service quality have no significant impact on user satisfaction.

5. Methodology

Based on the objectives of the study, survey method was used for this study using LIbQUAL+ tool as data collection instrument. The questionnaire consists of three sections. The first section contains 22 items for three dimensions of Library service quality i.e. Affect of service (AS) - 9 items, Information control (IC) - 8 items and Library as place (LP) - 5 items. The second part consists of 5 local questions on library service provisions. The third sections covered 3 items on library outcome, 3 items on library satisfaction, 2 items on library use pattern and demographic information like gender, status of respondents and duration of stay in the university. Nine point Likert scale was used with "1" being "strongly disagree" and "9" being "strongly agree". The library users were invited to participate via an e-mail announcement that directed them to a link of web-based questionnaire. In addition125 the researchers also personally administered printed questionnaires. A total of 116 complete and valid questionnaires, were analyzed with the help of IBM-SPSS software, version-22.0.

Table 1 Demographic Profile of the respondents

Demography	Status	Frequency	%
Gender	Males	54	46.6%
	Females	62	53.4%
Status	UG	71	61.22%
	PG	25	21.55%
	RS	9	7.75%
	Faculty	11	9.48%
Duration of Library use	1st	35	30.1%
	2nd	21	18.1%
	3rd	22	19%
	4th	24	20.7%
	Above 5 Yrs	14	12.1%
Frequency of Library Visit	Daily	60	51.7%
	Weekly	37	31.9%
	Monthly	16	13.8%
	Quarterly	1	0.9%
	Rarely	2	1.7%
Frequency of access to the Library website	Daily	35	30.1%
	Weekly	59	50.9%
	Monthly	14	12.1%
	Quarterly	7	6%
	Rarely	1	0.9%
	Total	116	100%

6. Data Analysis

The analysis of data is presented in the tables as per the objectives of the paper.

Table 1 presents the socio-demographic details of 116 respondents. 53.4% of the respondents were females and 46.6% were males. Majority of respondents (61.22%) were undergraduates. 30.1% of respondents were using the library for past one year and only 12.1% were having more than 5 year experience of library use in the university. Two elements had been analyzed related to respondents' frequency of visits to the library and frequency of access to library website. A total of 97 (82.9%)respondents physically visit the library daily or weekly and more than half of the respondents i.e. 59 (50.9%)access the library website weekly.

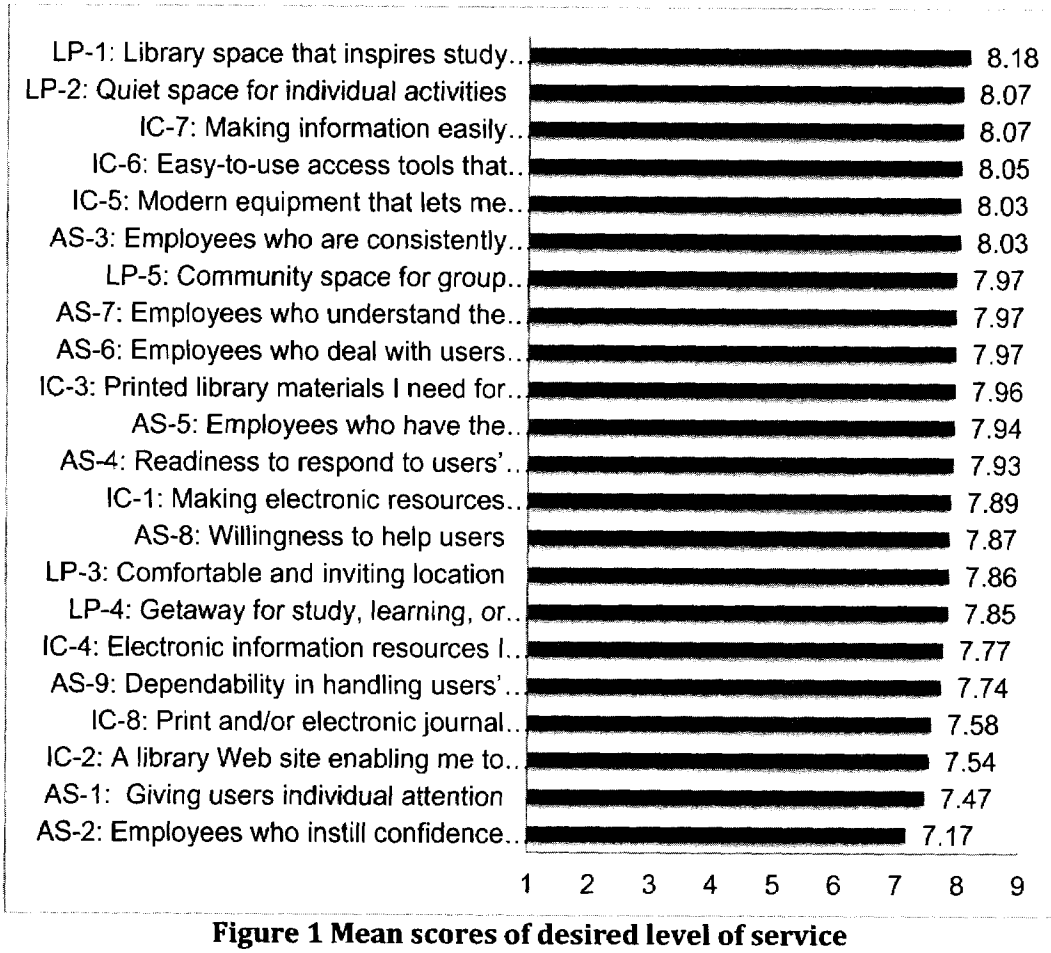


Figure 1 Mean scores of desired level of service

The Figure 1 shows mean scores of desired level of services by respondents given in the descending order. The respondents most desired item is library space that inspires study and learning (8.18) followed by quite space for individual activities (8.07), making information easily accessible available for independent use (8.07) and so on. However, the Employees who instill confidence in users is the least desired level of service (7.17).

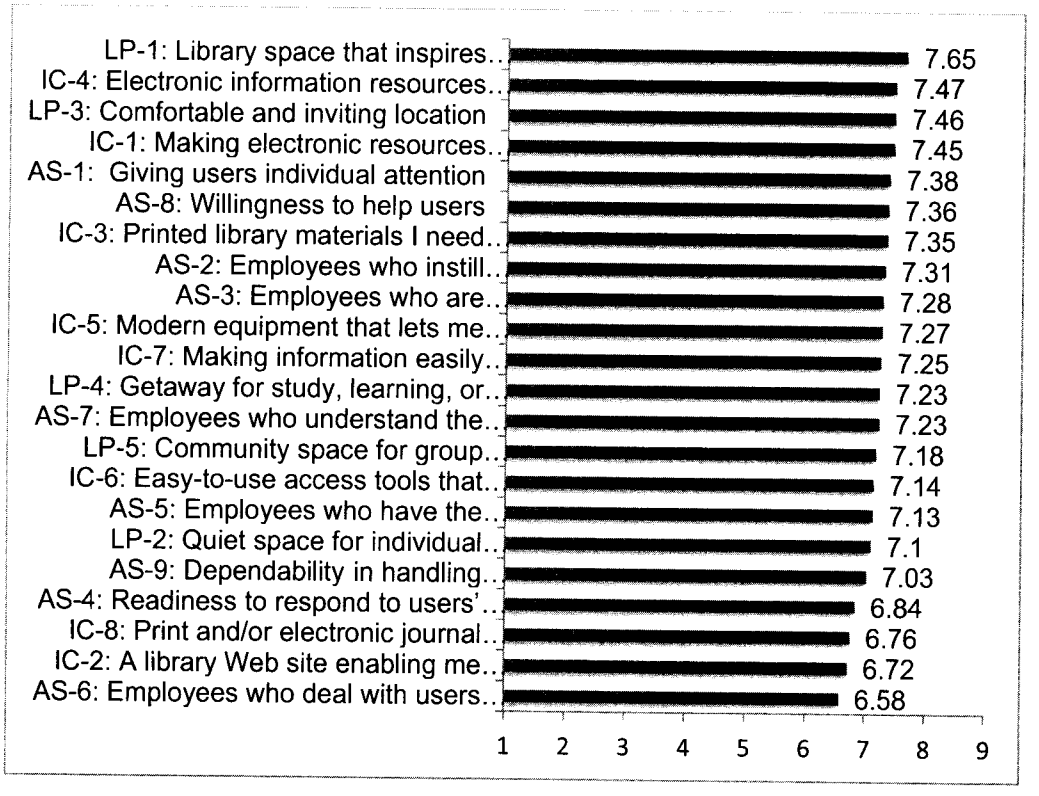


Figure 2 - Mean scores of perceived level of service

The Figure 2 shows mean scores of perceived level of services as experienced by respondents given in the descending order the respondents most perceived item is library space that inspires study and learning (7.65) followed by electronic information resources I need (7.47), Comfortable and inviting location (7.46) an so on. Whereas Employees who deal with users in a caring fashion the least perceived level of service (6.58).

Table 2 Paired sample t test for difference in mean scores

Items		N	Desired level Mean ± SD	Perceived level Mean ± SD	Mean Diff.	T Value	P value
AS-1	Giving users individual attention	105	7.54±1.611	7.25±1.674	1.770	1.770	.080
AS-2	Staff who instill confidence in users	108	7.47±1.537	7.03±1.531	3.188	**3.188**	**.002***
AS-3	Staff who are consistently courteous	110	7.74±1.690	7.46±1.668	1.665	1.665	.099
AS-4	Readiness to respond to users' questions	112	7.94±1.441	7.65±1.564	1.950	1.950	.054
AS-5	Staff who have the knowledge to answer user questions	111	7.93±1.326	7.38±1.402	3.829	3.829	**.001***
AS-6	Staff who deal with users in a caring fashion	111	7.85±1.316	7.36±1.560	3.237	3.237	.002
Staff	Employees who understand the needs of their users	109	7.86±1.548	7.31±1.507	3.880	3.880	**.001***

AS-8	Willingness to help users	113	7.97±1.430	7.45±1.535	4.091	4.091	**.001***
AS-9	Dependability in handling users' service problems	98	7.77±1.569	7.47±1.694	4.016	4.016	**.001***
IC-1	Making electronic resources accessible from my home/ office	107	7.96±1.566	6.84±1.683	5.659	5.659	**.001***
IC-2	A library Web site enabling me to locate information on my own	112	8.07±1.400	7.14±1.593	4.917	4.917	**.001***
IC-3	The printed library materials I need for my work	101	7.89±1.341	7.13±1.534	4.421	4.421	**.001***
IC-4	The electronic information resources I need	109	8.03±1.424	7.23±1.451	4.891	4.891	**.001***
IC-5	Modern equipment that lets me easily access needed info.	111	8.18±1.063	7.23±1.572	5.883	5.883	**.001***
IC-6	Easy-to-use access tools that allow me to find things myself	114	8.03±1.379	7.10±1.499	1.833	1.833	.070
IC-7:	Making information easily accessible for independent use	110	8.07±1.290	7.28±1.369	6.215	6.215	**.001***
IC-8:	Print and/or electronic journals, I require for my work	105	8.05±1.410	7.18±1.592	5.094	5.094	**.001***
LP-1	Library space that inspires study and learning	109	7.58±1.663	6.72±1.758	4.141	4.141	**.001***
LP-2	Quiet space for individual activities	112	7.87±1.436	6.76±1.856	5.359	5.359	**.001***
LP-3	A comfortable and inviting location	108	7.97±1.286	7.35±1.805	3.304	3.304	**.001***
LP-4	A getaway for study, learning, or research	112	7.97±1.545	7.27±1.835	3.932	3.932	**.001***
LP-5	Community space for group learning and group study	109	7.17±2.045	6.58±1.911	2.654	**2.654**	**.009***

Table 2 shows paired sample t-test between the desired and perceived level of service quality items. Paired sample t-test was done at the .05 level of confidence. The result shows that most of the items have significant difference in desired and perceived level of service quality as p values=<.05. This indicates to reject null hypotheses, which means that there was significant difference between perceptions and expectations of service quality.

Table 3 Paired sample t test for difference in mean scores of LSQ dimensions

Dimension	N	Desired level Mean ± SD	Perceived level Mean ± SD	Mean Diff.	T value	P value
AS	116	7.77±1.068	7.35±1.193	.428	**4.39**	**.001***
LP	116	7.71±1.113	6.94±1.472	.775	**5.32**	**.001***
IC	116	8.01±1.024	7.12±1.092	.891	**7.60**	**.001***
LSQ	116	7.84±0.934	7.18±1.063	.662	**6.91**	**.001***

Table 3 shows paired sample t-test between the dimensions of desired and perceived level of service quality rendered by the university. Significant difference in mean scores was detected in desired and perceived level of service quality as p values = 0.001, (<.05). This indicates to reject null hypotheses, and significant difference was noted between perceptions and expectations of all the dimensions of service quality. The maximum mean gap i.e..891 was observed in the IC dimension, whereas minimum gap i.e. .428 was found in affect of service dimension.

Table 4 Analysis of variance of perceived service level across users' status

Dimension	Status	N	Mean	SD	F value	P value
ASPER	UG	71	7.13	1.170	**4.705**	**.004***
	PG	25	8.10	.782		
	RS	9	7.12	1.024		
	Faculty	11	7.19	1.628		
	Total	116	7.35	1.193		
LPPER	UG	71	6.59	1.575	**4.574**	**.005***
	PG	25	7.77	.879		
	RS	9	7.27	.889		
	Faculty	11	7.05	1.534		
	Total	116	6.94	1.472		
ICPER	UG	71	6.88	1.053	**4.417**	**.006***
	PG	25	7.70	.990		
	RS	9	7.56	.705		
	Faculty	11	7.00	1.326		
	Total	116	7.12	1.092		
PER	UG	71	6.93	1.035	**5.872**	**.001***
	PG	25	7.90	.742		
	RS	9	7.33	.750		
	Faculty	11	7.09	1.398		
	Total	116	7.18	1.063		

Analysis of variance was applied in table 4 totest the significant difference in the perceived level of LSQ with respect to status of users if any. There was difference in the mean scoresof LSQ and its dimensions across status of respondents. Mean scores of postgraduate respondents was more than other respondents. This indicates to reject null hypotheses, and significant difference was noted between perceived level of LSQ and its dimensions as p value =<.05.

Table 5 One sample t – test for significant degree of users satisfaction

Items	Test Value = 5				
	N	Mean ± SD	Mean Difference	t	P value
In general, satisfied with the way I am treated at the library.	111	5.74±1.838	.74	4.236	**.001***
In general, satisfied with library support	11	5.75±1.828	.75	4.328	**.001***

for my learning, research.	0				
Rate overall quality of service provided by the library	11 1	5.84±1.671	.84	5.283	.001*
Overall Satisfaction	11 6	5.76±1.457	.76	5.610	.001*

In table 5, one sample t-test was to find out degree of user satisfaction with library service quality with a test value of 5. The analysis indicates that mean scores of all three questions to measure the degree of users satisfaction was more than 5 test value, which indicates that the respondents were moderately satisfied with library services rendered by the library.

Table 6 Correlation between Users satisfaction and LSQ dimensions

	ASPER	LPPER	ICPER	PER
Overall Satisfaction	.568**	.596**	.618**	.677**
	.000	.000	.000	.000
	116	116	116	116
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 7 Regression Analysis

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	F Change	Sig. F Change
1	.618[a]	.382	.376	1.150	70.429	.000*
2	.686[b]	.471	.461	1.069	18.996	.000*
a. Predictors: (Constant), ICPER						
b. Predictors: (Constant), ICPER, LPPER						

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.110	.707		-.156	.877
	ICPER	.824	.098	.618	**8.392**	.001*
2	(Constant)	-.649	.669		-.970	.334
	ICPER	.551	.111	.413	**4.978**	.001*
	LPPER	.358	.082	.362	**4.358**	.001*

The impact of independent variables (i.e.AS, LP and IC) ondependent variable (user satisfaction) was determined via multiple regression analysis in table 7.The adjusted R^2 = 0.471 accounted for 47.1% variance in dependent variable is explained by the independent variables. Significant value is set at 95% significance level. Hypotheses were investigated to check the impact on user satisfaction byLSQ dimensions. IC has highest standardized beta coefficient value i.e. 0.824 followed by LP with value i.e. 0.358 signifying that these two dimensions predict library user satisfaction. AS is not significantly effecting user satisfaction.

7. Findings and Conclusion

The study attempted to assess the LSQ at RGNLU, Patiala. The findings of the study revealed that 82.9% of the total respondents physically visit the library daily or weekly and more than half of the respondents i.e. 59 (50.9%) access the library website weekly. The most desired LSQ item was library space that inspires study and learning (8.18) followed by quite space for individual activities (8.07), making information easily accessible available for independent use (8.07) and so on, but perceived service level of LSQ items differ from the desired service level. Library space that inspires study and learning... (7.65) followed by electronic information resources I need... (7.47) and Comfortable and inviting location (7.46) were ranked high in the perceived service level. The significant difference in perceived and desired service level was noted among most of the LSQ items and all the three LibQUAL dimensions. Moreover the maximum gap was found in the IC dimension. Postgraduate respondents have the maximum perceived mean scores and significant difference was observed in the perceived LSQ level across status of respondents. The study also investigated that the respondents were moderately satisfied with services rendered by the library. Information control dimension, which represents the library collection and information resources determine the maximum degree of user satisfaction. Regression analysis also revealed that perceived level of IC and LP significantly predicts the degree of user satisfaction.

On the basis of findings, there is need to make efforts to improve the affect of service dimension which consists of item related to library staff and their interaction with respondents. The findings of LibQUAL survey can help the library to focus the areas, where improvement is required. The regular assessment of library service quality can serve the university administration to evolve a strategic planning for library services to meet the user needs effectively.

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Total Quality Management and Its Application in University Libraries of Andhra Pradesh: *A Study on User's Opinion*

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Abstract: This Paper aims to analyses and evaluate the TQM in University Libraries with a view of examining the exposure of facilities and services, quality collection development of library resources in different universities libraries of Andhra Pradesh. And also, examine the library organization and access. Finally it aims to know the user's opinion towards the library professional staff in university libraries. The authors investigate the users through a survey based on structure questionnaire. Various statistical methods have been used for data analysis. The study confirmed that user's are requesting the quality of library resources and services and qualified library professionals in the university libraries of Andhra Pradesh.

Keywords: Quality Libraries, Quality Management, Quality services and University Libraries

1. Introduction

A large number of contemporary organizations across the world have adopted Total Quality Management (TQM) to satisfy customers throughout quality products and responsive services in order to gain competitive advantages. TQM first took its roots in improving quality of physical products, as the measurement of quality performance of such products, but in organizational transformation specifically in bringing about a cultural change, in improving employees moral and in facilitating an empowering working environment for attaining excellent human performance. The philosophy of TQM, is as important to any organization profound growth and sustaining more consistently in the context of continuous changes and ever expanding competition have become overwhelming and all pervasive concerns for all types of enterprises. TQM focuses on the integration and coordination of all activities in a work process and aims at continuous improvement in quality.

2. Need for the study

A number of studies were carried out to assess and evaluate the effectiveness, efficiency, flexibility and competitiveness among the libraries. In this direction the University Libraries are not exception. At present the libraries are facing a lot of problems owing to benchmarking. The reputation and quality of the library services are evaluated with a number of performance indicators. In this direction, a study is carried out to apply the

various aspects to Total Quality Management (TQM libraries. Therefore this study made an attempt to find out how far TQM can be applied to University Libraries.

3. Objectives of the Study

- To evaluate the existing quality level of management;
- To know the availability of facilities and services in different universities libraries in Andhra Pradesh;
- To explore the expectations of library users (External library customers) on quality collection development of library resources;
- To examine the library organization and access; and
- To know the user's opinion towards the library professional staff.

4. Scope and Limitations of the Study

At present (May 2014) there are 43 universities are exists covering the various subjects, established from 1918 onwards. Owing the age and importance the following University Libraries were undertaken for this study, as they are deemed well established.

Table 1 - Category wise List of Universities in Andhra Pradesh under study

Category	S.No.	Name of the University	Year of Establishment
Old Universities	1	Osmania University	1918
	2	Andhra University	1927
	3	Sri Venkateswara University	1954
Young Universities	4	Kakatiya University	1976
	5	Nagarjuna University	1976
	6	Sri Krishnadevaraya University	1976
Special Universities	7	University of Hyderabad	1974
	8	Rasthriya Sanskrit Vidya Peetha	1961
	9	Acharya N.G. Ranga Agricultural University	1982
	10	Sri Padmavathi Mahila Viswavidyalayam	1983

5. Methodology

As stated earlier, the present study is confined only to ten universities of Andhra Pradesh, proportionate stratified random sampling method is adopted to collect data for the present study. A structured questionnaire were designed and distributed among Users in the university libraries.

6. Data Analysis

The data collected from the questionnaires has been analysed to fulfill the stated objectives. For this purpose, Statistical Package for the Social Science (SPSS) software package has been used for the analysis of data. Statistical analysis techniques such as Skewness and Chi-Square test, Likert-type Scale Analysis have been employed depending on the nature of the data collected from the respondents.

Table 2 - Status of User's in Universities

Status	Old Universities		Young Universities		Special Universities		Overall	
	No.	%	No.	%	No.	%	No.	%
Faculty	301	25.51	167	20.67	203	18.97	671	21.94
Research Scholar	343	29.07	271	33.54	308	28.79	922	30.15
PG Student	536	45.42	370	45.79	559	52.24	1465	47.91
Overall	1180	100.0	808	100.0	1070	100.0	3058	100.0

From the Table 2, it is found that the majority of the users 47.91% postgraduate students, 30.15% research scholars, and rest of the 21.94% teaching faculty members. On further analysis of the data, Old universities libraries has got highest i.e. 25.51% of the user faculty, young universities libraries has got highest i.e. 33.54% of the user group of research scholars and Special universities libraries has got highest i.e. 52.24% of the postgraduate student users respectively.

Table 3 - Category of Universities Users' opinion Vs Library Resources

Library Resources	Old Universities (N=1180)		Young Universities (N=808)		Special Universities (N=1070)		Overall (N=3058)	
	Skewness	Chi-Square	Skewness	Chi-Square	Skewness	Chi-Square	Skewness	Chi-Square
Books	-1.200	301.5	-0.769	153.4	-0.986	378.8	-0.993	113.3
Reference sources	-1.102	211.1	-0.358	257.0	-0.849	198.3	-0.955	518.6
Periodicals	-1.129	213.1	-0.398	61.9	-1.013	255.3	-0.850	218.9
Indexing & Abstracting journals	-0.817	151.9	-0.111	93.6	-0.363	332.4	-0.450	293.3
Thesis/ dissertations	-0.896	166.8	-0.260	98.2	-0.828	261.3	-0.716	198.3

Bibliographies	-0.820	264.6	-0.146	64.6	-0.719	382.5	-0.595	181.3
Manuscripts	-0.032	200.4	0.706	146.8	-0.011	330.9	0.170	234.5
Microfilms/ Microfiche	0.127	104.5	0.785	82.4	0.097	281.3	0.327	316.1
Audio/ Video Sources	0.116	221.0	0.887	199.1	0.177	319.2	0.311	225.7
CD ROM database	-0.181	226.4	0.536	130.4	-0.132	382.3	0.025	152.0
Internet	-1.173	213.1	-0.445	184.6	-1.059	389.2	-0.904	185.5

Table 3 shows the skewness values have been computed for each and every facet of Library and Information Resources in order to determine the relevance and usefulness of library collection for course and research activities of the users in the university libraries of Andhra Pradesh. The collection of books (-0.993), reference sources (-0.955), internet (-0.904) periodicals (-0.850) and thesis/dissertations (-0.716) are in the university libraries is expressed as fully satisfied by the users as they indicated relevant and useful for course and research activities. The users group has no specific opinion regarding the collection of ROM databases (0.025), manuscripts (0.170), audio/video sources (0.311) and microfilms/microfiche (0.327).

The computed Chi Square Test of Goodness Fit Test on all the observation of collection development of Library Resources found to be significant at 0.01 level of significance.

Table 4 - Category of Universities Users opinion Vs Library Organization and Access

Library organization and Access	Old Universities (N=1180)		Young Universities (N=808)		Special Universities (N=1070)		Overall (N=3058)	
	Skewness	Chi-Square	Skewness	Chi-Square	Skewness	Chi-Square	Skewness	Chi-Square
Directional signs/guides	-1.072	318.3	-0.446	233.4	-1.008	356.8	-0.903	195.4
Consonant of library classification & cataloguing	-1.122	214.0	-0.441	32.3	-0.899	463.1	-0.836	362.1
The printed catalogue is available	-1.332	431.1	-0.250	118.0	-1.299	370.7	-0.959	393.7
The OPAC is available	-0.136	150.0	-0.273	105.8	-0.133	257.2	-0.196	130.4
The OPAC is familiar and satisfactory	-0.490	217.9	-0.234	70.4	-0.374	376.2	-0.394	105.9
Difficult to get relevant information	-0.071	145.8	0.389	161.1	-0.080	303.6	0.046	97.5
Easy to locate the library collection	-0.644	142.1	-0.438	177.6	-0.599	205.9	-0.653	174.2
Library collection are properly shelved	-0.866	137.2	-0.544	170.7	-0.822	189.8	-0.776	88.3

Library materials are reshelved promptly	-0.909	248.3	-0.244	118.2	-0.863	329.0	-0.732	246.8
I am able to obtain the relevant information	-0.866	151.0	-0.182	152.6	-0.810	226.1	-0.637	189.7
Good condition of library materials	-1.167	6.0	-0.234	82.3	-1.163	328.9	-0.888	454.8
Mechanism to tell particular document is available at a given point of time	-0.885	356.1	-0.640	217.0	-0.803	300.4	-0.789	26.2

Table 4 shows majority of the users response on organization of reliability of printed catalogue (-0.959), the clear and meaningful directional signs and guides in the library (-0.903), Library collection and cataloguing (sk-0.840), library materials are in good conditioned (-0.888), classification and cataloguing of library materials are consonant (-0.836), The library collection/materials are properly shelved (-0.776), The library materials are reshelved promptly (-0.732) library materials are found to be consistent in university libraries of Andhra Pradesh expressing as fully satisfied by the users. However, the users of university libraries of Andhra Pradesh are not satisfied towards the search for not got their relevant information (0.046) and organization of library collection and access like OPAC availability for getting and searching reliable information (-0.196).

To substantiate the above statements, the data was computed with the Chi-Square Test of Goodness Fit Test, which reveals that all the facets in the above table found to be significant at 0.01 level of significance.

Table 5 - Category of Universities Users opinion Vs Library Services

Library Services	Old Universities (N=1180)		Young Universities (N=808)		Special Universities (N=1070)		Overall (N=3058)	
	Skewness	Chi-Square	Skewness	Chi-Square	Skewness	Chi-Square	Skewness	Chi-Square
Knew the library facilities & services	-0.656	120.6	-0.306	176.6	-0.746	148.4	-0.773	482.8
Circulation services	-1.178	235.9	-0.297	174.4	-1.071	358.3	-0.843	370.0
Indexing & Abstracting	-1.024	278.6	-0.418	165.7	-0.960	365.4	-0.858	187.8
Bibliographic	-1.081	280.3	-0.388	134.1	-0.410	220.2	-0.698	308.4
Newspaper Clipping	-0.083	160.6	0.716	173.7	-0.086	346.7	0.098	342.1
Current Content Services	-0.935	262.2	0.516	170.1	-0.340	359.1	-0.556	1209.6
SDI	-0.254	130.3	0.675	174.2	-0.165	387.2	0.016	246.2

Photocopying	-0.716	263	-0.453	99.4	-0.619	450.6	-0.622	133.2
Online Catalogue (OPAC)	-0.762	210.4	-0.110	89.8	-0.259	281.7	-0.597	728.3
CD-ROM services	-0.287	169.7	0.670	262.9	-0.320	407.4	-0.065	399.0
Internet	-1.187	332.1	-0.271	147.4	-1.168	458.1	-0.985	432.6
User Education/ Orientation	-0.774	166.5	0.397	124.6	-0.678	283.5	-0.387	652.6
Inter Library loan	-0.077	180.4	0.611	200.1	-0.082	351.7	0.084	278.6

Table 5 describes the response from the users on the university library services offered by the university libraries of Andhra Pradesh. The opinion from the users is well about the information services extended to the user community by the university libraries in Andhra Pradesh (-0.773). From the table, it is clear that, the users are fully satisfied with internet (-0.985), indexing and abstracting (-0.858), circulation services (-0.843), bibliographic service (-0.698), photocopying (-0.622). However, the users could not make demarcation about the satisfactory or dissatisfactory of library services viz. newspaper clipping (0.098) Selective Dissemination of Information (0.016) and inter library loan (0.084).
The computed Chi-Square values for the Library and Information Services are found to be significant at 0.01 level of significance.

Table 6 - Category of Universities Users opinion Vs Library Professional staff

Professional Staff	Old Universities (N=1180)		Young Universities (N=808)		Special Universities (N=1070)		Overall (N=3058)	
	Skew ness	Chi-Square	Skew ness	Chi-Square	Skew ness	Chi-Square	Skew ness	Chi-Square
Staff attend promptly	-1.052	165.7	-0.513	132.6	-0.592	323.6	-0.716	160.8
Staff are near to the readers	-0.943	206.3	-0.004	116.2	-0.862	272.8	-0.667	548.1
Staff take personnel interest	-0.650	249.1	-0.521	105.0	-0.551	395.2	-0.585	85.9
Staff are efficient skills	-0.916	217.1	-0.294	84.2	-0.638	426.4	-0.707	404.1
Staff available at reference desk	-1.040	273.2	-0.120	86.6	-0.982	366.6	-0.711	329.2
Ability of staff to providing services	-0.849	215.3	-0.235	79.0	-0.813	313.5	-0.740	344.4
Staff teach, use catalogue & etc.	-0.631	209.6	-0.297	79.0	-0.567	350.9	-0.527	266.6
Staff encourage me	-0.344	194.3	-0.324	113.3	-0.413	361.0	-0.363	25.3
Provide correct	-	132.2	-0.111	105.0	-	213.7	-0.476	305.6

answers to my queries	0.582				0.533			
Do not pass my query to other staff	-0.933	218.6	-0.153	107.9	-0.929	299.9	-0.795	570.4
Understand easily the information	-0.621	123.2	-0.384	140.0	-0.547	216.0	-0.580	176.0
Directing me to resourceful libraries	-0.489	229	0.015	120.9	-0.382	371.1	-0.306	172.7
Availability of knowledgeable staff	-1.064	233	-0.521	101.8	-1.127	310.6	-1.026	348.5

From the Table 6, it is found that, most of the users are fully satisfied with the all facets of library professional staff. Promptness of library staff (-0.716), strong communication ability (-0.740), efficiency of library professionals in providing relevant materials from the library collection (-0.707) shirking responsibility (-0.795), user orientation (sk-0.762) and who are always available at reference desk (sk-0.711).

The observations made on all the facets of university library professionals found to be significant at all 0.01 level of significance in Chi-Square Test.

Table 7 -Category of Universities Vs Library Infrastructure Facilities

Infrastructure Facilities	Old Universities (N=1180)		Young Universities (N=808)		Special Universities (N=1070)		Overall (N=3058)	
	Skewness	Chi-Square	Skewness	Chi-Square	Skewness	Chi-Square	Skewness	Chi-Square
Adequate staff	-1.123	246.5	-0.452	127.6	-1.086	391.3	-0.968	340.2
Sufficient: research cabins	-0.396	160.3	-0.083	125.8	-0.260	412.5	-0.252	68.4
Convenient furniture's	-1.023	225.6	-0.181	138.6	-1.067	347.1	-0.833	461.7
Lighting and ventilation	-0.988	205	-0.380	248.6	-0.963	394.5	-0.808	171.4
Suitable humidity/ temperature	-0.638	381.5	-0.335	95.8	-0.554	514.3	-0.485	250.4
Maintaining toilets	-0.764	177.6	0.344	179.5	-0.684	252.3	-0.444	451.8
Peaceful study halls	-1.072	269.7	-0.332	146.3	-1.029	445.6	-0.819	190.9
Good library building	-1.022	229.1	-0.464	171.2	-0.993	423.4	-0.837	124.6
Drinking water	-0.736	123.3	0.585	198.9	-0.702	189.0	-0.515	1057.7
Feedback mechanism	-0.457	148.5	-0.302	117.5	-0.332	436.1	-0.365	57.7

Attractive interiors	-0.816	147.8	-0.187	53.7	-0.759	204.3	-0.627	264.2
Grievance cell	-0.302	152.6	-0.289	125.4	-0.355	263.4	-0.339	81.2
Photocopier	-0.781	178.8	-0.330	226.5	-0.722	237.0	-0.633	89.4
Audiovisual aids	-0.082	149.3	0.446	140.7	-0.027	388.9	0.099	343.4
Computer systems	-0.344	225.4	0.224	165.1	-0.447	413.4	-0.243	219.0
Microfilm/Microfiche readers	-0.011	172.5	0.297	227.7	0.007	368.4	0.073	124.4
Printers	-0.343	80.9	0.253	298.1	-0.208	418.0	-0.121	188.0

From the table 7, it is found that the majority of the users in the university libraries of Andhra Pradesh expressed their fully satisfied with the library infrastructure facilities such as library opening/closing hours (-1.010), adequacy of staff (-0.968), safely library building (-0837), suitable furniture (-0.833), silent reading halls (-0.819), sufficient photocopiers machines (-0.815), lighting and ventilation (-0.808), good working conditions of photocopier (-0.633) and attractive interiors (-0.627). However, the users could not make demarcation about the satisfactory or dissatisfactory of library services viz. good conditions of Audiovisual aids (0.099), microfilm/microfiches (0.073), Printers (-0.121), computer systems (-0.243).

7. Major Findings

- The users in the older universities library system are satisfied with the relevance and usefulness of quality books, reference sources, periodicals and Internet access facilities. However, the users in the universities libraries of Andhra Pradesh are like microfilm/microfiche, audio/video sources, CD-ROM databases, bibliographies have been considered as least useful and relevant to their course related activities.
- The users in the universities libraries environment of Andhra Pradesh are satisfied with the library organizational tools like Printed catalogue, classification and cataloguing, directional signs and guides, reference collections, proper and prompt shelving of library collection and its god conditions and also retrieval tools.
- The facilities and services extended in the university library are known to the users. However they are satisfied towards the remaining information services extended to them in the older universities libraries of Andhra Pradesh.
- The users of the universities are fully satisfied with the library professionals inviting ability and attending the query promptly with their strong grasping power, making themselves available at all the service points of the library. As regards to the remaining features of the library professionals, the customers are passive.
- The users are highly satisfied with quality infrastructure facilities available in the older universities libraries of Andhra Pradesh. They are: library opening/closing

hours, adequacy of library staff, silently reading halls, suitable library furniture, sufficient lighting/ventilation, reading hall, safety/security in the library, Library building and photocopiers. However, they are dissatisfied with the conditions of Audio visual aids, microfilm/microfiche readers and also availability of computers.

8. Suggestions

- The university library has to develop a need-based and quality collection of information sources with latest editions, which are relevant and useful for course and research activities of the users. Further, provisions for multiple copies of text books are made.
- The information services especially reference service, documentation service and reprographic service has to be improved considerably in extending personalized quality based services to the users.
- As the customers in the university environment are not much aware about the significance of secondary tools like bibliographies, Indexing and Abstracting Sources, efforts should made by the library managers in imparting the importance of these information sources as a basic tool for pursuing research by conducting user orientation as a regular feature of the library.
- The library collection has to be properly organized and re-shelved promptly by making provision of directional signs and guides. The library materials should be maintained in good condition.
- The classification and cataloguing tools act as a mirror of the library and therefore, classification and cataloguing of library materials should be consistent and updated regularly for providing access to quality collection to the customers.
- The library staff should attend the customer problems very carefully by providing timely service and accurate answers to a query. They should be courteous, have good attitude with helping nature to treat the library customers with respect and smile; conformance to the customer's requirement is centrifugal for TQM. The university libraries that are caring the customer's perceptions and expectations will certainly move towards the service quality culture in the university library system.
- The library services processes and practices should be planned keeping in view of the customer needs and demands. The librarian should give an opportunity to the library professionals for developing work process of the library. A joint team effort has to be made in improving the work process, procedures and practices for quality culture.
- The infrastructure facilities like research cabins; lighting and ventilation, drinking water facility, toilet facility; gardening and generator facility has to be strengthening the quality dimension of Tangibility.

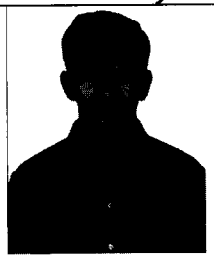
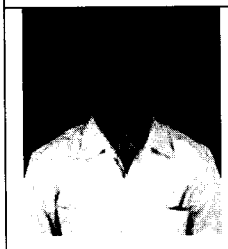
- Adequate financial provision should be made to procure books and periodicals and also up gradation of computer infrastructure and thereby meeting the nascent information needs of the customers.

9. Conclusion

The success and sustenance of libraries in future depends upon their capability to be more dynamic and continually to prove their value in academic and research endeavor. The only alternative left to the university libraries is to adopt TQM in all the integrated library activities and services and thereby contribute to the productivity and accomplishments of the customer expectations. The university library systems had a variety of reasons for implementing and promoting TQM, due to increase demands for quality service from the customers, impact of information technology and rising costs, resulting from inflation were becoming the standard for today's university systems. Greater efficiency, improved service and optimum utilization of resources are the reasons for undertaking TQM in the university library systems. The importance of quality has been in the past and this will march into the future and remain as key strategic importance to the librarianship. But the ultimate goal in obtaining highest quality products and services remain as an integral part of our library profession's ethos and no matter what modern management tools do we apply in search of "Quality".

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Application of Transactional Analysis in Library and Information Profession: *methods and techniques*

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Abstract: This paper tries to explore the application of Transactional Analysis in the field of library and Information profession. Tools of Transactional analysis can improve the interpersonal and intrapersonal intelligence of library professionals. As far as library and information professionals concern various dimensions of transactional analysis such as personality analysis, communication analysis and motivation analysis are very much relevant for application in library and information profession. It also provides useful insights for improving the value added services of the library by adopting adequate positive stroke.

Keywords: Transactional analysis, stroke, motivation, verbal stroke, non verbal stroke

1. Introduction

International Transactional Analysis Association (ITAA) defined 'transactional analysis (TA) as a theory of personality and systematic psychotherapy for personal growth and personal change'. Transactional analysis (TA) today is all this and much more. Among psychological approaches TA is outstanding in depth of its theory and wide variety in its applications. As a theory of personality it gives us a picture of how people are structured psychologically. TA also provides a theory of psychotherapy, child development, and psychopathology and most importantly as a theory of communication. As far as library and information professionals concern various dimensions of transactional analysis such as personality analysis (structural and functional analysis), communication analysis (transactional analysis proper) and motivation (stroking) are very much relevant for application in library and information profession.

There have been a few studies on application of TA in various organizational settings including educational set up. Some of them have been cited here. Mohammed Aldoghan (2014) explored the ways in which transaction analysis helped to improve the personality and leadership of individuals and team in Saudi Organization. This conceptual paper which is applicable both private and public companies in Saudi Arabia explored that for healthy personality in Saudi organization the three ego state such as Parent ego state, Adult ego state and Child ego states are important. He found that the transformational leadership OK ego state can contribute to improvement in strategic planning, corporate image, recruitment, selection and transfer of employees in Saudi organization.

Thollander (2014) explored transactional analysis in relation to post-graduate supervision with an objective of exploring the benefits and values of TA as a way to further understand and work with Ph D supervision. Using TA and the legitimacy ladder applied on PhD education, a modified model for increased understanding of the Ph D student supervision process is presented, and is then related to empirical findings from a questionnaire among Ph D students. The model shows for example the need for the supervisor to balance his or her role towards the PhD student, and suggests that professional Ph D student supervision means moving from a Parent to Child relationship between the supervisor and the Ph D student; towards a more mature Adult to Adult relationship.

Ciucur and Pirvut (2011) conducted a study on the effects of a transactional analysis training programme on team leadership factors in automotive industry. The aim of this study was to identify a modality to improve the leaders' and managers' qualities and abilities requested in team leadership. The results highlighted significant differences regarding Emotional Stability and Social Boldness between the managers who attended a Transactional Analysis based Leadership Training Programme and those who did not attend. Barrow (2007) wrote a conceptual paper on Transactional Analysis, Pastoral Care and Education. In it he opined that TA enhances pastoral care in mainstream and special education contexts. The author introduces TA as a powerful educational theory and provides illustrative accounts of how it is being applied in classrooms and staffrooms in the United Kingdom.

2. Theoretical concepts and models of Transactional Analysis

- **Basic assumptions of TA:** TA rest on certain philosophical assumptions. The followings are the philosophical assumptions on which TA is based.
    - People are OK.
    - Everyone has the capacity to think.
    - People decide their own destiny which can be changed.

- **Main elements of Transactional Analysis**
    - Structural Analysis: Structural analysis is the segregation and analysis of Parent, Adult and Child ego-states which comprises individual personality.
    - Functional analysis: Functional analysis utilizes the flow and distribution of psychic energy within and between three ego-states.
    - Transactional analysis proper: Transactional analysis proper consists of determining which ego-state in one person is transacting with which ego-state in another and in what ways.
    - Stroke analysis: Stroke analysis analyzes the content of communication and the interaction of parties who exchange stroke.

- Game analysis: Game analysis is the analysis of a series of social transactions that are accompanied by covert ulterior transactions which leads to a well defined pay off. The goal of this phase is for counseling clients to gain awareness of the psychological game they play, how they initiate those games and how they get hooked in them by others.
- Racket analysis: Racket analysis emphasis the ways in which people manipulate each others.
- Relationship analysis: Relationship analysis analyzes the pattern of transactions.
- Script analysis: Script analysis is analysis of life dramas that people act out usually without awareness.

3. Relevance of Transaction Analysis in libraries

It is to be mentioned that not even a single study has been happened on the application of transactional analysis in library and information field. This paper will focus on the application of the concept of 'stroking' in libraries. We propose that TA can be applied in library and information profession for enhancing the performance of the libraries in general and to improve the quality of library services in particular. Transactional analysis can be applied at various areas and levels in library and information centre management. Some of the possible areas are as given below:

- Developing effective interpersonal communication in libraries
- Establishing complimentary communication (effective communication) in libraries
- Developing and transforming the organizational culture of the libraries.
- Proactive conflict management in the libraries
- Motivating and inspiring patrons to become habitual use.

This paper tries to explain the relevance of the fourth element of stroke analysis in library and information profession. Before entering into stroke analysis I would like to explain basic life positions (basic attitude) as mentioned in transactional analysis theory shortly as it will be helpful in understanding the relevance of stroke analysis in library and information profession.

4. Life Positions

In TA , 'Life Position' means to the general attitude about life (specifically the subconscious feeling as opposed to a conscious philosophical position) that play in every dyadic transaction. The basic life positions as mentioned in TA theory as given below.

- I'm not OK, You're OK (I-U+)
- I'm not OK, You're not OK (I-U-)

- I'm OK, You're not OK (I+U-)
- I''m OK, You're OK (I+U+)

5. Stroke Analysis

According to Eric Bern a stroke is a basic unit of recognition. A stroke is a unit of attention which provides stimulation to an individual. Physical stimulation is a basic human need. This is supported by various researches and it was noted that children deprived of physical stimulation may sink into decline and become prone to death. Berne described this as stimulus hunger. As we grow and develop our stimulus hunger develops and is partially transferred to a psychological version which Berne describes as recognition hunger. Here I would like to define stroke pragmatically as a transaction which provides a person with either recognition or stimulation.

- **Types of Strokes**

  - Conditional stroke and Unconditional stroke: Conditional stroke is related to what you do. A recognition given for your action can be called as a conditional stroke.
  - Unconditional stroke: An unconditional stroke is related to what you are. In other words, it is a recognition or reinforcement given to your being.
  - Positive and Negative stroke: A positive stroke is the one which the receiver experience as pleasant. A negative stroke is the one which is experienced as painful to the receiver.
  - Verbal stroke and Non-verbal stroke: Strokes can be exchanged verbally as well as non-verbally. Verbally given strokes are called verbal strokes, whatever given non-verbally may be called as Non-verbal stroke.

The above mentioned types of strokes are exchanged in a complexed and multi-dimensional way among individuals. The following types of strokes are most commonly used by individuals in their transactions. So we would like to detail about them.

- Unconditional positive stroke: It is the unconditional acceptance of the being of the other person. It is a very powerful tool to apply at any work environment. It is a magical tool of healing human mind.
- Conditional positive stroke: This type of strokes can be used for reinforcing positive behaviors.
- Unconditional negative stroke: This means the unconditional denial of the being of the other persons. It is a dangerous weapon with everlasting negative impact. Use of this kind of stroke is not at all healthy in any organization. But it is a most dangerous weapon which can destroy the mind of other person or sometimes the organizational climate of the institution

- Conditional negative stroke: Conditional negative stroke can be used for controlling the undesirable behaviors of other person. It is the non-reinforcement of the work of the other person.
- Verbal and Non-verbal strokes : Verbal strokes are given verbally whereas non-verbal strokes are given through gestures, postures, eye-contact and such types of body languages. Non-verbal strokes are also equally powerful as that of verbal strokes.

6. Application of strokes in libraries

Strokes can be effectively utilized for improving the user delight. Some of the applications of the strokes in library profession are given below.

- Establishing rapport with new patron: Strokes can be used for attracting a potential patron as a patron of the library. Unconditional positive strokes either verbally or non-verbally will do the job of establishing rapport and an emotional attraction towards the library system in the mind of the new patron.
- Retaining old patrons: Conditional as well as unconditional positive strokes may be utilized by librarians for retaining the enthusiasm of the patrons to visit and utilize the library.
- Value addition of library services Any library services rendered with a positive stroke will definitely leads to positive subjective evaluation of the particular library service. So we would like to suggest that any service rendered in the library, let it be reprographic service or document delivery service, must be given with a positive stroke.
- Staff motivation: Strokes can be used for motivating staffs of the library in order to empower them to provide better library service.
- Organisational culture and strokes: Organisational culture of a library has much to do with the user satisfaction. Positive or a democratic organisational culture is a pre-requisite for the higher level of user satisfaction. For attaining a positive organisational culture recognizing, motivating and healing the personality of each staff member and patron is necessary and stroking is a better tool for this purpose.
- Strokes can be used for maintaining discipline in the library. Conditional negative stroke may be used for reducing undesirable behaviours occurs at the side of patrons.
- Improvement in the quality of library services through stroking: Active listening to the patrons is an unconditional positive stroke which can lead to the improvement of the quality of the library services.
- Use of the strokes for improving the effectiveness of user education: Strokes can be effectively used for making library user education sessions more lively and active.

- Organizational commitment can be enhanced by adopting positive stroking in the libraries. The professionals will be more committed to the work and the organization by adopting positive strokes.
- Stroking can be used for reducing the library anxiety and bewilderment of new patrons. The new patrons may feel much more relaxed with the library environment.
- Stroking will give a healing touch to the patrons who suffer from some types of stress and boredom. So it is also reduce the stress and stain while utilizing the library through this manner.
- In information seeking a patron undergoes various types of psychological agonies which include both cognitive and emotional elements. Stroking will reduce this kind of psychological agonies.

7. Conclusion

Providing right information at right time in a right way is the aim of any library information centre. For attaining this goal we need to approach every patron in a personalized manner. Tools of Transactional analysis can improve the interpersonal and intrapersonal intelligence of library professionals. We would like to conclude that a transactional analysis psychology approach is highly recommended in library and information science. We would like to suggest some measures for improving the quality of library services.

- Training in transactional analysis is to be given to all library and information professional at post graduate level itself. (Many of the university courses in India like M Com, MBA, B Ed , M Ed , M Sc Computer Science has TA as a part of their syllabus)
- Transactional analysis training may be given as course as a part of refresher or orientation courses given at academic staff colleges in different universities in India.

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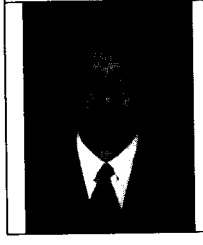
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Authorship Patterns and Collaborative Research in LIBRES Journal of Library and Information Science, 2004 - 2013

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Abstract: The article presents a bibliometric study of the journal titled "LIBRES for the period 2004 to 2013. The analysis cover mainly the number of articles, authorship pattern, country wise distribution, subject wise distribution, print and online citation pattern. Quantitative authorship pattern in the citation. This study helps to monitor the growth of the journals and the literature in the field of the library and information science.

Keywords: collaborative research, authorship pattern LIBRES journal

1. Introduction

"LIBRES is an international refereed e-journal devoted to research and scholarly articles in Library and Information Science/Service (LIS). It has a particular focus on research in emerging areas of LIS, synthesis of LIS research areas, and on novel perspectives and conceptions that advance theory and practice. It is published twice in a year. All papers are blind reviewed by at least 2 referees." [http://libres-ejournal.info/about-libres/]. Earlier this journal used be published by Curtin University, Information studies department, Perth, Australia. But now it is being jointly published by Wee Kim Wee School of Communication & Information and NTU Libraries of Nanyang Technological University, Singapore.

2. Review of Literature

Narendra Kumar and Ramesh Babu (1999) analyzed the literature published in Indian Library Aassociation (ILA) bulletin during the years 1986-1996 and discussed authorship patterns, citation patterns, and subjects covered, ranking of the contributors, nature of contributions, bibliographic forms of cited documents. Shirabe and Tomizawa (2002) studied the likelihood of overseas access to international co-authorship, and proposed a new index for international scientific co-authorship which was based on a simple model of domestic and international co-authorship. Wilkes et al. (2002) reported on investigations on Nursing Research published by Australian authors from 1995-2000 in 11 Nursing journals from Australia, UK and the USA.

Mahapatra and Padmanav (2006) examined the growth of authorship patterns, year growth, subjects of papers, category of journals, place of origin, length of papers, in scientific research productivity on Orissa were studied. Thavamani (2014) studied on Authorship Patterns and Collaborative Research in Malaysian Journal of Library and

Information Science, 1996 - 2012 and find out highest number of research articles 28 (10.036%) were published in 2011 from different countries. Majority 180 (64.516%) of the papers have been written in joint authorship. It is seen that only 99 (35.484%) of the publications are single authored and 111 (39.785%) are two authored papers. And 46 (16.487%) are contributed by three authors and the lowest number of contributions (i.e., 1 (0.358%) contributed by eight authors. Iroaganachi, Iteskor & Osinulu (2014) studied on Citation Analysis of Social Science Research: A Case Study of Bachelor Degree Research Project Reports of a Nigerian University 2009-2013 and identified that average of 39 citations per report generally was discovered which is encouraging, however at the Departmental level, Marketing had the highest mean score of citation per project report which is 50 citations, followed by Accounting with 48 Citations, then Business Administration and International Relations had an average of 46 citations respectively. The least average citation per report was that of Political science 27. The researchers generally cited more foreign authors than African authors. Sivasubramanian (2014) conducted study on Bibliometric Analysis Medicinal and Aromatic Plants Research investigated that 617 publications were found to have been published by a total of 1884 authors from across the globe. Though the overall performance of India as a nation is impressive with good number of publications, the performance of individual institutions could have been better.

3. Objectives of the Study

The objective of this study was to understand the growth of LIBRES Journal of Library and Information Science and contributor's research output in global during the period 2004 - 2013. The specific objectives are:

- To study the Contribution of Research Article by Year and Issue
- Authorship Pattern by Year and Volume and authorship patterns in general.
- To study author productivity, single and multi-authored papers by year.
- To trace subject and country wise distribution of the articles.
- To explore the citation pattern of the articles in the print as well as online resources
- To explore the productivity and citation pattern by author wise.

4. Methodology

The total number of 10 volumes of the journal of LIBRES (from 2004-2013) have been taken for the study. The details of the articles published in the all the issues of the 10 volumes have been recorded for the study. The data were retrieved from the website and recorded. The systematic calculation and tabulation have been done for the analysis.

5. Data Analysis

Table 1 - Contribution of Research Article by Year and Issue

Year	Number of Issues	Number of Contributions	Percentage (%)
2004	2	11	16.18
2005	2	7	10.29
2006	2	6	8.82
2007	2	8	11.77
2008	2	12	17.65
2009	2	5	7.35
2010	2	7	10.29
2011	2	6	8.82
2012	2	4	5.89
2013	2	2	2.94
Total	**20**	**68**	**100.00**

Table 1 shows the number of contributions (i.e. research articles) and the number of issues published by year. There have been 68 articles contributed by 88 authors were identified in last ten years. The highest number of research articles 12 (17.65%) were published in 2008 from different countries. The smallest amount of research articles 2 (2.94%) were published in 1998 and 2002.

Table 2 - Authorship Pattern by Year and Volume

Year	Volume	Author per Article					Total	%
		Single Author	Double Author	Three Author	More than three Author	Other		
2004	14	7	4				11	16.18
2005	15	6	1				7	10.29
2006	16	4	1	1			6	8.82
2007	17	5	1	2			8	11.77
2008	18	9	1	1	1		12	17.65
2009	19	3	2				5	7.35
2010	20	5	2				7	10.29
2011	21	4		1	1		6	8.82
2012	22	3	1				4	5.89
2013	23	1	1				2	2.94
Total	**185**	**47**	**14**	**5**	**2**		**68**	**100.00**

Table 2 shows the authorship patterns by year and volume. Out of the 47 contributions by single author, volume 18 has the highest number i.e., 12(17.65%) and 23 has the lowest number i.e. 2(2.94) contributions. Out of the 14 contributions by two authors, 17 has the highest i.e. 2(2.94%). And 15, 16 and 21 have the lowest number i.e., 1(2.94) contribution. Out of 2 contributions by three authors, 18 and 21 have given i.e. 1 contribution and 4, 5, 6, 7, 9, 10, 12 and 13 did not give contributions.

Table 3 - Authorship Pattern

Author	Total	Percentage (%)
Single Author	47	69.12
Double Author	14	20.59
Three Author	5	7.35
More than three Author	2	2.94
Other	-	-
Total	**68**	**100.00**

Table 3 shows the majority 47 (64.12%) of the papers have been written in single authorship. It is seen that only 14 (20.59%) of the publications are double authored and 5 (7.35%) three authored papers. And only 2 (2.94%) are contributed by more than three authors and it is the lowest number of contribution.

Table 4 - Authorship Patterns by Country

Country	No. of Contribution	Percentage (%)
USA	28	41.18
Australia	6	8.82
South Africa	3	4.41
Nigeria	3	4.41
UK	3	4.41
Malaysia	3	4.41
Columbia	2	2.94
Pakistan	2	2.94
Cuba	2	2.94
Canada	2	2.94
UN	1	1.47
Taiwan	1	1.47
India	1	1.47
Botswana	1	1.47
Canada	1	1.47
Belgium	2	2.94
Singapore	1	1.47
Wilmington	1	1.47
Greece	1	1.47
No country	2	2.94
Austria	1	1.47
Total	68	100.00

Note: 2 articles have not mentioned the country in their article.

It is clear from the above table that USA has been contributed most articles i.e. 28(41.18%). The second most contributions were from Australia i.e., 6 (8.82%). This is followed by 3 contributions; South Africa, Nigeria, UK and Malaysia. Followed by 1 contributions; UN, Taiwan, India, Botswana, Canada, Singapore, Wilmington, Greece and Austria.

Table 5 - Subject wise Contribution

Subject	No. of contribution	(%)
Information Communication Technology	12	17.65
Information literacy/research	14	20.05
Bibliometrics and scientrometrics	7	10.29
Library collection	3	4.41
Public Library	5	7.35
Academic Library	4	5.88
Disaster	1	1.47
HRM	1	1.47
Health Science library	1	1.47
Inf. Seeking Behavior	1	1.47
Digital archives	2	2.94
Database	1	1.47
Library and information Education	3	4.41
Total	68	100.00

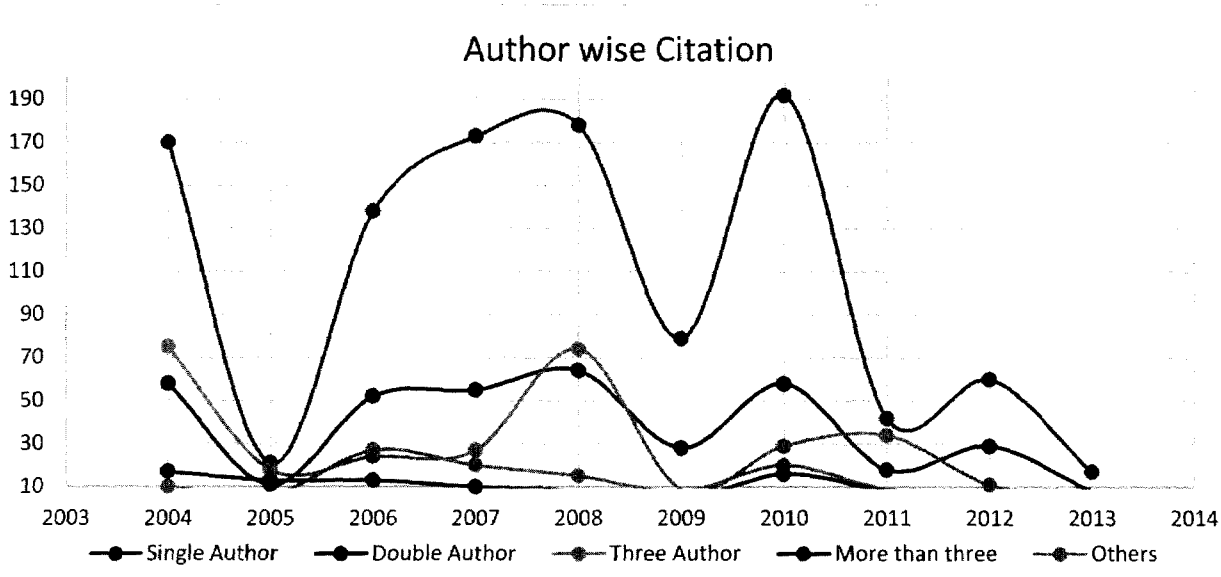
Table 5 shows that the subject wise contribution of the articles. It is depicted that most articles 14(20.05%) are from information literacy/research, followed by 12(17.65%) are from Information communication technology, 7(10.29%) are from Bibliometric and scientrometrics where as 5(7.35%) are from the public library. Only one-one article are written in subject database, health science, disaster, HRM, and information seeking behavior.

Table 6: Print vs. Web Citations

Year	Volume	Issue	Total Article	Total number of Citations	Print Citation	Web Citations
2004	14	1-2	11	330	219	111
2005	15	1-2	7	69	52	17
2006	16	1-2	6	254	205	49
2007	17	1-2	8	285	219	66
2008	18	1-2	12	339	242	97
2009	19	1-2	5	128	113	15
2010	20	1-2	7	315	231	84
2011	21	1-2	6	111	35	76
2012	22	1-2	4	108	61	47
2013	23	1-2	2	38	22	16
Total	**10**	**20**	**68**	**1977**	**1399(70.76%)**	**578(29.24%)**

Table 6 4 shows that the citation pattern of the articles. It is depicted that total 1977 articles were cited In the 68 articles. It is found that 70.76 % cited articles are print resources whereas only 29.24 % cited articles are online resources.

Graph 1 - Citation trends Author wise



Graph 1 shows that the author wise citation pattern of the articles. It is depicted that the most of the articles cited are single authors (57%). Multiple authors (32.12%) articles are very less in comparison to the single author. Only 16.20 % articles are included in the citation written by corporate authors.

6. Conclusion

The study this bi-annual journal in the given duration (2004 to 2013) shows that there were total 68 articles contributed by more than 90 authors from 20 countries, all over the globe. Singapore being its home country have contributed one paper only where as U.S.A running in the lead. Most of these articles were focused on Information literacy and Information and communication technology. Majority of the articles were published by single author every year, and the citation index also shows that articles with single author were most cited all over whereas articles with more than three authors were less refereed. In this study we also found that readers have referred the print issue mostly in comparison to its web or E-version. The study also notified that the rate of contributions have declined in past 3-4 years.

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Authors Profile



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Awards and Honors in the field of Library and Information Science in India

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Abstract: Awards have their existence in all societies at all times and recognised as symbols in society or professional identity. These are treated as direct motivators and indirect incentives. This paper discusses about importance, criteria and introduction of awards, rewards, honours, fellowships and gives brief description of Indian national and international awards especially in the field of library and information science in India.

Keywords: Awards, Honors, Fellowship, Library and Information Science, Library Association

1. Introduction

In today's context, awards and honors are considered as societal and recognisational symbols. These are specifically designed to fulfill the human desires to be publicly recognized and honored by others in front of or by one's reference group. Importance of awards and honors in the form of orders, decorations, medals, prizes and titles can be found in virtually in all societies and at all times. Awards form an important part of the motivation system in a society. Awards comprise a type of nonmaterial extrinsic reward, extensively used in all spheres of society, including the economy. Individuals have an innate desire to distinguish themselves from other individuals.

Frey (2006) concluded on importance of awards in the form of orders, medals, decorations, prizes, and titles are ubiquitous in monarchies and republics, private organisations, and not-for-profit and profit-oriented firms. The Economist (2004) recognizes this by noting, "a quick glance around the globe suggests that fancy decorations are virtually universal". Awards are found different forms in different fields. Awards are used in corporate sector (e.g. Businessman of the year), in the cultural sphere (e.g. Falke award, Deenanath Mangeshkar award), in sports (e.g. Rajeev Gandhi khel ratn award, Arjun and Dronacharya award), in domestic and international affairs (e.g. Gandhi peace prize and Bharatratna award), and other sectors of economic and social life.

Frey and Neckermann emphasised difference between award and monetary compensation. They recognised following major differences between awards and purely monetary compensation.

- The material costs of awards, consisting of a certificate or a small trophy, are typically low for the donors, but the value to the recipients may be very high.
- In contrast to monetary compensation, accepting an award establishes a special relationship in which the recipient is expected to behave loyally towards the donor.
- Due to their vague nature and ex post performance evaluation, awards are more adequate incentive instruments than monetary payments when the recipient's performance can only be vaguely determined ex-ante or measured ex- post.
- Awards are not taxed, while monetary income is.
- Famous journalist Pritish Nandy explored the importance of awards in his article in Times of India. Awards do not only acknowledge success; they recognize many other qualities: ability, struggle, effort, excellence and, above all.

The conference ended with the award of the royal prize (like the Nobel Prize) to Yajnavalkya for his admitted superiority in learning. The prize was 1,000 cows, each of whose horns was adorned with a string of five gold coins called Padas, so that the total gift of gold amounted to 10,000 gold pieces. It is found through the history of India that in ancient India also teachers and scholars of repute were honored by the kings and were granted lands, clothes, jewels and money. The traditions maintained by the Hindu Kings in the ancient period were also followed for a long period. It was also seen in Mughal period when Akbar confessed the title of Jagadguru on a Jain scholar Hirari Jaya Sur in 1584. The British government in India showed keen interest in promoting both eastern and western learning but Mughul and British period was not good as before.

2. Importance of Indian International and National Awards:

Following are some important International and National level awards, which have great significant impact:

2.1. Gandhi Peace Prize

The Government of India awards the International Gandhi Peace Prize, named after Mahatma Gandhi, annually. As a tribute to the ideals espoused by Mahatma Gandhi, the Government of India launched the International Gandhi Peace Prize in 1995 on the 125th birth anniversary of Mahatma Gandhi. This is an annual award given to individuals and institutions for their contributions towards social, economic and political transformation through non-violence and other Gandhian methods. The award *carries Rs. 10 million in* cash, convertible in any currency in the world, a plaque and a citation. It is open to all persons regardless of nationality, race, creed or sex.

2.2. Civil Awards: Bharatratna, Padma Vibhushan, Padma Bhushan and Padmashri Awards

Bharat Ratna is India's highest civilian award, awarded for the highest degrees of national service. This service includes artistic, literary, and scientific achievements, as well as "recognition of public service of the highest order." The Padma Vibhushan is India's second highest civilian honour. It consists of a medal and a citation awarded by the President of India. It is awarded to recognize exceptional and distinguished service to the nation in any field, including government service. The Padma Bhushan award is the third in the hierarchy of civilian awards. It is awarded to recognize distinguished service of a high order to the nation, in any field. Padma Shri award is generally given to Indian citizens to recognize their distinguished contribution in various spheres of activity.

In addition, to these awards some are other important awards in different fields as Param Veer Chakr and Mahaveer Chakra for military services, UGC (University Grants Commission) awards as UGC Hari Om Ashram Trust Awards, UGC Swami Pranavananda Saraswati National Awards and UGC National Veda Vyas Sanskrit Awards, cultural awards as Gyanpeeth Purskar, Sahitya Academy Fellowship, Premchand Fellowship including the Arts, Education, Industry, Literature, Science, Sports, Social Service and public life.

3. LLibrary and Information Science Awards In India

Library and Information Science profession provides a variety of employment opportunities. Today there are a number of career prospects in Library and Information Science. The qualified professionals are employed in various libraries and information centers. Trained library professionals can find opportunities for employment both as teacher and as librarian/knowledge manager or many more. So many library associations and library endowment organizations are promoting profession through motivational activities through awards, rewards and honors. Online Dictionary for Library and Information Science defines Library award as "Special recognition given to an individual, group, or library in honor of outstanding achievement and/or distinguished service to the profession. Major awards given annually often include a monetary prize funded by an individual or corporate donor or by a library association". As Nagar (1957) noted in his doctoral research awards and honors to librarians or knowledge managers can be traced from the most ancient libraries in India were learned pandits, who were both the custodians and cultivators of cultural heritage, in addition to being its disseminators. They could well be termed as "living libraries," "memory libraries," or "mobile libraries". The cultural heritage of ancient India was preserved, conserved, and transmitted from generation to generation through the spoken word, rather than the written word. The most ancient Indians did not like the idea of the immortal word being subjected to an ephemeral writing material. Knowledge was acquired by means of hearing, rather than seeing. One who knew the book by heart was himself the book.

3.1. Honours/Awards to Shiyali Ramamritam Ranganathan

The history of awards in the field of library and information science in India can be traced with the Padma Shri award to Dr. S.R.Ranganthan, by the Govt. of India in 1957. He was also

awarded D.Litt. (honouris causa) by Delhi University in 1948 and by Pittusburgh University, USA in 1964. Dr. Ranganathan was honoured by many awards and honorary fellowships by International and National organisations e.g. Margret Man Award by A.L.A., Grand Night of Peace by Mark Twain Society, honorary Fellowship by FID, honorary Vice-Presidentship by Library Association (U.K.), honorary Fellowship by Virginia Bibliographic Society, National Research Professor in Library Science by Government of India, honorary Fellow by Indian Standards Institute (now BSI) and many other honors.

3.2 Padmshri awards to LIS professionals

The following library professionals have been awarded by Padmshri by Government of India for their outstanding contributions to Library and Information Science or library development activities.

Dr. S.R. Ranganathan	-	1957
Shri B.S. Kesavan	-	1960
Iyyanki Venkata Ramanayya	-	1972
Prof. S. Bashiruddin	-	1976
Prof. P.N. Kaula	-	2004

3.3 Indian Library Association (ILA) Awards/Fellowships

Indian Library Association established in 1933 at the First All India Library Conference at Calcutta. The Indian Library Association is a premier association committed to the cause of library movement and development. The Indian Library Association is the national association, which represents those who work in or advocate for Indian libraries. ILA members work in college, university, public, special (corporate, non-profit and government) and school libraries. ILA has provided a wide variety of services and programs to its members and others in the library community since its formation in 1933. ILA has instituted the following major awards/fellowships [9].

- **ILA-KAULA Best Librarian Award:** The award was instituted by Prof. P.N.Kaula Endowment for Library and Information Science, Guntur (A.P.) in 1996 for the professionals in the field of LIS in India.
- **ILA-CD Sharma Award:** The award is meant for the author of the best paper written and presented during All-India Library Conference of ILA. The award was instituted by family members of Dr. C.D. Sharma former Librarian, University of Rajasthan, Jaipur.
- **ILA-AG Motiwale Award:** The award is meant for the young author (below 40 years) of the best paper written and presented durinng the ILA conference. The Award was instituted by Mrs. Sushila Motiwale in the memory of her husband.
- **ILA-PV Verghese Award:** The award has been instituted by Shri P.V. Verghese and is meant to be given to the author of the best paper published in ILA Bulletin.

- **ILA-Dr. L.M.Padhya Best University Library Award:** The award was instituted by Mrs. Kantaben L. Padhya in memory of her husband Dr. L.M.Padhya, retired University Librarian, Smt. Hansa Mehta Library, M.S. University, Baroda.
- **ILA-SM Ganguly Award:** The award is meant for the best school librrary in the country. The libraries of higher secondary schools of India are eligible fulfilling some requirements.
- **ILA-Dr PSG Kumar Life Time Achievement Award:** The award is instituted by Dr. P.S.G.Kumar Felicitation Committee, Amrawati (Maharashtra). It is for the Indian professionals above 55 years of age.
- **ILA-Gidwani Deshpandey Best Academic Librarian Award:** The award, instituted by Prof. K. Navlani, former Professor and Head, Department of Library & Information Science, Punjabi University, Patiala, is for the professional in the field of academic libraries in India.
- **ILA-Dr. K Pumapathy and K S Umapathy Fellowship in Library and Information Science:** Five Fellowships worth Rs.2000/- each are to be awarded annually out of the accured interest on sum of deposit with ILA, donated by Dr K.S. Umapathy, former Professor of Library and Information Science and Librarian, Bangalore University. These fellowships are given to the students pursuing MLIS in recognised universities, securing 60% marks in the qualifying examination.
- **ILA-Vendanaikee Fellowship:** This fellowship was instituted by Mrs. V.K.Sundaram, former Reader, DLIS, University of Delhi. It is meant for the candidate who has secured highest percentage of marks in the qualifying examination on the basis of which the candidate has been admitted to the BLIS course in the University of Delhi.

3.4 Indian Association of Special Libraries and Information Centres (IASLIC) Awards

IASLIC is India's second national library association established in 1955 with the great efforts of Dr. S.L. Hora and others. Dr. Hora was elected the first President and Mr. J.Saha the first Honorary General Secretary of IASLIC. The main objectives of the IASLIC Associations are:

- Undertake, support and co-ordinate research and studies.
- Organise general and special meetings, seminars, workshops and conferences at national and regional level.
- Publish journals, monographs, manuals, newsletters, papers, proceedings and reports.
- Conduct short-term courses
- Collaborate with other fraternal bodies in promoting the interests of the library and information profession.
- Undertake such other activities, which are incidental and conducive to the attainment of its objects.

- **IASLIC has instituted the following major awards:**

- **Prof. A.K. Mukerjee-IASLIC Lifetime Achievement Award** for Retired Librarian IASLIC has instituted a national level Prof. A.K. Mukherjee-IASLIC Lifetime Achievement Award for Retired Librarian since 2008. This award is sponsored by family members of Prof. A.K. Mukherjee, one of the founder of IASLIC.
- **Prof. Prabir Roy Choudhary and Mrs. Amita Roy Choudhary-IASLIC Best LIS Teacher Award:** This award has been instituted in 2008 sponsred by Prof. Prabir Roy Choudhray and Mrs. Amita Roy Choudhary memorial Fund Trust.
- Smt. A Satyavathi and Prof A. N. Raju - IASLIC Best Young LIS Teacher Award This award is sponsored by Prof. A.N. Raju, retired Professor and Head, Department of Library and Information Science, Osmania University, Hyderabad and it was instituted in 2008.
- **S.M. Ganguly-IASLIC Librarian of the Year Award:** IASLIC has instituted a national level S.M. Ganguly-IASLIC Award for the Librarian of the Year since 1993, sponsored by Late S.M. Ganguly, one of the founder members of IASLIC. Nominations for Librarian of the Year in prescribed format are invited each year.
- **IASLIC Bulletin Best Article Award:** IASLIC has instituted the best article award to promoting article writing. The award is given for best article writing in IASLIC Bulletin.

3.5. Indian Association of Teachers of Library and Information Science (IATLIS) Awards/Fellowships:

IATLIS is an Indian Association of Teachers of Library and Information Science. It was eastblished on 19th December 1969 to promote exchange of ideas, to promote research in education, to promote the publication process on education, to organize and hold conferences, seminars and colloquia for the development and propagation of new ideas on education in library and information science, to give consultation service on education in LIS, to promote training of the LIS teachers and to welfare teachers of LIS in India. The IATLIS is a strong and vibrant professional association of LIS teachers that have members from India and abroad, such as Nigeria, Republic of China, USA, etc. IATLIC has instituted the following awards/fellowships for professional development.

- **IATLIS—Motiwale best LIS Teacher Award**
- **IATLIS-Prof. S.P. Narang Research Promotion Award**
- **Prof. Jagindar Singh Ramdev Lifetime Achievement Award**
- **Management Libraries Network (MANLIBNET) Awards:** MANLIBNET was established in the year 2000 for sharing of resources and information among the libraries by fostering a spirit of cooperation and weaving these together in a networking arrangement. Keeping in view the importance of information as a vital resource, increasing cost of inputs, quantum of information stored, its desired quality and the speed with which the information can be retrieved, there are

technology options which need to be known and exploited. MANLIBNET has constituted the following awards [12]:

- **MANLIBNET Best Business and Management Librarian Award:** The Management Libraries Network (MANLIBNET) an apex body of Management, Business and Management libraries in India had instituted the MANLIBNET Best Business and Management Librarian Award. It consists of a cash award and a citation. A committee nominated by the Executive Council selects the candidate for this award.
- **MANLIBNET Best Librarian Award:** Management Libraries Network (MANLIBNET) instituted the MANLIBNET Best Librarian Award in the year 1999.
- **MANLIBNET-3B Best Paper Award:** To promote research in LIS community, MANLIBNET recognises the Best Academic work on an annual basis. MANLIBNET-3B Best Paper Award is given to the LIS professional for his/her paper written and presented during MANLIBNET Conferences and is found to be the best by the committee constituted by MANLIBNET. Supported by Bharat Book Bureau (3B), the award is presented during the valedictory functions of MANLIBNET annual conferences.
- **MANLIBNET-Bharat Book Bureau (3B) International Travel Grant**: It promotes research in LIS, MANLIBNET-Bharat Book Bureau (3B) International Travel Grant is given to MANLIBNET members for presenting an original and unpublished paper in an International Library Conference held outside India.
- **Satkal Awards:** SATKAL Trust established by Philanthropist S. Jagindar Singh Ramdev Ji in the year 2000 is an International Trust. Every Year SATKAL Trust honours four eminent librarians of the world with memento, shawl, award etc. These awards are given to the library professionals on the basis of their qualifications and contributions to the profession. The credit for honouring such qualified library professionals goes to S. Jagindar Singh Ramdev who single handedly provide all the monetary support for the smooth running of trust and annual functions. He has given librarians a platform to meet and interact with the eminent professional and colleagues. S Jagindar Singh Ramdev has given a new ray of hope to the much ignored library professionals, that the work of librarians is being recognised. This is a great effort has motivated all the librarians to work more hard and to develop their professional capability. SATKAL is reaching every nook and corner of the country through its four prestigious awards. While selecting the awardees due weightage is given to all the regions, each age group and each category of the professionals so that talented, committed and dedicated persons are recognized.

3.6. Promote research and librarianship by giving scholarships/fellowships/stipends to deserving students and in-service library professionals

- Launch/sponsor/publish/distribute library related literature

- Institute Awards. e.g. a)Punjab Librarian Award, b)Young Librarian Award, and c) Woman Librarian Award
- Organise Library competitions, including Ranganathan Quiz
- Organise Annual lectures, library related seminars, training programmes and workshops
- Provide financial assistance to needy retired librarians/their dependants
- Undertake, promote and sponsor any and all such activities, which sustain and develop librarianship
- Lifetime Achievement Award
- National Librarian Award
- Young Librarian Award
- Women Librarian Award
- School Librarian Award

3.7. Satkal Medals: S Jagindar Singh Ramdev has instituted three gold medals in different universities in different subjects. Every year these awards are given at the Annual Convocation to the meritorious students who stood first in the University exams.

- SATKAL Gold Medal in Library & Information Science at Guru Nanak Dev University, Amritsar (In memory of his wife Mrs Satinder Kaur Ramdev).
- SATKAL Gold Medal in Library & Information Science at Panjab University, Chandigarh (in memory of his father S.Arjan Singh)

3.8. Library Professional Association Awards/Fellowship

To support the LIS Professionals as well as Profession, The awards are to be announced by the executive committee of LPA in five categories [14]:

- **Best Librarian (Four categories):** The awards are given to a working librarian of the following each category:
  - Librarian (School);
  - Librarian (College);
  - Librarian (Corporate);
  - Librarian (Public Library)
- **Best Paper Award:** Best paper award is given on the recommendation of the panel of experts.

- **Best Paper Presentation Award:** Best paper presentation award is given on the recommendation of the panel of experts. The decision of the recommendation committee is acceptable.
- **Travel Grant Award (Two Awards):** IInd Class (Non-AC) Rail/Bus fare (To & fro) is to be given to the participants on submission of original tickets.
- **Special Award:** "Sh. Sukhdev Singh Award" This Award is given to differently abled LIS Professional of India. It consist cash, memento, citation and shawl.

3.9. Society for Information Science (SIS) Awards/Fellowship

The Society for Information Science (SIS) was formed during 1975 with the aims of providing support to information disseminate and professional development. The SIS offered following awards:

- **Raizada Award (Young Information Scientist Award):** The Society instituted The Young Information Scientist Award in 1989 in the memory of Late Shri A.S. Raizada, Founder Secretary of SIS, to Young Information Scientists for their outstanding contribution in their profession. So far many Young Information Scientists have been awarded Raizada Memorial Award
- **SIS Fellowships:** The Society awards fellowships to individuals in recognition of their outstanding contribution in their profession. So far, 40 individuals have been awarded fellowship by the Society. SIS Executive Committee selects the fellows through search committees.

3.10. Society for the Advancement of Library and Information Science (SALIS) Awards

SALIS instituted the following awards to recognise and encourage LIS professionals those who contribute for the profession and society.

- Dr. Harish Chandra-Sushila Chandra Best Librarian Award (National Level)
- AutoLib-Tamilnadu Best Librarian Award
- AutoLib-Tamilnadu Best Young Librarian Award
- A.M. Marappan Best National Young Librarian Award

All the above awards are to be given every year during the inaugural function of SALIS National Conference.

- SALIS Best Paper Award for LIS Professionals for the best paper presented in SALIS Annual Conference (based on content, quality, innovative idea, research work, case studies, etc)
- SALIS Best Paper Award for LIS Students for the best paper presented in SALIS Annual Conference (based on content, quality, innovative idea, research work, case studies, etc)

The above two awards carry cash price and a citation and given every year during the valedictory function of SALIS National Conference.

3.11. Raja Ram Mohan Roy Library Foundation (RRRLF) Awards/Fellowship

RRRLF has undertaken a number of promotional activities for qualitative improvement of library services. It is associated and interacts with different national and international library professional associations like IFLA, ILA, IASLIC and different state level library associations.

RRRLF has constituted the following awards and fellowships to promote qualitative improvement of library services:

- RRRLF Fellowship: RRRLF instituted the RRRLF Fellowship to eminent men and women in the field of library services who have contributed significantly to the library movement particularly, public library movement in the country through active involvement in the movement, organizational initiative, intellectual leadership or are dedicated to the propagation of the reading habit among the mass.
- RRRLF Best Library Award: RRRLF Best Library Award for the Best State Central Library in India. The Award carries a Citation and a cash incentive of Rs. 1 lac.
- RRRLF Best District Library Award: RRRLF Best District Library Award in each of the six regions. The Award carries a Citation and cash incentive of Rs.50, 000.
- RRRLF Best Rural Library Awards: RRRLF Best Rural Library Awards one for each state since 2005.
- Raja Rammohun Roy Award: Raja Rammohun Roy Award was introduced annually to the best contributor of an article covering the area of development of public library systems and services or suggesting measures for the promotion of reading habits. (RRRLF/Activities)

3.12. Others

- Master Moti Lal Sanghi Best Librarian Award: Master Moti Lal Sanghi established the Shri Sanmati Pustkalaya at Jaipur in 1920. It was a really great effort this National Level Award was started in 2008 in the memory of Master Motilal Sanghi who established a free library in the early 20th century in Jaipur.
- Prof. Kaula Endowment for Library and Information Science: Prof. Kaula Endowment for Library and Information Science was instituted by the admires and students of Prof. Kaula in March, 1975, with Guntur (A.P.) as its headquarter. In addition to other academic activities i.e. Publications of books and journals, organizing seminars, etc. Endowment decided to institute various awards.
- International Kaula Award and Citation: This is awarded every year to a distinguished service for the cause of library and information science from any part of the world.

- Ranganathan- Kaula Gold Medal and Citation: The Endowment instituted an award for Indian libraries and information specialists. The award is named Ranganathan-Kaula Award, for Indian professioanls, who have made distinct contributions in the field. This award is being given once in two years from 1980 onwards.

4. Conclusion

Awards always play a significant role in which is given to someone or a institute to recognise their excellence in a field. Awards and honors signified by trophies, medals, fellowships, title, etc. Awards and honors always pass a positive message to the society or profession and inspire to others to do something extraordinary. In addition to the above awards, many state library associations, state governments, etc also awards and honors to their library professionals from time to time to motivate and recognisation their extraordinary contributions to the society as well as profession.

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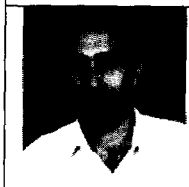
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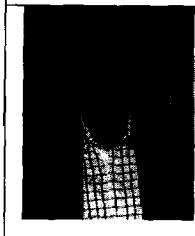
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MOOCs: *Opportunities, Challenges and Best Practices*

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Abstract: The present paper discusses the concept of OER. Any organization which is going to develop an OER should be aware of its limitations and challenges. This paper tries to point out all these probable challenges. Besides, the best practices which can make any OER a productive project, have also been discussed. This paper also touches upon the shortfalls of technological infrastructure in developing countries. At the end, some initiatives taken in India have also been mentioned. In short the reading of this paper is a must for an incipient learner as well as for the developer of OER.

Keywords: MOOC; Massive Open Online Courses; OER; OCW; Social learning; ICT.

1. Introduction

In the present knowledge-oriented society, everyone wants to gain more and more knowledge to excel others. This class of knowledge-seekers is dominated falling in the age group of 18-25 years. In none of the countries such education system exists as may satisfy the ever-increasing demand of this class of the society. Sir John Daniel (Cited in Atkins et al, 2007), President and CEO of The Commonwealth of Learning (2004-12) mentions, "Today, there are over thirty million people who are fully qualified to enter a university, but there is no place available. To meet the staggering global demand for advanced education, a major university needs to be created every week". In the field of education and learning, last decade witnessed the birth of a significant revolution which is called Massive Open Online Courses or MOOC. This new venture tends to meet the need of the hour to spread education among all those who fall under a suppressed class. The MOOC revolution commenced at MIT University in 2001 with the name Open CourseWare (OCW). The present decade has nurtured this movement so far and is likely to persist. D'Antoni (2009) called it 'a young movement'. The creation of participatory contents and participatory learning has now become a reality with the proliferation of Web 2.0 (and now Web 3.0). As Brown and Adler (2008) say "Learning 2.0 is the new form of learning begins with the knowledge and practices acquired in school but is equally suited for continuous, lifelong learning that extends beyond formal schooling." The Web 2.0 is giving boom to this revolution. In support of OER revolution, they further add "The Web 2.0 is creating a new kind of participatory medium that is ideal for supporting multiple modes of learning." "OpenCourseWare (OCW), an initiative within the Open Educational Resources movement,

finds its origins in the free software movement" (Caswell et.al, 2008). It may be termed as Open Educational Resources or Repositories. OER is a very innovative idea through which organizations can contribute to the advancement of the society. For this social cause, technology, which can be rightly described as the heart of the modern society, can play a great role to facilitate the access to the resources. "Two developments have greatly opened up the ways in which we can make our content openly available First, the giant leaps in technology and second the emergence of new forms of licensing for (largely) digital contents." (Gourley & Lane, 2009). Publishers also have found that the material which is open to public is used more by learners than that those which is not in public domain. Annual reports, outcomes of meetings outcomes etc. which are freely available on the web are seen quoted more and more cited particularly in developing countries. "For readers, open access grants enable access to an entire body of literature." (Downes, 2007)

2. Open Educational Resources

Educational or learning resources which are used free to use are called Open Educational resources. OER includes text, graphics, lectures, audio/video files, presentations, and all such materials which can be used to learn know-hows of things. Here the term "Open" means 'open to create and use'. A White House document (Open Government Directive, 2009) says "An open format is one that is platform independent, machine readable, and made available to the public without restrictions that would impede the re-use of that information."

The objective of World OER Congress held in 2012 in Paris by UNESCO was to encourage the governments of the countries of the world to engage in the activities of development of OERs. It emphasized on the issue that the public-funded educational outputs should be available for public use and there should be no restrictions due to copyright on such material. Defining OER, UNESCO Forum on Open Courseware where the term OER was coined, says: "teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. Open licensing is built within the existing framework of intellectual property rights as defined by relevant international conventions and respects the authorship of the work." (UNESCO World Open Educational Resources Congress, 2012).

On the basis of the above mentioned comprehensive definition of OER one can draw a layout of OER. In case of an OER you have free (no-cost) access to it and free (no-cost) permission to engage in "4R" activities when using them, which are as follows:

- Revise: adapt and improve OER to make it suited to meet your needs in a better way.
- Reuse: use the original or your new version of OER in a wide range of contexts
- Remix: combine or "mashup" OER with some other OER to produce new materials
- Redistribute: make copies and share the original OER or your new version with others (Wiley et.al, 2012)

3. Challenges & Best Practices

As we are at the very initial stage of developing OERs, there are no established standards and procedures for developing them. Any organization that wants to take an initiative in this field has to start from scratch and lay down its own standards. Besides, in the emerging field of an OER there are various other formidable challenges which need to be surmounted at the early stage of the development of an OER for the success of the venture.

The first and foremost requisite to run these projects is finances. Any OER needs substantial funds for the successful running of the project. An OER project is as much difficult to run as it is easy to start. At the global level for very early projects major investments were made by universities and various foundations in which William and Flora Hewlett Foundation was the main financial supporter. "This foundation spent more than $110 million in the 2002 to 2010 period, of which more than $14 million went to MIT." (Hafner, 2010).

To run the project, there is a need to create the interest and the trust of the investors in the project. The investors could be either an individual or an institution. As compared to an individual an institution often has more resources, contribution from an institution will, no doubt, be more fruitful. The resources and other amenities can be deployed for the development of a project which is instrumental for its success. As Keats (2009) says "Institutions may align themselves with a framework of freedom and openness in order to maintain quality while moving into this space." If it is an educational institute, the academicians of the institute may contribute for creating and developing the content. The OER courses may be developed along with the regular courses of the institute so that the quality of the courses may not be compromised at any level. In the institute the students of regular courses may be encouraged to make their contribution to enrich the course contents. They can be motivated to create the contents in various forms like presentations, tutorials, projects etc. As Van Acker et.al. (2014) rightly said, "Knowledge sharing self-efficacy, more specifically refers to the belief a person has in being able to effectively share information. In order to have such a belief, a person needs to be convinced to possess actual knowledge worth sharing, and have the necessary skills to provide such information." The contents created by the students make them responsible and increase their participation in the development of OER. In the institute, these types of activities can be regarded as a part of the social responsibilities of the students as well as of the educators. The students can be encouraged by giving them meager remuneration or in some such other way. To develop OER, proper training should be provided to the fraternity of the institute including faculty, staff and students. Apart from the students, faculty and staff, voluntary contributions should be welcomed and should be encouraged to further enrich the input to the venture. Hence here we can scrutinize the quality of the contents but after verifying the validity of the contents, they should be added to the repository. A proper mechanism should be evolved with regard to accepting the voluntary contributions as well as putting them into the system. Such software should be developed through which they can put their submissions. Thus, collective efforts will result into developing a system of better and innovative ideas. It can be an excellent package of conceptual as well practical approaches to the topic. On the topics, users should be able to give comments. The

comments given by the students should be analyzed to make necessary amendments to cater to the needs of the diverse range of the users' community. Proper attention should be given to their queries and modify the system accordingly to make the resources capable of meeting diverse demands. Dholakia et.al (2006) argued that, "current thinking on the topic is often solely tactical with too much attention on the "product" and not enough attention on understanding what its user community wants or on improving the OER's value for various user communities. All these practices are necessary for the sustainability of the OER."

While using an OER there is a general tendency that if some learning material is currently available it is likely that it will not be available after some time. It may happen due to the absence of proper policy regarding preservation of the materials. For the preservation of the OER, a reliable and affordable infrastructure should be put in place. There are many institutions which are now giving attention to address this issue. They try to make the archive of the digital objects either by digitization or otherwise. Internet archive is one such destination which has now become the hub of the digital preserves. Besides Library of Congress, there are many more academic libraries which are working in this field. They are not only giving internet based access to various forms of literature but also making a huge repository of the digital preserves. Since the digital preservation work is crucial and it demands continuous updation and preservation, it should be done with the consent of the experts of the relevant field. YouTube is one such platform in the public domain which can host thousands of digital records. There are millions of video lectures, tutorials and other materials available on YouTube. Anyone who has internet connection can watch and download the videos. Users can even appraise or comment on particular video or presentation. Any institution or individual which does not want to invest in the preservation and access, YouTube can provide a platform to provide the access. One such example in India is NPTEL, which is the video courses prepared by IITs together and are available through YouTube. XPERT (Xerte Public E-learning ReposiTory) is another similar project. This project as stated on its website is "to explore the potential of delivering and supporting a distributed repository of e-learning resources created and seamlessly published through the open source e-learning development tool called Xerte Online Toolkits." It provides a common platform to educators and learners to explore the growing database of open learning resources available. XPERT claims to contain almost 1,20,000 learning objects (provides browsing facility through 3,86,557 resources) created by over 8000 creators. The videos of OER should be downloadable to make it free in the real sense.

Another challenge which is very commonly faced by the creators of OER as well as the users' community is the diverse nature of the formats of the learning objects. There are numerous diverse forms in terms of contents and media. In case of audio format, there are various formats available which include WAV, .AIF, .MP3, and .MID. and so on. These file formats may or may not be available to the end user. The same type of problem exists with the other media or document format. Also there is problem of sustainability of the formats i.e. how long the file format would be updated and supported by the developer company. For example, with the proliferation of various OSs, *Wordstar* file formats are no longer in use and can't be read today. The problem of interoperability of the files also persists with the various file formats. In the same way .pdf formats are highly popular for text

documents but they cannot be reused. In this scenario, adoption of one standard or the other is highly risky. It may happen that at a later stage the format may lose its validity. However, there are various tools available online or offline but these tools undergo conversion at the cost of the quality of contents only. If a file contains some graphics, then it can't be converted properly. Also the size of the file may get enlarged several times. In essence, the selection of file formats is very significant to make feasibility of the learning object.

The success of an OER is completely based on access. The learning materials that are put for usage need a strong technological platform. The pillar on which this building will stand still is- ICT. The high storage capacity and communication infrastructure are the backbones of this project. Although the broadcast of the materials cannot be said to have achieved its goal until the access to the end user is ensured. At the users' end the access to the available resources remains a critical issue particularly in developing countries. As Johnstone says "A major reason for sharing resources created for local communities is individuals' desires to make a difference in the lives of those less fortunate." Governments should focus on strengthening the ICT infrastructure. Basic connectivity must be developed to ensure access to the online resources. As Marcus-Quinn and Diggins (2013) said "OCW will be established with "an Internet connection".

The success of an OER depends not only on the contributors but also on the commitment of the management. "To be successful at embedding OER into teaching and learning practices, higher educational institutions need to move from a consumable product mindset to a cultural mindset that promotes transparency in teaching and learning processes through policies in support of openness." (Nikoi et al, 2011). Also, there must be a user friendly technological infrastructure, so that the creators should not be bothered about the technical difficulties of the platform. They must not face any difficulty in using the system for putting their resources for the project. They must be able use the system by a small training session so that their emphasis should be on quality content creation rather than on understanding the complexities of the system. As Marcus-Quinn and Diggins (2013) rightly said "The worldwide success of open educational resources will depend upon a community that can, within minimal technical restraints, access, adapt, translate, use, produce, and offer the material."

4. Initiatives in India

In India where a common man still struggles for his daily earning, education does not come under his agenda. Hence, with the entrance of smart phones and internet connection, literature of the world is available to all, to which India is no exception. A study reveals that in the MOOC courses the highest registration behind American students, is that of Indians. (Dainik Bhaskar, page 5, 29/12/2014). "India has one of the largest higher education systems in the world, with 311 universities and 15,600 colleges, as of 2004 producing 2.5 million graduates each year." (Thakore, 2004). In India, National Programme on Technology Enhanced Learning (NPTEL) was first such initiative which was started in July 2003. It is a joint venture by seven Indian institutes of technology and Indian institutes of science and funded by the Ministry of Human Resource Development, Government of India

to enhance the quality of engineering education in the country by developing curriculum-based video and web courses. Under phase 2 NPTEL has been offering new courses and certification also. (NPTEL).

On 26 Jan 2015 IIT Bombay started its MOOC platform which was named IITBombayX. IITBombayX offers interactive online classes and MOOCs. Subjects from multiple disciplines are presently offered, as can be seen in the list of courses. This list will be expanded later. IITBombayX is a non-profit online platform, created with funding from National Mission on Education through Information and Communication Technology (NME-ICT), Ministry of Human Resource Development (MHRD), Government of India (GoI). (IIT BombayX)

Another open education initiative by IIT Bombay is eKalavya which distributes the contents developed in different Indian languages over the web. Open Source Educational Resources Animation Repository (OSCAR) was developed under the eKalvaya project. The OSCAR provides web-based interactive animations for teaching and learning. eGURU, eCONTENT and eOUREACH are the various programmes started under eKalvya project. (eKalavya)

Another prominent initiative, E-Grid, supported by the Human Resource Ministry of the Indian Institute of Information Technology, Kerala, provides subject-specific portals that are developed and maintained by subject domain experts. Currently, this programme offers OER only for science and engineering. (Hylen and others, 2012)

"A MOOC platform called MOOKit is being developed by IIT Kanpur. This platform will provide the open courses in various fields specifically in agriculture and computer science. First two trial courses which are available on it are 'Arc4cloud' and 'MOOC on MOOC'." (Dainik Bhaskar, page 2, 11/12/2014).

"Recently Ministry of HRD, India has announced that from the next session, private students will be able to take the lecture from IITs, IIMs etc. on their desktop or via phone. To provide easy access to the lectures on mobile, an app will be developed. The learners will also be able to get the degree on the payment of nominal fee." (Dainik Bhaskar, page 9, 11/12/2014).

Despite the above-mentioned all efforts, there is still a lot of work to be do. With the passing of RTE Act (Right to Education) it is the responsibility of the government at all levels to encourage the participation in the development of OER. The research must be encouraged in the field of higher education and various projects need to be started to make it a movement at a large level. There must be a provision for funding of these types of projects at local, regional, and national levels. Proper training for the creators as well as for learners should be provided to maximize the use of learning resources.

5. Conclusion

Day by day the quality of ICT technology is improving which is very essential for the success of a project. This is particularly very crucial for developing countries like India. In

India where bandwidth rate is very poor, special attention needs to be given to this aspect. There are many countries where basic connectivity is still a critical issue. Also, the organization should search for the institutions which are interested in investing in this project to make the venture free from the burden of financial limitations. A conducive environment should be created for the educators or the creators of the resources. There is need to create a culture of educating the people to eradicate ignorance from the society. It will help the people to survive in the knowledge-based society. Producing smart phones and making internet connection available at cheaper cost is the need of the hour in making the services easily accessible.

The value of an OER lies in its simplicity, flexibility and transferability to satisfy the users' needs. While developing an OER, stakeholders should be properly guided to submit their resources. In some cases, they may not be confident about the materials produced. Here they may be required to be sure about the authenticity of the materials they have produced. In India where the availability of educationists is always a problem this may be considered a good practice. In this new era creating and producing free educational resources should be one of the most vital tasks of the institute. Although many institutions are doing very impressive work in this field, nevertheless it should neither be the responsibility of a particular institute or institute group nor of a specialist group. Every organization should put their contribution for this social cause as now it comes under the sphere of corporate social responsibility. Governments also should create such environment to equalize access to the resources and opportunities across the nation. It may be a means to spread education and culture of the institution at global level and can guide, in advance, the potential students of the institutions. The students of regular courses can also be benefitted by having doubts clarified. In essence, an OER can be said to be a fruitful project only if someone who wants to gain something and is able to achieve it as per his desire.

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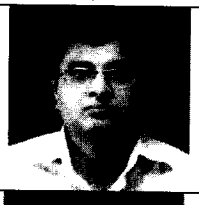
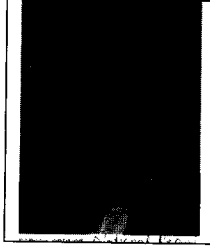
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National Repository of Open Educational Resources: Technology in School Classrooms through Learning Object Repository

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Abstract: With the availability of modern networked communication and advanced digital technologies the school education is also getting radically changed. The pace of dissemination and ease of access to intellectual material has never been so faster or easier, but now in today's environment it has become possible. To support this growth vital is the establishment and development of institutional repositories (IRs), which has now initiated for school going students also in India. With the development of student-teacher centric institutional repository supporting elementary and secondary level students will definitely instill better information literacy standards and practices in the country. So this paper will discuss the National Repository of Open Educational resources: an Indian school education initiative taken by Department of School Education and Literacy, Ministry of Human Resource Development, India in detail. NROER is a learning object repository constructed which included digital learning resources accessible to teachers, students, and other potential users.

The purpose of this study was to examine NROER Institutional repository (IR) in order to assess the development and extensiveness of the IR. The paper will also study the student, teacher participation in the repository as user and contributor. It will further identify the features available in the repository portal developed. The paper will also analyze how the content is organized and how the resources are made available resources are accessible to the students.

Keywords: NROER, Repository, School Education, Open Access Resources, Open Educational Resources, Virtual Library/ repository, Generation and Dissemination of Information

1. Introduction

Education has an acculturating role as it refines sensitivities and insights to contribute to national unity, a scientific temper and freedom of mind and spirit. It further boost the spirit of secularism, collectivism and democracy enshrined in the National Constitution of the Country. In view to this, Indian Government has achieved a landmark in the history of School Education by enforcing the Article 21-A and the Right of Children to Free and Compulsory Education (RTE) Act, 2009 since 1st April 2010. **(Parliament of India, 2006)** Department of School Education and Literacy, Ministry of Human Resource Development, India has a mission of making 'secondary education a reality for every deserving student in

the country'. To achieve the mission the Department has set objectives including increasing the access to quality school education by expanding the network of schools. Bringing equity to the system of secondary education by including disadvantaged groups as well as weaker sections, who were kept deprived hitherto. The department wishes to ensure quality and improved standards of education by supporting the existing institutions and facilitating setting up of new ones. Last but not the least, initiating policy-level changes in terms of institutional and systematic reforms in the school education. **(MHRD, 2014)**

The above objectives can be only achieved if in the present environment, all efforts are being made to bring the technology to classrooms by establishing e-classrooms and providing multimedia devices to the students of the schools. With a electronic platform in the classrooms the students can get the opportunity to access the information, in digitized form any time. So, the Department of School Education and Literacy is making all efforts to provide technological platforms for structured, authentic and easy accessible online information like subject gateways, institutional repositories, e-portals which remove the barrier of physical boundaries and time limitation of classrooms with a variety of digital chunks of information take on many forms: text, video, audio, graphics, and multimedia and includes tutorials, scenarios, simulations, lesson modules, case studies, and assessments. **(Lehman, 2007)**

2. National Repository of Open Educational Resources (NROER)

NROER stands for National Repository of Open Educational Resources which is one of the finest initiative of Ministry of Human Resource Development (MHRD), Government of India. It is a comprehensive an open access digital repository for educational resources covering all the resources as pedagogical organization and representation of the knowledge from elementary education to the senior secondary education for the school students, teachers and other stakeholders. The NROER mission is to store, preserve and provide access to variety of digital resources for students and teachers and to enable the participation of the community in development and sharing of digital resources. The basic idea behind the creation of the repository is to provide variety of resources to teachers so that they can use the one which is most appropriate to their teaching style, as per the needs of their students and add to the learning of the subject. The National Repository of Open Educational Resources (NROER) is a project funded by Department of School Education and Literacy, Ministry of Human Resource Development, Government of India. The Central Institute of Educational Technology (CIET), one of the constituent units of National Council of Educational Research and Training is shouldering the responsibility of implementation, development and management of this project. The technological support for the repository was extended by the Homi Bhabha Centre for Science Education (HBCSE). The software on which the entire repository is built is Meta studio which is a project of gnowledge lab, HBCSE TIFR, Mumbai. **(HBCSE, 2013)**

The NROER project originated from many deliberations that happened during the making of ICT @ School scheme and formulation of National Policy of ICT in school education. Both National Policy of ICT in School education 2012 and the ICT @ School scheme recommended collaborative creation and widespread dissemination of learning resources.

The National Policy on ICT in school education proposes setting up state and national level digital repositories which will host variety of digital content appropriate to the needs of teachers at different levels of school education. It also encourages the involvement of teachers and students in collaborative development of digital resources. A series of workshops were organized during 2013 to develop a roadmap for the NROER. The repository was launched on 13th August, 2013 by the Hon'ble HRD Minister Mr. Pallam Raju in the National Conference on ICT which was held from 13-14 August 2013. **(Yadav, 2013)** The repository seeks to improve the quality of education in the country through a cooperative approach to learning and teaching, and promotes three main principles i.e. collaboration amongst the teaching community. Second is identification, sharing, reuse and revision of high quality learning material. Third is pursuit of excellent developments and innovations in the field of learning objects and educational technology in the form of repository.**(Koppi & Bogle, 2005)**

3. E-Educational resources for teachers and students

NROER have a broad objectives of enhance the quality of teaching-learning, facilitating teachers to create and share contextualized teaching learning resources and to celebrate innovations in resource creation. The portal is designed to make available quality educational resources for teachers and students and motivate teachers to create contextualized teaching learning resources. It is designed in such a pattern that it encourages teachers collaborate and create new resources and also encourage them to participate in online courses and even run their own courses. The repository design is based on learning object repository. The repository has been developed to enhance the teaching and learning process of elementary and secondary school students and includes different types of learning objects suitable for the school level.**(Arslan & Yildirim, 2010)**
The coverage of NROER includes in two broad categories i.e. Internal Resources and External Sources. The Internal Resources includes the materials which are developed by National Council for Educational Research and Training (NCERT) and its constituent units. However the External Resources are the resources which are developed and designed by the other than the NCERT. The repository is for and by the experts from various subject areas. The data is not only provided by the experts and teachers but also by the instructional designers, independent producers, directors and film makers also. The repository is also open to submit data by the other government and non government organizations who would wish to share their resources. However all the submissions are rigorously reviewed by a team of experts before the content is made available on the repository. Registered submitters including teachers can also view other screens, such as those that display personal information, learning objects they upload, and a statistical page with information regarding the learning objects they recently visited, downloaded, reviewed, and about which they made comment.**(Arslan & Yildirim, 2010)**

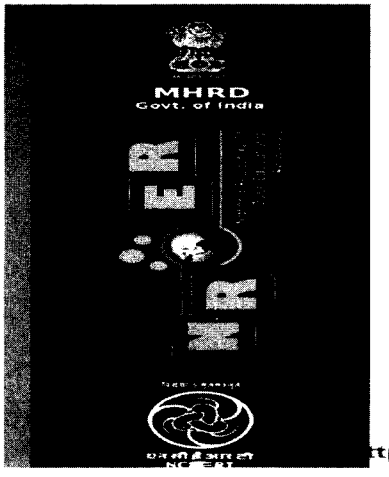
4. Concept Library

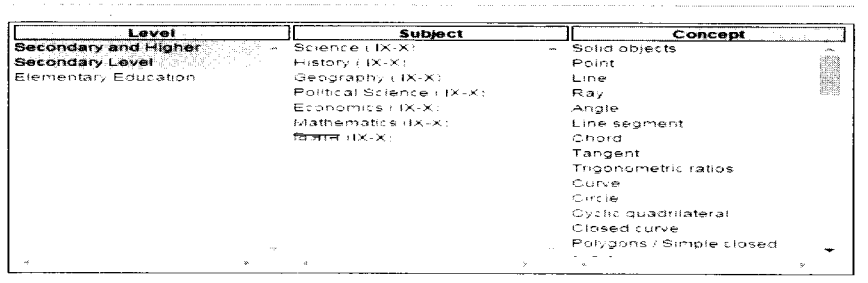
The NROER site defines its search as "Concept Library" which symbolize a collection in the library for various subjects in various media formats. One can either directly search the

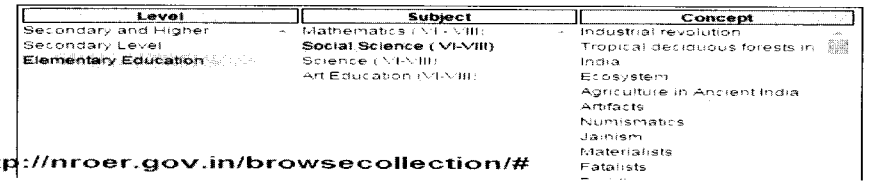
repository by searching the "Concepts" or browsing the repository. The repository has been presently classified into two levels:

- Secondary and Higher Secondary Level for IX to XII Class
- Elementary Education for VI to VIII Class

These levels are further classified on the basis of subject i.e. subject wise categorization like Vigyan (Hindi,) Mathematics, Science, History, Geography, Political science, Economics Further each subject is having gamut of 'Concepts' with the span of entire school and teacher education curricula.







http://nroer.gov.in/browsecollection/#

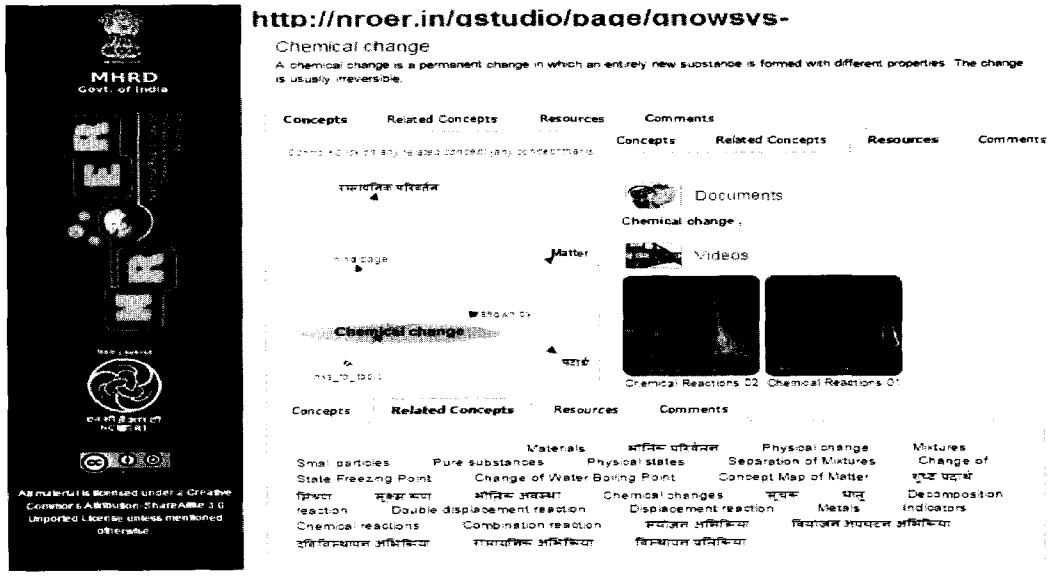
5. E-Content of NROER

NROER supplements and enriches the school curriculum used in teaching through various electronic media formats. The basic idea of the repository is to provide scope for value addition to various subjects offered at the school level. The e-resources in multiple formats are available, but not limited to Videos, Audios, Learning Objects , Multimedia, Concept maps, Photographs, Graphics, Essays/presentations, Educational games, Question banks, Activities, Worksheet and many more formats.**(NROER, 2015)**

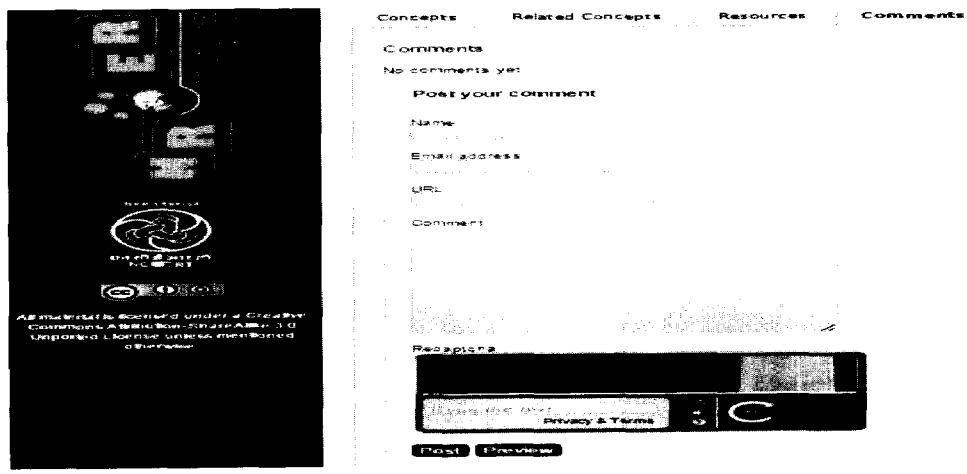
6. Searching in NROER

Registered or unregistered users can use the basic or advanced research functions to search learning objects in the repository. The search function is available on all screens in NROER, and users can change keywords to perform a search according to different fields in the metadata tags of Learning Objects. The searching in the repository gives the concepts in a diagrammatical links not only in English but also Hindi also. More regional language content are added and the same will be automatically depicted in the concept. The users can also see the related concepts of the search term for further reference. The portal also provides the resources in various formats like videos, audios etc with a visual picture of each document. It provides a very easy and simple way to create a learning object, share them with other teachers, students via email, download a learning object in the repository,

and search to find the most appropriate object for their needs. The picture given below shows the same.



The user can also submit his/her comments by creating his/her username password and can comment on the resources available, so that the appropriate feedback is received on the content. The user can share his/her experience or can give rating about the content. It is important for the integrity/accuracy/completeness of the repository that the IR team uploads material and will help the in quality control process developed.(Dubinsky, 2014)



7. NROER @ CC by SA

Three overarching challenges that the IRs continue to grapple with are copyright, permissions, and use of IR by the users in appropriate manner.**(Passehl-Stoddart & Monge, 2014)** The NROER all material is licensed under a Creative Commons Attribution-ShareAlike 3.0 Unported License. The repository encourages members to adhere to principles that protect freedom, sharing, collaboration and socially acceptable protocols. It instructs its resource submitters to ensure that the documents uploaded are encoded using non-proprietary, open standards.

8. Central Institute of Educational Technology (CIET)

The Central Institute of Educational Technology (CIET), as shouldering the responsibility of implementation, development and management of NROER has an E-mission to act as nodal resource centre for school education media software acquired through national, regional and international sources for reference and research. It has the objective to achieve excellence in design, research and production of educational software for children and teachers, including parents. The Institute has the mission to build capacities of teachers/educators for quality improvement roles in school education. Further institute constructively inform educational policy makers and to critically appraise educational technology (ICT related) policy in India. CIET being the national coordinator trains the Master Trainers from each state and prepare the experts through the "Training Programme on Development and Management of the National Repository of Open Educational Resources" (NROER) for States/ UTs (348 participants from Phase I to VII). This strategy of training is an ongoing activity of the CIET. Master Trainer are those who are deputed to attend the workshop or training session on behalf of their SCERT, School etc. and after getting the training these master trainers are entrusted with the responsibility to train further rest of the target group in their respective schools

9. Expression Series

Recently NROER has introduced the Expression Series which provides a platform to deliver the content on selfless and courageous services of the women and men who have served the nation in their own ways i.e. the popular personalities of the Nation. This helps the students learn about the eminent personalities who have worked incessantly towards nation-building. Under the series one can watch audio and video biographies of eminent personalities and take inspiration from their lives. The series presently includes various audios files from CIET, NCERT; SIET, Hyderabad; SCERT, Manipur; Videos from CIET, NCERT and Vigyan Prasar on the eminent personalities. **(NROER, 2015)**

10. Conclusion

NROER is a comprehensive digital repository of resources that can be used by the teachers in the teaching learning process. The National Repository of Open Educational Resources (NROER) is an implemented initiative which is achieving/ realizing the goals of the National Policy of ICT in school education. The repository is a significant step in wider spreading and distributing education equally accessible to all or intends to reach out to the unreached. It is a step towards open educational movement in the field of school education and for school teachers. The repository is covering the concepts of school education with a unique approach to construct the virtual repository for the Teacher Education.

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Rattan literature: *A scientometric portrait*

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Abstract: Rattans are one of the main non-wood forest produces that provide livelihood for millions of tribal and rural populations in the world. There are 13 genera of rattans comprising about 568 species. During the last three decades a number of studies have been conducted in different aspects of rattan. These studies have been published in various journals as articles. The study aims at analysing the research output of rattan publications. The analysis cover mainly the growth of literature, degree of collaboration, authorship pattern, subject wise distribution of articles, core journals, language of publications etc

Keywords: Scientometrics, Bibliometrics, Rattan – Scientometric study

1 Introduction

Rattans are climbing palms with flexible stems which are exploited for furniture and handicraft manufacture industries. They constitute one of the main non wood forest produces, which provide livelihood for millions of tribal and rural people and raw material for industries in various parts of the world.

The thriving international and domestic trade of rattans has led to substantial over-exploitation of the wild rattan resources. This exploitation coupled with loss of forest areas is threatening the long-term survival of rattan industry and the very existence of local rattan collectors. Rattans are spiny, climbing palms belonging to the subfamily Calamoideae of the family Arecaceae or Palmae There are 13 genera, which produce commercial rattans, with 556 reported species. The largest genus is *Calamus* with 374 species.

2 Objectives

- To find out the rate of growth of literature of rattan
- To examine the pattern of authorship of rattan literature
- To study degree of collaboration of rattan publications
- To examine core authors in rattan literature
- To examine subject wise classification of rattan literature
- To find out the gender wise productivity of rattan publications

- To find out the language wise distribution of rattan publications
- To find out core journals in rattan literature
- To find out the country wise distribution of rattan literature

3 Methodology

The analysis has been carried out based on publications of rattan literature as a whole and sub-disciplines. The methodology employed for the analysis is described in the following sub-sections.

4 Sources of data

The number of articles selected from TREE CD, CAB CD, AGRIS, AGRICOLA, JSTOR, Ebscohost online, INBAR databases, FAO, Biological Abstract and scientific papers are used to prepare database on rattan. The table 1 provides number of articles selected from each database. A total number of 2317 publications ranging over the period 1980-2011were collected and database formed.

Table 1 Number of records in Databases

No.	Database	No. Publications
1.	CAB CD	1327
2.	TREE CD	282
3.	AGRIS	137
4.	AGRICOLA	85
5.	JSTOR	112
6.	EBSCO	104
7.	INBAR	125
8.	BIOLOGICAL ABSTRACTS	37
9.	SCIENTIFIC PAPERS	108
	Total	**2317**

The database, created using CDS/ISIS, contains 2317 records which was manipulated and analysed.

6 Growth of Literature

6.1 Year wise distribution of publications at National level

A total of 637 publications were produced at national during the period 1980-2011. Rattan literature at national level is also increasing during the period 1980 to 1990. After 1991 there is a declining trend. From 1992 to 1996 literature is increasing. After slight decrease in 1997, literature is increasing during the period 1998-2001. After 2001, literature is increasing as well as decreasing. Maximum number of 50 publications (7.8%) produced in

2007 and minimum number of publications 4. Year wise publications at national level is given in the Table 2.

Table 2 Year wise rattan publications at National level

Year	Indian Publications	Cum. publications	% of Indian publications	Cum. % of Indian publications
1980	4	4	0.63	0.63
1981	5	9	0.78	1.35
1982	7	16	1.1	2.45
1983	7	23	1.1	3.55
1984	6	29	0.9	4.45
1985	7	36	1.1	5.55
1986	9	45	1.41	6.96
1987	10	55	1.57	8.53
1988	10	65	1.57	10.1
1989	11	76	1.73	11.83
1990	11	87	1.75	13.58
1991	9	96	1.41	14.99
1992	10	106	1.57	16.56
1993	11	117	1.73	18.29
1994	15	132	2.35	20.64
1995	17	149	2.67	23.31
1996	19	168	2.98	26.29
1997	22	190	3.45	29.74
1998	20	210	3.14	32.88
1999	18	228	2.82	35.62
2000	19	247	2.98	38.6
2001	40	287	6.28	44.88
2002	33	320	5.18	50.06
2003	38	358	5.96	56.02
2004	33	391	5.18	61.20
2005	40	431	6.28	67.48
2006	42	473	6.59	74.07
2007	50	523	7.85	81.92
2008	46	569	7.22	89.14
2009	26	595	4.08	93.22
2010	22	617	3.45	96.67
2011	20	637	3.14	100
Total	**637**			

6.2. Authorship Pattern

This section presents the analysis regarding pattern of authorship, degree of collaboration, core authors and core journals in rattan literature. The authorship pattern analysis determined the type of research in Table 4.6. It is found from the table, out of 2317 articles, single authored articles are highest 967 (42%). Two authored articles are 561 (24%), three authored articles are 408 (18%) and more than three authored articles are 381 (16%).

Table 3 Pattern of Authorship

Year	Authorship Pattern				
	Single Authored	Two Authored	Three Authored	More than 3 Authored	Total
1980	6	5	4	3	18
1981	8	6	3	4	21
1982	9	7	6	6	28
1983	10	8	6	7	31
1984	12	8	6	7	33
1985	14	9	6	7	36
1986	9	14	8	8	39
1987	9	9	14	8	40
1988	10	10	14	8	42
1989	11	11	15	8	45
1990	12	12	16	09	49
1991	22	14	08	06	50
1992	23	12	10	10	55
1993	26	15	10	09	60
1994	23	17	12	15	67
1995	30	20	10	10	70
1996	34	20	11	10	75
1997	30	20	12	10	72
1998	32	22	14	13	81
1999	36	29	11	10	86
2000	58	27	07	14	106
2001	55	27	07	14	103
2002	47	29	18	21	115
2003	65	23	27	12	127
2004	42	18	17	33	110
2005	66	32	18	19	135
2006	58	23	27	21	129
2007	72	44	13	18	147

2008	55	14	33	18	120
2009	36	18	12	18	84
2010	25	20	18	16	79
2011	22	18	15	9	64
Total	**967**	**561**	**408**	**381**	**2317**

6.3. Degree of Collaboration

The degree of collaboration among authors is the ratio of the number of multi-authored papers published to the total number of papers published in a discipline during certain period of time. The formula is as following by Subramanyan

C= Nm/ (Nm+Ns)

Where, C= Degree of collaboration

Nm=Number of multi authored papers during a specific period in a discipline

Ns=Number of Single authored papers works in a discipline during a given period of time. Table 4 provides degree of collaboration of rattan publication

Table 4 Degree of collaboration

Year	Single Author	Multi author	Degree of collaboration
1980	6	12	0.66
1981	8	13	0.62
1982	9	19	0.67
1983	10	21	0.67
1984	12	21	0.63
1985	14	22	0.61
1986	9	30	0.77
1987	9	31	0.77
1988	10	32	0.76
1989	11	34	0.75
1990	12	37	0.75
1991	22	28	0.56
1992	23	32	0.58
1993	26	34	0.56
1994	23	44	0.65
1995	30	40	0.57
1996	34	41	0.54
1997	30	42	0.58
1998	32	49	0.60
1999	36	50	0.58
2000	58	48	0.45

2001	55	48	0.46
2002	47	68	0.59
2003	65	62	0.48
2004	42	68	0.62
2005	66	69	0.51
2006	58	71	0.55
2007	72	75	0.51
2008	55	65	0.54
2009	36	48	0.57
2010	25	54	0.68
2011	22	42	0.65
	967	**1350**	**0.58**
Mean degree of collaboration is 0.58			

C= Nm /(Nm+Ns) = 1350/ (1350+967) = 0.58

The study found that degree of collaboration is 0.58. It clearly shows prevalence of collaborative research.

6.4. Subject wise classification of rattan publications

Table 5 shows clear picture of subject classification of rattan research output. The total 2317 rattan articles are divided into different classification such as Botany, Distribution & Resource Diversity, Reproductive Biology, Natural Regeneration, Silvicultue, Injuries and Protection, Properties, Harvesting and Grading, Processing, Preservation and Trade & Industry.

Based on classification Silviculture has scored first position with 803 (34.65%) records. Botany occupies second position with 425 (18.34%) records. Trade and Industry has been placed in third position with 224 (9.67%) records. The last place is occupied by Harvesting and Grading with 71 (3.06%) records. Silviculture is the strongest area of research and Harvesting and Grading is the weakest area of research.

Table 5 Subject wise classification of rattan Publications

Sl. No	Subjects	No. Publications	%	Cumulative Publications	% of Cumulative Publications
1.	Botany	425	18.34	425	18.34
2.	Distribution & Resource Diversity	127	5.48	552	23.82
3.	Reproductive Biology	89	3.84	641	27.66
4.	Natural Regeneration	116	5.01	757	32.67
5.	Silviculture	803	34.65	1560	67.32

6.	Injuries and Protection	87	3.76	1647	71.08
7.	Properties	152	6.56	1799	77.64
8.	Harvesting and Grading	71	3.06	1870	80.70
9.	Processing	98	4.23	1968	84.93
10.	Preservation	125	5.40	2093	90.33
11.	Trade & Industry	224	9.67	2317	100
	Total	**2317**			

6.5. Gender wise Productivity of rattan literature

Table 6 reveals the gender wise productivity of rattan literature. In the present study first author of rattan publications are only considered to find out gender wise productivity. The study found that out of total 555 first authors, 538 (97%) authors are male and 17(3%) authors are female.

Table 6 Gender wise productivity of rattan publication

Category	No. Authors	%	No. of Publications	Cum. Publications
Male	538	97	2218	2218
Female	17	3	99	2317
Total	**555**	**100**	**2317**	

6.6. Core journals in rattan literature

In every subject there are some journals which are frequently referred by the researchers because of the close relation between the subject of journals and areas of research work. Bradford's Law serves as a general guideline to librarians in determining the number of core journals in any given field. It states that journals in a single field can be divided into three parts, each containing the same number of publications. Core journals on the subject, relatively few in number that produces approximately one-third of all the publications. ie journals covering 33% of publications of total publication is known as core journals.

Table 7 Distribution of core journals according to Bradford's Law

Zone	Journal	No. of Article	% out of Total Article
1	8	664	33.26
2	62	609	30.51
3	463	723	36.22
Total	533	1996	100

In the present study first 8 journals covers 664 (33.26%) publications and it is known as core journals. The core journals considered as central set of journals which most clearly reflects the conceptual essence of the research being reported in the discipline (Bradford, 1950). The core journals always contain a higher discipline and rest of the papers on the subject are scattered over a large number of journals. The list of core journals is given in Table 8. RIC Bulletin scored first position with 103 publications and the second rank occupied by the Indian journal named Journal of Bamboo and Rattan.

Table 8 Core journals in rattan literature

Sl no	Name of the Journal	No. of Publications	Cum. Publications	Publisher
1.	RIC Bulletin	103	103	Rattan Information Centre, Malaysia
2.	Journal of Bamboo & Rattan	97	200	Kerala Forest Research Institute, Peechi, Thrissur, Kerala
3.	J. Tropical Forest Science	95	295	Ministry of Natural Resources and Environment, Malaysia
4.	Kew Bulletin	86	381	Royal Botanical Garden, Kew
5.	Indian Forester	83	464	Forest Research Institute, Dehra Dun
6.	Malaysian Forester	79	543	Forest Department, Malaysia
7.	Forest Research	67	610	Chinese Forestry Research, Malaysia
8.	Canopy International	54	664	Ecosystem Research and & Development Bureau, Philippines

6.7. Country wise rattan contributions

An attempt has been made to study the geographical distribution of contributors. A list of 9 countries which contributed majority of papers to journal is given in Table 12. It is revealed from table that India scored first position with 617(27%) articles, followed by China 324 (14%) with articles, Indonesia 301(13%) with articles, Malaysia 232 (10%) with articles.

Table 9 Country wise classification of rattan publications

Sl. No.	Name of the Country	No. of Publications	%	Cumulative Publications	Cumulative %
1.	India	617	27	617	27
2.	China	324	14	941	41
3.	Germany	70	03	1011	44
4.	Indonesia	301	13	1312	57
5.	Japan	116	05	1428	62
6.	Malaysia	232	10	1660	72
7.	Nepal	95	04	1755	76

8.	Philippines	93	04	1848	80
9.	Thailand	141	06	1989	86
10.	UK	139	06	2128	92
11.	USA	96	04	2224	96
12.	Others	93	04	2317	100
	Total	**2317**			

7. Results and Discussion

The study reveals growth of literature increasing as well as decreasing. Maximum number of articles in the year 2007 with 147(12.11%) articles. Most of the articles are following single authorship 543(45%). Most productive author is Dransfiled, J with 39 articles. Based on subject classification Silviculture has scored first position with 405 (33.38%) records. Journal of Bamboo and Rattan is the core journal with 32 (2.93%) articles. English is the predominant language used for article publications. Counrty wise study reveals India scored first position with 617 publications.

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