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ELECTRONIC INFORMATION ENVIRONMENT AND LIBRARY SERVICES

A contemporary paradigm

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NIMHANS, Bangalore

22-25 January, 2003

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45th All India Library Conference-Seminar Papers on "Indian Libraries and Librarianship in Retrospect and Prospect. Edited by J L Sardana. Rs 760 (Paperback) US $ 75 & Rs 950 (Hardbound) US $ 110.

National Seminar on Challenges before the University Libraries in India in the 21st Century. M S University of Baroda. August 9-12, 1999. Edited by J L Sardana. Rs. 700 US $ 70.

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Model Public Libraries Act 1991. Rs 100 US $ 20.

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Continuing Education for Librarian. Paper for the All-India Seminar held on February 12, 1984 at Pragati Maidan, New Delhi. Edited by J L Sardana. Rs 200 US $ 40.

28th All-India Library Conference-Seminar on (1) Public Libraries in a Developing, Society (2) Planning for National Information System for India 1982, Edited by JL Sardana, Mohinder Singh, O P Trikha, N N Mohanty. Rs 200 US $ 40.

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PREFACE

Traditionally libraries have been held as treasure house of human knowledge. They promote interaction of human minds and play vital role in educating people of all walks of life. They are also known to preserve the social and cultural heritage for future generations. Libraries are important treasure houses of information and knowledge. They act as information resource centres both of the individuals and the community alike. The old statement that "libraries are the hearts of educational institutions' will no longer hold true if nobody have to go to the library and if the libraries are indistinguishable from computing centres. Preserving, organizing and providing access to scholarly and cultural record which is the primary and historical role of libraries, is threatened in the present electronic environment. Already there is a shift in the objectives and internal operations of a library such as collection development, inter library lending, and reference services.

The outstanding advances in IT and e-media-related fields made it necessary to change the traditional image and adapt to the threats and challenges posed by these technologies. The growing and ready availability of personal computers at affordable prices to institutions, universities, colleges, schools and individual made them tools for accessing information. The laborious, time consuming conventional publishing is giving way to the instant electronic publishing resulting in digital and online publications.

Electronic media as applicable to the libraries include computers and related peripherals such as hardware, diskettes, magnetic tapes, and various optical disks such as CD-ROM, magneto-optical disks, video disks, and laser disks used for storage of information; library networks and communication technologies used for information transmission and dissemination; and electronic publications including online bibliographic databases, primary (full text) and secondary publications on CD-ROM, and online journals. Electronic information environment facilitates enhancement in the speed of service, number of users served, the quantum and exhaustiveness of information

provided. This has led to the improvement, in general, of the quality of services provided by the libraries using the e-media.

A number of issues and concerns are associated with the usage of e-media. Many authors addressed various problems faced by the libraries in the electronic/digital/virtual library environment. The problems and concerns of publishers, librarians as well as users of e-media include issue of single articles versus full issues of e-journals, copyright, user-friendliness, pricing, incompatible hardware and software, formatting, graphics, scholarly recognition and obsolescence. The problems like credibility, accessibility, performance and issues concerning the dissemination over networks like Internet, etc., associated with e-journals were dealt in the literature well.

These will help the library professionals to face the challenges of technological developments of Internet. Libraries will continue to be the meeting and learning places to play important social, cultural, technical and pedagogic roles in the future.

The issue of sociological and psychological impact on the profession and the traditional role of the libraries in the event of the researcher accessing information resources through networks without actually entering into a library is difficult to understand and address at present. When publishers introduce pay-per-use or pay-per-article modes and more users get connected to Internet, individual subscribers may increase and may result in the reduced role of libraries.

Another concern is the storage life. As against a print-on-paper (acid-free) document or a microfiche/film which have a much longer shelf life, floppy disks and hard disks last only a few years. Comparatively computer tapes and CD-ROMs last longer. But whereas tapes necessitate frequent transferring data as and when new technologies come to play, the big question is whether the technologies that created CD-ROM or DVD will be around a few years from now? No one is sure.

Classification and cataloguing of e-publications will drastically change. The nature of details these entries would have and whether links will be provided to the publishers' sites are to be decided. Already OCLC and other agencies have taken steps in this direction. Print publications facilitate user and usage studies, citation, circulation and interlibrary loan studies. The e-publications will change this scenario and may call for entirely new methods for such studies.

Issues like developing electronic catalogues that can retrieve information scattered across digital libraries over a network (say, Internet), finding a cost-effective way to digitize the material without spoiling the original in the process, and making the digital material available while protecting the literary rights of writers and publishers are also to be addressed. There are enormous economic and ecological disadvantages associated with all-digital library as users tend to print any thing that is more than 500 words, and a typical library would spend much more on printing and licenses than its current budget and would use at least 50 times as much paper as at present. A critical yet realistic view of omnipresent electronics, the death of printed text, universal conversion of collections into digitized form, digital communications and computer hardware, copyright vis-a-vis publishers and libraries are to be taken care.

Browsing digital documents is an infringement. It is impossible to browse through a digital document without accessing it. This makes the users to pay some sort of fee, even for ascertaining whether it is useful. If potential users of a digital document are expected to pay a fee, then they must be in a position to determine, in advance, the usefulness of the document and the price tag. This is one of the most important issues which concerns the users and librarians alike. Site licenses at a reasonable cost would allow institutions to do their services as well as research without complexity.

Other concerns of libraries in the contemporary context include addition of more and more electronic and digitized information, development and maintaining proper infrastructure facilities for access, and re-appropriation of budgets in the changing information technology environment. Further, techniques for using electronic information for training, teaching and learning are to be mastered.

India missed the industrial revolution but it should not miss the information revolution. This is possible only when planners, administrators and library and information experts in Information Technology harness the potential of electronic environment. Indeed, the nation has not secured the fullest returns possible from the electronic and computer revolutions inspite of many Indians have made mark in the world in these respective fields. However the efforts made in these years by the Scientific and Technical Community, Universities, Academics and Institutions of National Importance with the support of the Government and other established task forces and missions to enter into real information era looks eminently possible

today for our societal transformation in the current century which is going to be the century of hope for India.

It is the most welcoming augury that in the 48th Annual conference ILA on the theme **"Electronic Information Environment and Library Services : A Contemporary Paradigm"**, as many as 94 papers are contributed by the captains of Library and Information Centers. These papers are distributed in various sections reflecting the practical experience of the professionals in different types of Libraries and Information Centres.

In such short a time, the huge task of publishing the volume containing all the papers is a commendable work for which the entire team of ILA has to be congratulated. It is a matter of pride that each year the ILA conferences are making sincere efforts to better the best output of the earlier years. As the chief of the Editorial Advisory Board, I sincerely acknowledge with thanks the help and encouragement of all those who were involved in bringing out this high quality work that too well in time.

Prof. C.R. Karisiddappa
President, ILA.
January 22, 2003.

2
DIGITAL INFORMATION RESOURCES IN SOCIAL SCIENCES

Bhavina J Naik*

ABSTRACT

Since past few years free online digital information sources like e-journals, e-books, e-databases have increased considerably. The traditional library systems are going to transform in to digital library systems and different projects like Gutenberg e-book project, university of California Digital Library Project, University of Pennsylvania Digital Library Project have been undertaken. The author has started to compile the links of such freely available online digital information sources on Social Sciences such as e-journals, e-books, databases etc. at URL:- http://www.geocities.com/bhavinajin and described same in this paper.

1 INTRODUCTION

The digital information resources are going to play most vital role in the 21st century. Internet is the gateway for libraries and information centres to electronic information era and different organizations; Institutions, Research centres and individual all over the world generate information in digital form on the Internet. Creation of digital resources with the establishment of the digital library is the need of the day. It would be a unique resource and to be provided by the library professional such digital information sources like journals, statistics, government documents, electronic images and indexes. Simultaneously there are also Internet public library and virtual libraries on different disciplines those are providing such digital information services.

* Senior. Library Assistant (Adhoc), S V National Institute of Technology, Surat 395 007

2 TYPES OF DIGITAL RESOURCES

Digital refers to any resource, which is in digitized form i. e. which can be read and scanned by means of electronic media. Like conventional form digitized resources do not require separate space in a library as this can be stored in a computer locally and remotely. Digital resources include range of material such as:

1. Collection in which complete contents of documents are created or converted in to machine readable form for online access.
2. Scanned images, images of photographic or printed text etc.
3. Scientific data sets such as protein sequences
4. Online databases and CD-ROM information products particularly those with multimedia and interactive video components.
5. Computer storage devices such as optical disk, juke boxes, CD-ROM/DVD-ROM
6. Databases accessible through Internet and other networks
7. Digital audio, video clips or full length movies

3 HOW CAN DIGITAL COLLECTION BE ACQUIRED

1. One option of acquisition of digital resource is digitizing existing important and useful print material, it also helps in preserving rare and fragile objects without denying accesses to those who wish to study them.
2. Link and pointers, resources which are freely available on the Internet and are of significant scholarly valued can be added to libraries catalogues and network resources.
3. purchased or licensed material such as electronic journal or databases. In many cases this material is not "physically owned" by the library in the same sense that printed book or journal may be owned, but instead the library has acquired specific access right to the material on behalf of library clientele

4 ONLINE DIGITAL INFORMATION SOURCES

Due to emergence of Information technology individuals, organizations and institutions are publishing scholarly papers, creating digital libraries using scanning technology and other software. Publishers are also publishing a huge document on the Internet. But all the libraries and information centres are not in a position to spend a huge amount to subscribe or to procure the same within their financial

limit. In addition to the chargeable resources, a lot of digital resources are available free of cost.

In this study we are concerned with link and pointers, resources which are freely available on the Internet. Online information sources are referred to be free when access to the sources are not dependent on subscription or membership in an organization or a publisher. Among the freely accessible digital information resources identified by the author till date and compiled at URL http://www.geocities.com/bhavinajin , following are most important ones:

5 ELECTRONICS BOOKS (http://www.geocities.com/bhavinaj/EC_Books.html)

Several projects like project Gutenberg for e-books and digital library project like University of Pennsylvania, University of Virginia E-Book Library have been undertaken which also include Social Science and related discipline. Important e-book sites are described below

5.1 Gutenberg Project on electronic books online (http://www.promo.net/pg)

Thousands of e-books are available in this site free of charge. The site is having browsing facility by Author, and by Title. It also provides advanced search facility by Author or by Title (words). Author wise list of e-books is available at http://www.promo.net/pg/authors.zip and Title wise list of e-books is available at http://www.promo.net/pg/titles.zip and current list of e-books is available as GUTINDEXALL at the FTP site at the University of North Carolina ftp://ibiblio.org/pub/docs/books/gutenberg/GUTINDEXALL

5.2 University of Pennsylvania online book page

The Online Books Page is a website that facilitates access to books that are freely readable over the Internet. This site includes the different sections like Books Online, News, Features, Archives. The Online Books Page was founded and is edited by John Mark Ockerbloom. He is a digital library planner and researcher at the University of Pennsylvania. The online books listed on this page have been authored, placed online, and hosted by a wide variety of individuals and groups throughout the world. The local index of this page includes more than 15,000 English works in various formats. All are free for personal, non-commercial use. Near about 585 number of books on Social Science and 795 number of books on other interdisciplinary subjects as stated in the following table are available free of charge.

Subjects	Number of Books
Social Science	
Statistics	08
Economic Theory and Demography	127
Economic History and Conditions	297
Transportation and communications	46
Commerce	59
Finance	68
Public Finance	28
Sociology (General)	36
Social History, Problems, and Reform	47
Family, Marriage, Sex and Gender	173
Societies and Clubs	35
Cities, Communities, Ethnicity	18
Social Service, Welfare, Criminology	186
Socialism, Communism, Utopias, Anarchism	90
Total Social Science	585
Other Interdisciplinary subjects	
Political Science	334
Law	160
Education	301
Total Other Interdisciplinary Subjects	**795**
Total Social Science	**1380**

5.3 Electronic Text Centre of Virginia University

Near about 141 numbers of books on following topics are available in the Electronic Text Center of the Virginia University.

Subject	No. of Books
Native American (http://etext.ib.virginia.edu/ebooks/subjects/subjects-natam.html)	70
American Civil War (http://etext.ib.virginia.edu/ebooks/subjects/subjects-civwar.html)	12
African American	

Bhavina J Naik	**13**
(http://etext.ib.virginia.edu/ebooks/subjects/subjects-afam.html)	59
Total No. of Books	**141**

5.4 Bartleby Books online (http://www.Bartleby.com)

The Bartleby is one of the Internet publishers of literature and reference providing students, researchers and intellectually curious with unlimited access to books and information on the web, free of charge. The following reference books are freely available Online's from Bartleby Books online.

1. Columbia Encyclopedia, 6th ed :- http://www.bartleby.com/65/
2. Columbia Encyclopedia, 6th ed: Index to biographical entries:- http://www.bartleby.com/65/a0.html
3. Anatomy of the Human Body :- http://www.bartleby.com/107/
4. Columbia Gazetteer of North America , Edited by Saul B. Cohen :- http://www.bartleby.com/69/
5. World Fact book 2001:- http://www.bartleby.com/151/
6. Columbia World of Quotations, Edited by Robert Andrews, Mary Biggs and Michael Seidel :- http://www.bartleby.com/66/
7. Roget's II : The New Thesaurus, 3rd ed:- http:// www.bartleby.com/62/
8. American Heritage Dictionary of the English Language :- http:// www.bartleby.com/61/
9. Encyclopedia of World History : Ancient, Medieval and Modern :- http://www.bartleby.com/67/

6 ELECTRONIC JOURNALS

(http://www.geocities.com/bhavinajin/journal.html

Near about 36 online electronic journals on Social Science and related discipline freely available are identified so far. Most of the journals are available in full text. Some journals are restricted and only abstracts of those journals are freely accessible

7 DATABASES

(http://www.geocities.com/bhavinajin/databases.html)

Databases which are available free of charges, are identified and linked in this section. Out of them followings are most important ones.

7.1 Social Science Gateway (http://sosig.ac.uk/

The Social Science Information Gateway (SOSIG) is a freely available Internet service which aims to provide a trusted source of selected, high quality Internet information for students, academics, researchers and practitioners in the social sciences, business and law. It is part of the UK Resource Discovery Network.

7.2 Social Science Search Engine (http://sosig.ac.uk/harvester.html)

This is a database of over 50,000 Social Science Web pages. Whereas the resources found in the SOSIG Internet Catalogue have been selected by subject experts, those in the Social Science Search Engine have been collected by software called a 'harvester' (similar mechanisms may be referred to as 'robots' or 'Web crawlers'). All the pages collected from the main Internet catalogue which provides the equivalent of a social science search engine. It provides both simple and advanced search facilities. An example of simple search are shown in figure number 1. The search is conducted under the term "Tribal women" and 123 number of documents is retrieved shown in figure number 2.

7.3 Ingenta Database (http://www.ingenta.com/)

This database was formerly known as Uncover Database (http://uncweb.carl.org) and recently it has been taken over by Ingenta integrated to Ingenta's full text delivery service. The contents and abstracts are available free of charges. It contains 13,721,653 articles and 27,444 publications and covers different subject areas including Social Sciences. Ingenta now offers individuals the ability to sign up for email Table of Contents (TOC) alerts, which run exclusively from 5,400 full-text electronic journals. Individuals may sign up for alerts from up to five journals. Institutions and corporations interested in offering this service to their patrons can now buy a site license for unlimited TOC and Search Alerts. More information is available from librarysupport@ingenta.com . Index page and simple search example of Ingenta is stated below in figure no. 3

Search is conducted under "tribal women" and total 35 nos. of documents are retrieved and the screen of search result is shown below in figure no. 4

7.4 ERIC Database (http://ericir.sys.edu/Eric)

This database is produced with Public funding by the U.S. Department

of Education. Citations found in the Database are therefore public domain and may be freely copied and redistributed. This includes posting citations on Web sites created by individuals or agencies. The Document citations represent papers, reports, government documents and other materials published outside of the journal environment. The database provides both Simple and Advanced Search facilities. A sample search is shown in figure number 5. Search was conducted under term "tribal women" and 12 number of records are retrieved as shown in figure number 6. If the user click on the number of document i.e. ED152448 the abstract of the document will be displayed as shown in figure no. 6. If the users want the document in full text they can place the order. Cost of the full text of the documents is differ from US$ 9.10 to US$ 54.10 depending on media i.e. paper / microfiche / fax. Sample of order for is shown in figure 8.

8 LIBRARIES-VIRTUAL LIBRARIES-DIGITAL LIBRARIES

(http://www.geocities.com/bhavinajin/lib.html)

In this section reputed libraries all over the world, different digital libraries and virtual libraries are linked. Among all the libraries followings are the most important ones.

8.1 World Libraries on the World Wide Web

(http://www.123world.com/libraries/index.html#t)

It provides ultimate source of authentic and reliable information about 137 numbers of libraries of the world including Social Science on the net. This list of libraries includes the link of public libraries, research libraries, state libraries, national archives, libraries of different educational institutions, agricultural and technical libraries, business libraries, science libraries, and IMF libraries all over the world. It is arranged in alphabetical order.

8.2 Digital Library: University of California : (http:// elib.cs.berkeley.edu)

The University of California, Berkeley Digital Library Project is a part of Digital Libraries initiative, sponsored by the National Science Foundation and many others. It provides quick access of the collection, overview of the collection, image retrieval by image content, document image analysis and distributed search.

8.3 Social Science Virtual Library (http://vlib SocialSciences.html)

This Social Science virtual library includes the following discipline:

Anthropology Archaeology	History Men's Issues	Regional Studies Social Policy
Demography and Population Studies	Microcredit	Sociology
Economics	Migration and Ethnic Relation	Urban Environmental management
Geography	Psychology	Women's Studies

8.4 Regional Studies Virtual Library (http://vlib/Regional.html)

This Regional Studies Virtual Library includes the following areas:

Latin American Studies
African Studies
Asian Studies
Indigenous Studies
West European
Middle East
Pacific Studies
Russian and East European Studies

9 INSTITUTIONS AND ORGANIZATIONS

In addition to the abovementioned e-journals, e-books, online databases and virtual libraries, different Indian universities, Voluntary organizations,, Government organizations, and International organizations as stated below are linked for the benefit of the users

- Universities (http://www.geocities.com/bhavinajin/University.html)
- International Organizations http://www.geocities.com/bhavinajin/Inter_org.html)
- Voluntary Organizations (http://www.geocities.com/bhavinajin/Voluntary.html)
- Government Organizations (http://www.geocities.com/bhavinajin/Voluntary.html)

10 CONCLUSION

In this age of information Technology and information explosion librarians must be equipped themselves drastically if they want to retain their identity in a rapidly developing information society. On the other hand the source of information is unlimited and the budget of the institution is limited. To provide information to the users within the limited budget this type of compilation work is urgently necessary. Some of our library professionals have already started the compilation work under the different heading like virtual library, digital library etc. If the organization like ILA collect all the compilation work those have

already been done or started, accept their contribution and introduce uniform virtual library for India it will be a great help to the professional and prestige of the country.

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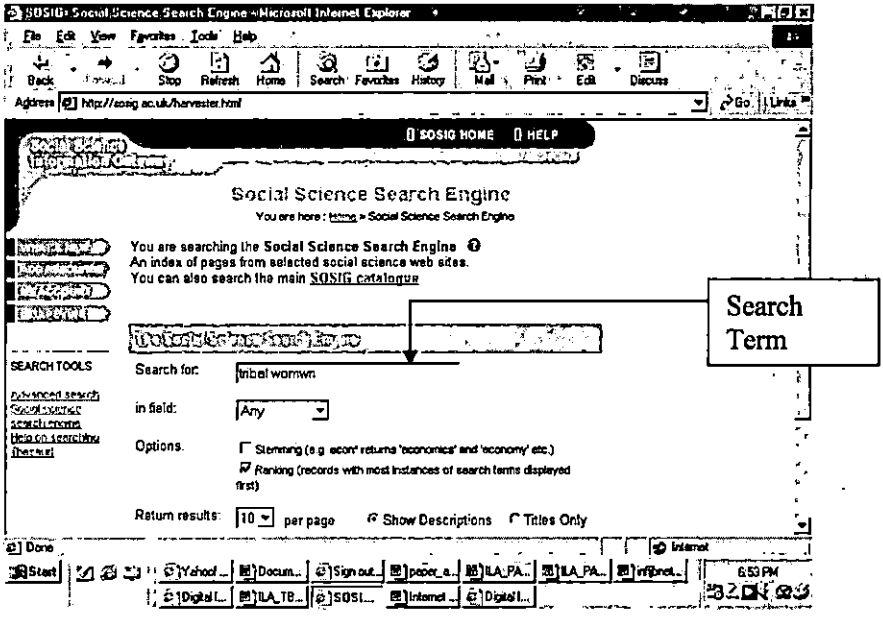

SOSIG: Social Science Search Engine - Microsoft Internet Explorer
File Edit View Favorites Tools Help
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Address http://sosig.ac.uk/harvester.html
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Social Science Search Engine
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You are searching the Social Science Search Engine
An index of pages from selected social science web sites.
You can also search the main SOSIG catalogue
Search Term
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in field: Any
Options: Stemming (e.g. econ* returns 'economics' and 'economy' etc.)
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Return results: 10 per page Show Descriptions Titles Only
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Fig. 1

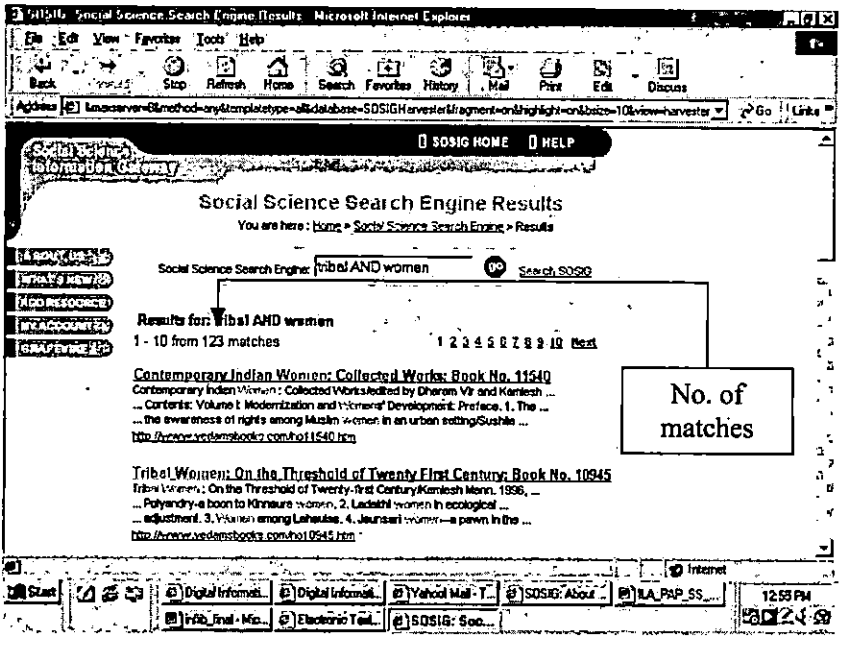

SOSIG HOME
HELP
Social Science Search Engine Results
You are here : Home > Social Science Search Engine > Results
Social Science Search Engine: tribal AND women
Search SOSIG
Results for: tribal AND women
1 - 10 from 123 matches
1 2 3 4 5 6 7 8 9 10 Next
Contemporary Indian Women: Collected Works: Book No. 11540
Tribal Women: On the Threshold of Twenty First Century: Book No. 10945
No. of matches

Fig. 2

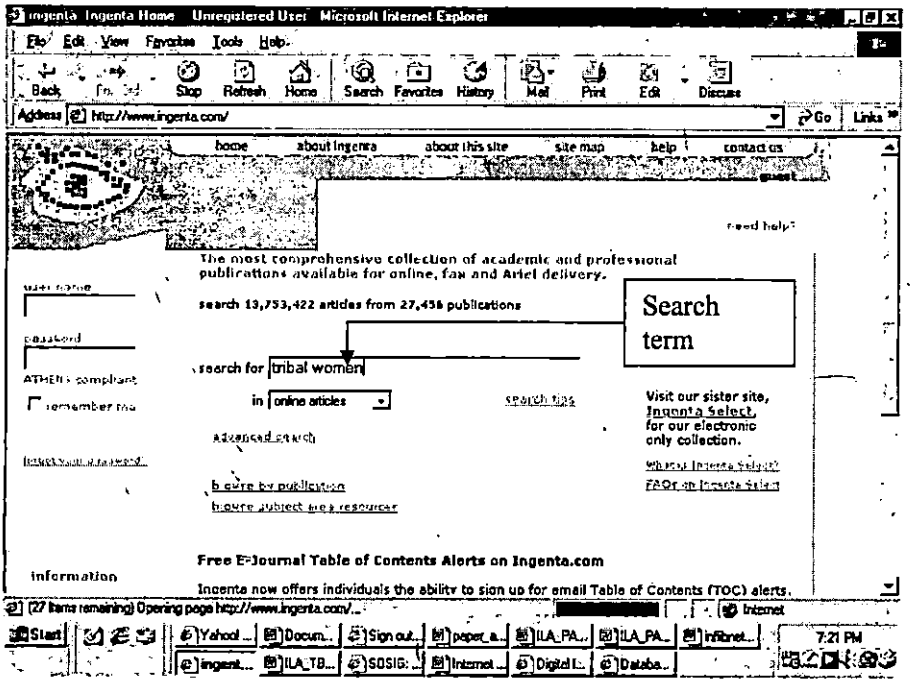

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Fig. 3

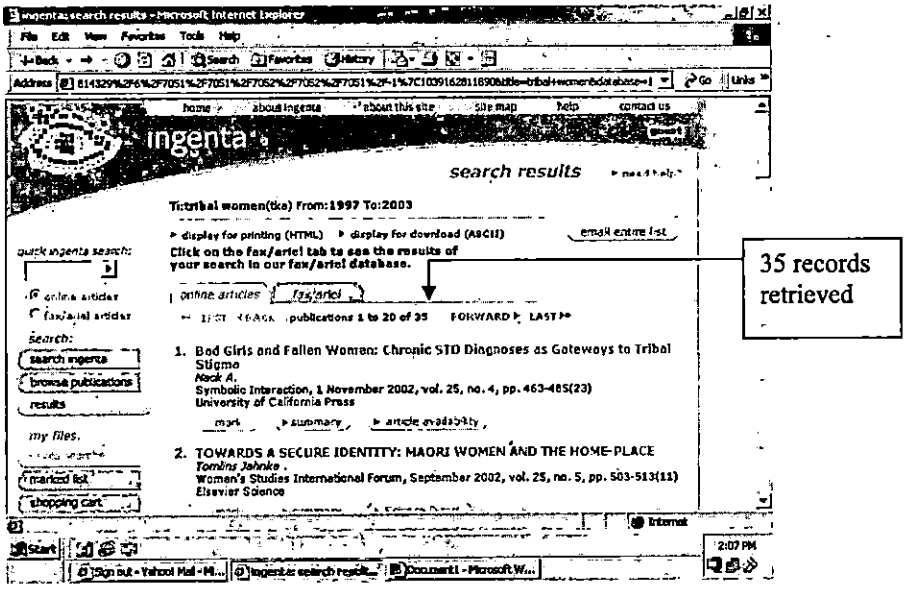

ingenta search results - Microsoft Internet Explorer
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search results
Ti:tribal women(tke) From:1997 To:2003
display for printing (HTML)
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email entire list
Click on the fax/artcl tab to see the results of your search in our fax/artcl database.
online articles
fax/artcl
publications 1 to 20 of 35
FORWARD
LAST
1. Bad Girls and Fallen Women: Chronic STD Diagnoses as Gateways to Tribal Stigma
Neck A.
Symbolic Interaction, 1 November 2002, vol. 25, no. 4, pp. 463-485(23)
University of California Press
2. TOWARDS A SECURE IDENTITY: MAORI WOMEN AND THE HOME-PLACE
Tomlins Jahnke .
Women's Studies International Forum, September 2002, vol. 25, no. 5, pp. 503-513(11)
Elsevier Science
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Fig. 4

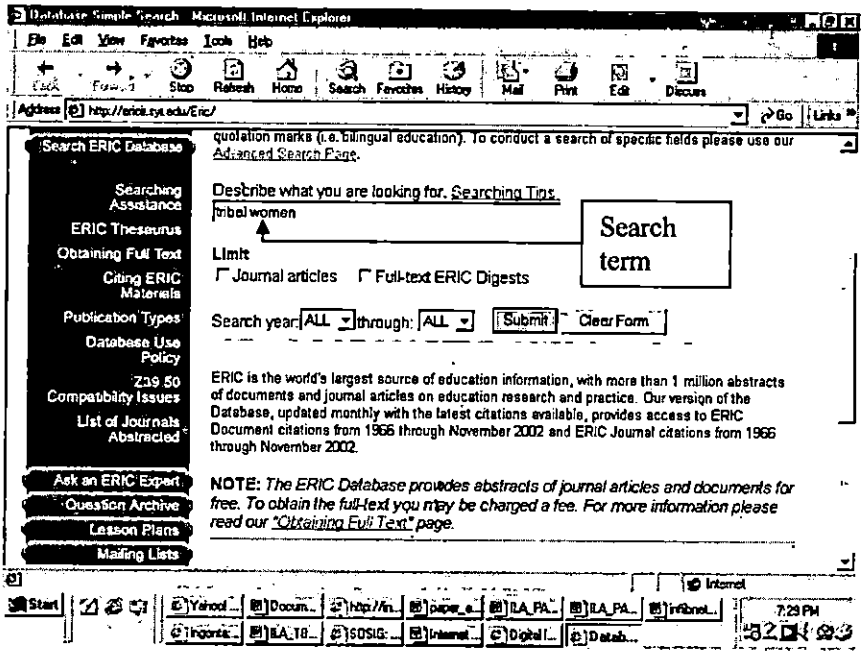

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Citing ERIC Materials
Publication Types
Database Use Policy
Z39.50 Compatibility Issues
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Ask an ERIC Expert
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Lesson Plans
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quotation marks (i.e. bilingual education). To conduct a search of specific fields please use our Advanced Search Page.
Describe what you are looking for. Searching Tips
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NOTE: The ERIC Database provides abstracts of journal articles and documents for free. To obtain the full-text you may be charged a fee. For more information please read our "Obtaining Full Text" page.

Fig. 5

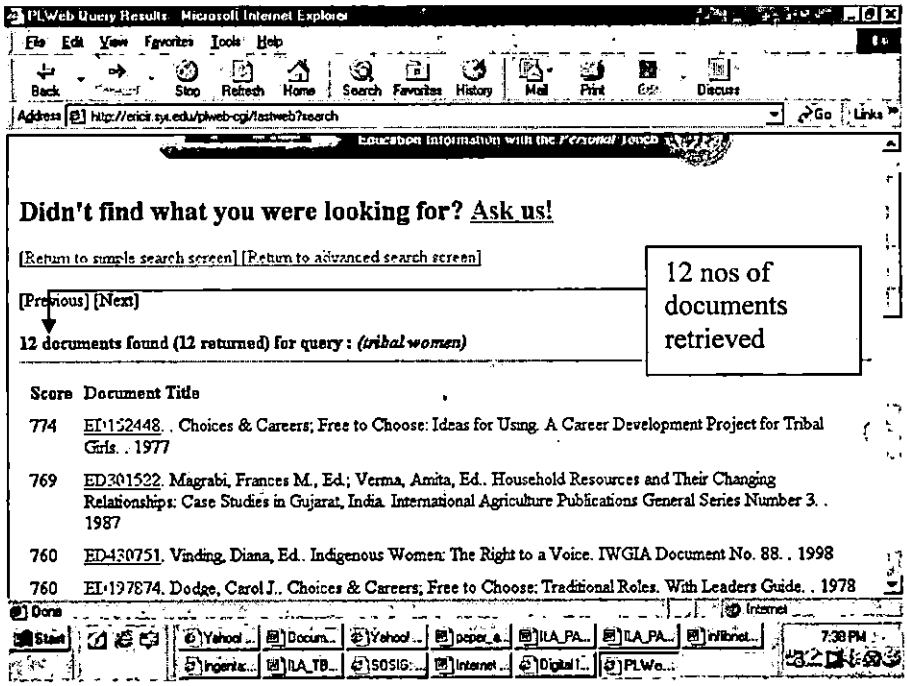

PLWeb Query Results - Microsoft Internet Explorer
File Edit View Favorites Tools Help
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[Return to simple search screen] [Return to advanced search screen]
[Previous] [Next]
12 documents found (12 returned) for query : (tribal women)
12 nos of documents retrieved
Score Document Title
774 ED152448. . Choices & Careers; Free to Choose: Ideas for Using. A Career Development Project for Tribal Girls. . 1977
769 ED301522. Magrabi, Frances M., Ed.; Verma, Amita, Ed.. Household Resources and Their Changing Relationships: Case Studies in Gujarat, India. International Agriculture Publications General Series Number 3. . 1987
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760 ED197874. Dodge, Carol J.. Choices & Careers; Free to Choose: Traditional Roles. With Leaders Guide. . 1978
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Fig. 6

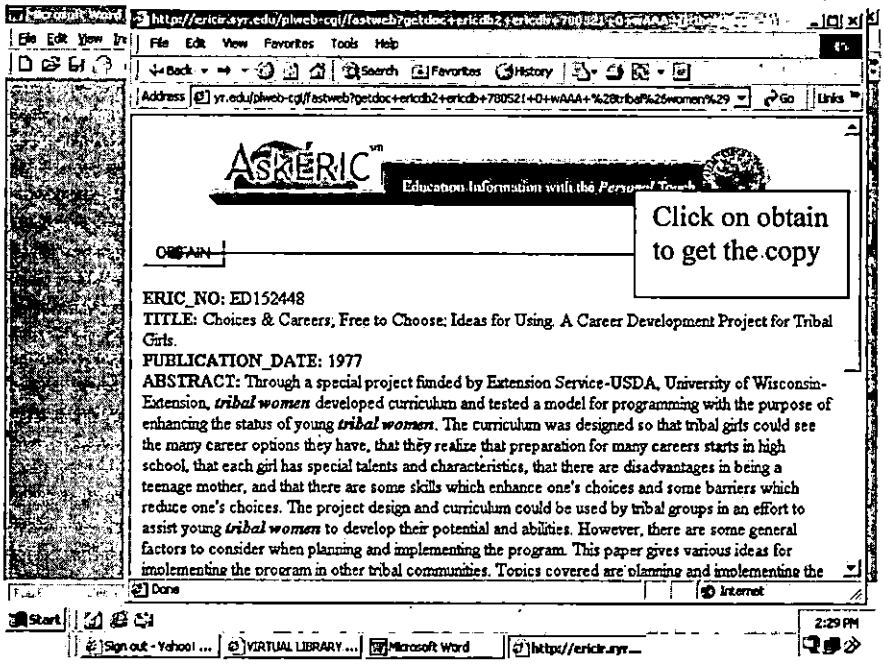

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ASKERIC
Education Information with the Personal Touch
Click on obtain to get the copy
OBTAIN
ERIC_NO: ED152448
TITLE: Choices & Careers; Free to Choose: Ideas for Using A Career Development Project for Tribal Girls.
PUBLICATION_DATE: 1977
ABSTRACT: Through a special project funded by Extension Service-USDA, University of Wisconsin-Extension, tribal women developed curriculum and tested a model for programming with the purpose of enhancing the status of young tribal women. The curriculum was designed so that tribal girls could see the many career options they have, that they realize that preparation for many careers starts in high school, that each girl has special talents and characteristics, that there are disadvantages in being a teenage mother, and that there are some skills which enhance one's choices and some barriers which reduce one's choices. The project design and curriculum could be used by tribal groups in an effort to assist young tribal women to develop their potential and abilities. However, there are some general factors to consider when planning and implementing the program. This paper gives various ideas for implementing the program in other tribal communities. Topics covered are planning and implementing the
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Fig7

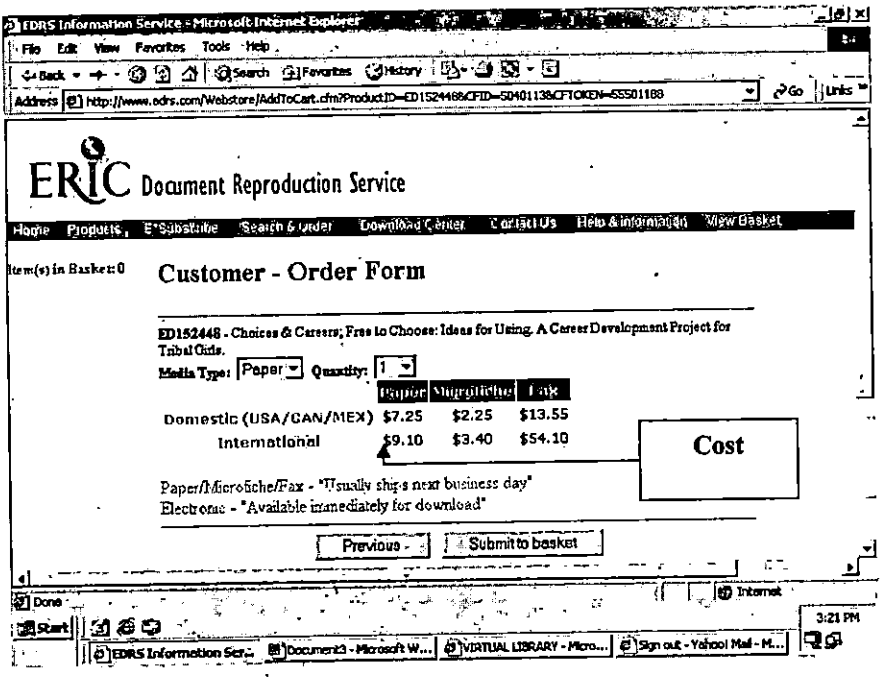

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ED152448 - Choices & Careers; Free to Choose: Ideas for Using A Career Development Project for Tribal Girls.
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Domestic (USA/CAN/MEX) $7.25 $2.25 $13.55
International $9.10 $3.40 $54.10
Cost
Paper/Microfiche/Fax - "Usually ships next business day"
Electronic - "Available immediately for download"
Previous
Submit to basket

Fig. 8

1
ELECTRONIC INFORMATION RESOURCES IN BUSINESS AND MANAGEMENT: A STUDY OF SELECTED ONLINE PUBLISHERS

M.Anandamurugan*
Dr.Murugesapandian**

1 INTRODUCTION

Digital Library and service through electronic documents is the prestigious issue of modern library concepts. The new concept is incorporated in the nineteenth century onwards. Now it grows a vast development in library and information science field. Digital libraries play a vital role in the field of Business and Management studies. The objective of the electronic document service is to improve the knowledge of management graduate students at the present development worldwide. Management study is a cluster of all subjects and it is involved in all areas of technology and developments. To setup a digital library in management environment, we consider the user environment and the cost of information. Electronic access to technology journals has become important and commonly accepted tool for researcher, faculty and students. The user community has become more familiar with the medium over time and has started to actively bid for alternative forms of access. Technology improvement in the communication network paired with the decreasing cost of hardware, create greater incentives for innovation. Consequently, although publisher and libraries face a number of challenges, they are also

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Providing opportunities. Publishers are creating many new electronic journals on the Internet. They will also develop electronic access to literature traditionally distributed on paper. They are modifying traditional pricing scheme and content bundles, and creating new schemes to take advantage of the characteristics of the digital duplications and distributions.

In this article, the diagram mentioned below explains the online publications where it started and where it ended. Role of publishing industries plays an effective manner and having advanced level to send the message to the end users to reach them in a very short time. To read the print journal published by western countries, Asian countries like India it takes four to six weeks and sometimes may vary from four to six months in ordinary shipment. The vast development of digital library helps to reach the authors work within a second through Internet. In the aspect of management studies we need a business manager who not only understands but also equipped to meet the competitive demand of our global economy effectively, and better able to identify the opportunities and access risk. Based on the above point of view, the role of library is a critical position to give the information very effectively and quickly. The information provider in digital environment is classified in to two types:

1.1 First stage of information provider:

It means the author creative works come directly to the society or organization where he belongs to or their works are directly sent to the publishers, and the society/ organizations or publisher published to the users is called first stage of information providers.

1,2 Second stage of information provider

This type of information provider can collect the information from the international societies/organizations or directly form the publishers and then produce the information to the users. Examples: ProQuest, Science Direct, Ebsco.

2 EBSCO

EBSCO is a international database covering all the discipline areas of resource the full text bibliographic data base is very useful resource in business and management environment. The information are in

full-text and abstract forms. Ebsco offers access to more than 8,000 e-journals and over 3.6 million full-text articles. The journals and information are mostly collected from the famous technical publishers like Elsevier and Black-Well and also information from the international technical societies directly.

Four major areas are very informative and effective.

Toc Premier covering information of above 23,000 journals and nearly 80 million records available in citations only database. Toc Premier is covering all functional areas of management discipline. Most of the information is in abstract form.

The second product of academic research premier is covering general information ion all the fields. 3,500 scholarly publications, includes 2,600 pre reviewed publications. In addition to the full text, the data base cover indexing abstracting of 4450 journal collections. This collection is mainly social science, humanities, education, and computer science. The coverage of management discipline is very less.

Business source premier: This database covers only the business and management information. 2,800 full-text scholarly publications include 900 pre reviewed journals and 3,350 of indexing and abstracting information. This database offers information in all areas of business and management like, Marketing, finance, human resource etc. But only default is some of the information is discontinued without any notice to the users.

World magazine bank: This is also one of the products of Ebsco covering all areas of magazines published worldwide. The magazine coverage includes management discipline also. Some of the ebsco products are published offline versions like CD-ROMs. The following figures explain the information coverage and the products of ebsco:

3 BLACKWELL PUBLISHERS:

Black well publisher is one of the world's largest publishers with a total of over 600 prestigious journals from the international association, societies within the physical science, social science, medicine and humanities. All Black well journals are available online as well as in print editions. Online journals can be accessed through black-well synergy of the online service of the Black-Wells.

BlackWell Synergy:

The online journal collection is covering all areas of the subjects. In the business and management disciplines their broad terms are business economics, finance accounting, maths and Statistics. The complete full-text and bibliographic information given in the journal database are in form of PDF and HTML.

The article and journal collections are collected from the 23 International societies and organizations in the field of business and management. Some of the notable societies are

1. British Academy of Management
2. European Academy of management
3. American Econometric Society, etc.,.

Functional Area	No of E-journals
Accounts&Tax	8
Banking &Finance	9
Business&Mgt	23
Economics	50
Maths&Sat	11

The leading international individual publisher in the world is publishing a number of scientific and technical journals. Elsevier science covers most of the international societies and organizations. Nearly 2,000 pre reviewed journals are published and covering all technical areas. Science Direct

Science Direct is a collection of information resource for millions of scientific works around the world. It is a web database of Elsevier science publishers. The collections are in multi disciplinary content source including research journals. It covers more than 1,700 scientific and technical journals and 3 million articles and also reports are made available. Access to abstract of article and journal table of content is free for all users.

Science Direct web editions:

The Elsevier science publishes all publications in online forms in the name of Science Direct Web Editions. More number of journals

articles and reports cover the business and management. Broad areas of the collections are business management and accounting, Economics, Econometrics and Finance. Nearly 300 journals cover these
areas.

Functional Area	Number of E-Journals
Business Management	50
Accounting& other operation	51
Economics& Econometrics	29
Mathematics &Allied operation	93

3 KLUWER ONLINE

Kluwer is one of the leading publishers. Online resource covers about 750 journals in subject including science, technology, humanity and management. The collections are divided in to online journals, e-books and e-reference works. The following tables indicate the availability of online resource in business and management disciplines. Some of the journals are added in pro Quest online information service.

Functional Area	Number of E-Journals	E-Books
Accountancy	5	475
Finance and Financial Ser	11	
Industrial Relations	1	
International Business	1	
HR	1	
MIS	6	
Management and Strategy	9	
Marketing	5	
Production and Operation	7	
Economics	98	
Operations Research and Management Science	23	
Others	4	

4 PRO QUEST

Pro Quest information learning has served as the best information provider in global. The collections and organizing are valuable information.for researcher, faculty and students. They cover 8,500

publishers worldwide and provide access to information from periodical anywhere, Newspapers, Out of print books, Dissertation and scholarly collection in various formats. The first access of the product is CD-ROM and microform. Now the web based proquest information service is available worldwide. Currently millions of higher education documents are included in Pro Quest collections.

Products and Service

The pro quest information is under four major branches. They are Pro Quest, Umi, Chadwyck-Healey, Xam Edu.

Pro Quest:
Global Information Service. Only academic and public libraries.
UMI:
Print and Electronic archives in all subjects
Chadwyck-Healey:
Online form of Humanities and Social Science information
Xam Edu:
Learning support materials for college curriculum.

Proquest Covers many of the business management periodicals, Report, Thesis in online form. At present Kulver STM. Business and Economics journals are added to Pro Quest information service.

ABI/INFORM ARCHIVE

ABI/INFORM COMPLETE

ABI/INFORM DATELINE

ABI/INFORM GLOBAL

ABI/INFORM RESEARCH

ABI/INFORM SELECT

ABI/INFORM TRADE & INDUSTRY

BANKING INFORMATION SOURCE

PRO-QUEST ACCOUNTING & TAX DATABASE

PRO-QUEST ASIAN BUSINESS

5 INFORMATICS:

Informatics group is an Indian based information provider and they cover worldwide publications in all areas of knowledge classifications, most of the Indian publications are covered in full text form. It is one of the best resource database in India.

The informatics products are mainly outcome the following media.1.CD-ROMs , 2.Through Internet, 3. Print form. The main notable services are electronic database, JGATE. The E-journal portal covers 8500 online journals, millions of records and reports.

Available Business and Management resources in Informatics database are.

Functional Area	Number of E-journals
Accounting and Auditing	22
Banking and Investment	17
Business Management	29
Economics	201
E-commerce	7
Finance & Marketing	98
Personnel Management	32
Trade and Commerce	10
Other Areas in Management	25

6 CONCLUSION

Collection of digital information, organizing & servicing is the important role of the Library professionals, because the information users like scholars, faculty and students are depending library professionals. Their duty is providing information in effective manner within a short period at a least cost. Today the trend of publishing industry is making money by providing the same information in different form. If we consider worldwide most of the non-profit organization and societies are slowly increasing the publication cost of the printed form of resource. So, we must go to electronic form of resource to reduce the subscription cost of the library. At present, Indian Government takes the first step to procure online publications of all IEEE journals. In August, Indian Ministry of Human Resource Department and leading Indian Industries entered in to a consortial agreement with IEEE for access to the IEEE/IEE electronic library(IEL). The initial IEL consortium will consist of eight branches of the Indian Institute of Technology (IIT), all twenty Regional Engineering colleges (REC) and three small academic sites. The online access will be in effect from the year 2003 onwards. In the same aspect, it is necessary to cooperate purchase of all business and management electronic resource and providing information to all business management schools in India. So, it is required to formulate standard guidelines

and policies of purchasing e-journals in academic management institutions. It will help to provide better service with a least cost and also a great saving of the national economy.

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3.www.ebsco.com/online/
4.www.wkap.nl/, www.kluweronline.com/
5.www.blackwellpublishers.co.uk/
6.http://www.j-gate.informindia.co.in

3
ELECTRONIC SOURCES AND SERVICES IN SOCIAL SCIENCES : AN INDIAN AND GLOBAL SCENARIO

Dr. H.S. Chopra*

ABSTRACT

In the present scenario because of hi tech development in science, technology and information technology the form of sources and services is witnessing a drastic change. Albeit sources in science and technology are getting priority being put on online or in electronic form, yet sources in social sciences are being paid comparatively less attention. Advanced countries are preparing databases on CD-ROM relating to different subjects of Social Sciences. Number, though small of journals in Social Sciences of advanced countries. on on-line, is increasing day by day. Most of the journals with web sites, bibliographic databases, reference sources databases, publisher's information about publications are proving very useful. Indian University libraries, information centres are also rapidly completing databases of books, journals, theses, patents etc. Role of INFLIBNET in this direction is commendable. Important publishers of books and journals have started using electronic media for providing information to the readers.

1 INTRODUCTION

Unlike the hi-tech development and abundant literature in science and technology, in recent years, literature in social sciences though not comparable to science & technology is also very significant. New disciplines have emerged in social sciences because of the

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societal change and interdisciplinary approach of the social scientists.

According to Encyclopaedia Britannica : 'The Social Sciences, which deal with human behaviour in its social and cultural aspects, include the following disciplines : cultural (or social) anthropology, sociology, social psychology, political science and economics'. 'Also frequently included are social and economic geography and those areas of education that deal with the social contexts of learning and the relation of the school of the social order. History is regarded by many as a social science, and certain areas of historical study are almost indistinguishable from work done in the social sciences. (Most historians, however, still consider history as one of the humanities. It is generally best, in any case, to consider history as marginal to the humanities and social sciences, since its insights and techniques pervade both'.

Social Sciences, according to universally accepted classification scheme of Dewey Decimal covers sociology, political science, economics and business, commerce, public administration, anthropology, education and law. In India library and Information Science subject is also covered in the social sciences faculty.

2 ON LINE JOURNALS

Before discussing on line journals one should know the position of printed journals in social sciences. In India approximately 12,000 journals are published out of which about 1300 belong to social sciences. Most of the journals published in regional languages are not covered in Ulrich's Periodical directory. In comparison to India on International scene about 50,000 journals are published in social sciences whereas in science more than one lakh journals are published world over. Standard journals published in U.S.A. and European countries have their web sites and most of them are available on online as well as in print form.

So far Indian journals are concerned most of these are in print form. Almost all the standard and institutional journals have their web sites. Some web sites have detailed information with home page facility. No Indian periodical directory indicates which periodicals are on on-line or on CD ROM. Complete Indian Journal on online is a rarity.

3 ON-LINE DATABASES

On line access to databases provides upto date information on a subject whereas CDROM cannot do so because of the time required in production of CD-ROM. On line search costs the reader whenever he accesses the information on the internet.

GROWTH OF DATABASES IN WORLD	
Year	**Databases**
1965	20
1975	300
1984	2453
2001	Thousands of databases

The criteria for inclusion of database directory were that the database must be accessible online, must be publically available, and must be searchable through a telecommunications link to an online.

4 REFERENCE DATABASES

Reference databases contain representations of original sources of data, information or knowledge. Hence, their name, they refer the searcher to more complete printed information sources. Records in reference database are distillations created through the analytical processes of cataloguing, indexing, abstracting and classification. Reference databases are intended to serve information retrieval functions.

4 BIBLIOGRAPHIC DATABASES

Undoubtedly most of the bibliographic databases provide references to journals articles in areas of science and technology, and to a lesser extent in disciplines of the social sciences and humanities. There are databases like: **U.S. EXPORTS, FULL TEXT DATABASES** : original textual material belonging to primary source items, such as encyclopaedia, court decision, newspaper, or journal articles. Examples are **Academic American Encyclopedia,** it consists of 32,000 general encyclopedia articles.

4.1 HARVARD BUSINESS REVIEW

This database covers all in articles published in the Harvard Business

Review since 1971.

CHRONOLOG NEWS LETTER

It is produced by DIALOG Information Retrieval Service. The online version of the monthly news publication of DIALOG 1981 to present.

ERIC DATABASE

Current index to journals in Education. It covers a significant number of standard journals in Education. It is a very useful database.

4.2 HISTORICAL ABSTRACTS

Important works of American and European History are covered is this abstract. Brief description of each work has been covered. However, publications of Asian and African countries find no significant place in this source.

5 CD ROM DATABASES

5.1 POPULAR DATABASES

It is a fact that research is very fast in science, engineering, medicine, technology and particularly computer technology, research of course is going on in the social sciences however, it cannot be compared with research development in science and technology. Some important CD ROM databases in social sciences have been briefly described. Almost all of these belong to advanced countries.

5.2 ULRICH'S ON CD ROM

It is very useful database for complete bibliographical detail of periodicals. It is an international source covering periodicals of all the countries numbering about 2,30,000.

5.3 LISA PLUS ON CD ROM

It provides abstracts from over 550 periodicals from more than 68 countries along with unpublished academic and institutional research from the current research in library and information science. LISA plus includes US-State library journals and new titles in information technology. Unrivaled international coverage, no competitor can match the world wide coverage of LISA PLUS, with 150 non-English

language journals from 68 countries in 35 languages.

5.4 Bowker/Whiteaker : Global Books in Print on CD ROM

This source gives the most authoritative coverage of English language titles worldwide. Information specialists and booksellers will be able to locate, access and other material published in English throughout the world.

5.5 Books in Print on CD-ROM

It is a classic bibliographic database for all current and forthcoming American titles in print. Coverage of the titles is about 1.6 million entries. Books in Print with book reviews offers all the benefits and features of complete books in print database, combined with tens of thousands of unabridged book reviews from 14 of the most esteemed book reviewing media. This two disc product includes bibliography and ordering information on 2.5 million bindings including books, audio-books and videos, either in print or out of print.

5.6 ASSIA PLUS ON CD ROM

Applied Social Sciences index and Abstracts data base is a unique subject coverage. It has an international scope, ASSIA PLUS covers publication from over 16 countries. It is complete social science tool for both practical and academic disciplines.

5.7 BHI PLUS ON CD ROM

British Humanities Index is an indispensable part of any current humanities serials collection as well as historical reference. An ideal starting point for any research work, the BHI PLUS CD ROM gives instant and flexible access to the British humanities index records from 1985 to the present, over 217000 entries.

5.8 INSTITUTE OF MANAGEMENT INTERNATIONAL DATABASE PLUS ON CD ROM

It is a complete management tool for the students of management, business schools, academic libraries and personnel/training departments in companies professional institutes and consultancies. It consists of 35,000 Abstracts 25,000 books, working pages, audio-video material etc.

5.9 ENVIRONMENT ABSTRACTS ON CD ROM

It gives comprehensive and effective access to over 2,30,000 citations from 1971 to date.

5.10 WORLD GUIDE TO LIBRARIES PLUS ON CD ROM

A single CD-ROM which is an invaluable research and contact source. Fast retrieval of the information you need on worldwide libraries and with the combinable search criteria you can search for libraries with certain special collections.

5.11 AMERICAN LIBRARY DIRECTORY ON CD-ROM

This powerful new product will help you find your way through the vast US book trade and library communities. It has information about 39000 libraries and retail and antiquarian book dealers. UNESCO launches information compact disc. It has information about UNESCO's publications, education, educational innovation and literacy. OCLC computer library database on CD ROM is the second of four databases in the OCLC library series available from silver platter and OCLC online union catalogue, a database of over 24 million records controlled by over 5000 members libraries throughout the world. The OCLC computer library is an international bibliography of computer and communication materials coverage span the 20th century and includes more than 2,70,000 records published on the disc, the OCLC computer library database is updated annually.

5.12 BNB ON CD ROM

The British National Bibliography (BNB) is also available on CDROM as two distinct products. Records of 1960-85 are contained on two discs and current discs (updated and produced quarterly) contains records from 1986 onwards.

5.13 PAIS ON CD ROM

Public Affairs information service, inc. brings out PAIS on CD ROM covering over 2,50,000 records beginning in 1972 and indexes worldwide information on public affairs from a variety of sources.

5.14 INDEX TRANSLATIONUM ON CD ROM

It covers about 60,000 works translated and published since 1979 in more than 100 countries of the world.

5.15 REFERENCE/SOURCES ON CD-ROM

CD-ROM offers excellent media for covering reference sources. Grolier was the first publisher to use optical media to provide access to its Academic American Encyclopedia. The CD ROM version, called Electronic Encyclopaedia has sophisticated searching capabilities. The first British Encyclopaedia recorded on CD ROM is the 8th edition of Hutchinson Encyclopaedia, McGraw-Hill Encyclopaedia of science and technology. Pergamon international Encyclopaedia of Education, New Encyclopaedia Britannica, Oxford English Dictionary, Guinness disc of records are some very important reference sources available on CD ROM. Microsoft book-shelf, a library of ten references works stored on a single CD ROM disc is perhaps the best selling CD ROM service. Gale directory of databases 1995 lists 4420 databases available on CD ROM. During the next six years large number of reference sources are now on CD ROM.

5.17 SERIAL'S DIRECTORY

It is a CD ROM version of EBSIO's serials directory covering 1,13,000 serial publications including annuals, irregulars and ceased titles.

5.18 DISSERTATION ABSTRACTS

Dissertation Abstracts Humanities and Social Sciences is a comprehensive source of dissertation information covering from 1861 to present. It covers Doctoral dissertations and master theses, representing work over 1000 universities throughout the world, but mainly North American graduate school and many European Universities. The database includes abstracts from 1980 forwards master theses. Abstracts are written by the author of the dissertation/ theses and average 350 words and 150 words in length respectively. This database is brought out by UMI.USA with quarterly updates covering various subjects such as education, business and economics, history sociology, language and literature, law, political science, music, fine arts, arts, cinema, philosophy, religion, theology and psychology. INFLIBNET centre has this database update.

5.19 ECONLIT

It is a fundamental research tool in economics. The database covers the international literature in economics, since 1969 and provides bibliographic citations with selected abstracts of journal articles, books, dissertations and working papers, as well as articles in collective works such as conference proceedings, collected essay volumes and full text book reviews. It has over 3,97,000 records covering the topics economic development, forecasting and history, fiscal and monetary theory, business and public finance, international, healthcare religion-urban economics etc.

5.20 PSYCLIT : Psychological Literature

This CD ROM database is published by the American Psychological association, covers publications in the fields of Psychology and behaviour including such subject areas as social, clinical, cognitive, developmental and education psychology and neuropsychological. Covering from 1974 through the present, it includes references and abstracts for articles from journals, and also for book chapters and books from 1987 to the present. This database is available with the INFLIBNET upto 1996.

5.21 SSCI : SOCIAL SCIENCE CITATION INDEX

This is a multidisciplinary database with abstracts to the journal literature of the social sciences. It includes items relevant to the social science from the 7000 journals. Covered in the multidisciplinary ISI database. It includes author subject index, search by cited author, cited patents or cited papers. This database covers the literature on different subjects viz. education, business and economics, history, sociology, language, literature, law, political science, music, fine arts, arts, cinema, philosophy, religion, theology and psychology. It is brought out by institute of scientific information, U.S.A. and is available with the INFLIBNET for the period 1995-96.

5.22 SOCIOFILE : SOCIOLOGICAL ABSTRACTS

Sociofile is a CD-ROM based fundamental tool for access to the latest international findings in theoretical and applied sociology, social science and political science. It contains abstracts from 2300 journals published since 1974 and enhanced bibliographic citations for dissertations added since 1986. The database combines sociological abstracts with social planning policy and development abstract (SOPODA). Sociofile covers journals articles, dissertations, book abstracts, chapter abstracts and association paper abstracts as well

as form books, films and software etc. INFLIBNET centre has this database.

6 ELECTRONIC JOURNALS

Electronic publishing has led to a new era of communications and information sharing. The term 'electronic journals' is ambiguous, and it is not always clear whether this producers of a given title are referring to a distribution format for a print journal, an electronic archive of a print journal, or a journal published exclusively in an electronic format. In the earlier stage there was not favourable response to e-journals. Comparing earlier and latest e-journals we see a great difference :

1st Generation

- Simple file structures (one file equals are article or one file equals one issue)
- Published by individual or groups of scholars.
- Disseminated by e-mail and the implied audience is the individual subscriber.
- Copy right restrictions are usually waived to the extent that proper attribution is made.

2nd Generation

- Now HTML-based on use the Web to disseminate specially formatted issues.
- Issues or articles include graphics, multimedia or links to other internet resources.

E-journals have undergone a dramatic transformation in style and format since their initial appearance in the early 1990s. Many now have full colour web pages with an attractive and easy to use layout. Despite the fact that layout and presentation have greatly improved, and access has been facilitated by the web and on-line archives, users still may prefer to print hard copies.

E-journals available through internet applications. LIBRES Library and Information Science Research Electronic Journal, Mc Journal : The journal of Academic media Librarianship, PACS review, and The Oliver Tree : A library and information Science Electronic Journal exemplify this type of electronic journal. Now these titles are available on Web. Subscriptions and access to this category of electronic

journal are free. Although there are a number of benefits yet its credibility is yet to be seen in future.

Some major e-journals provides are American Chemical Society (http://pubs.acs.org) Academic Press:/IDEAL LIBRARY (http:// www.ideallibrary. com) Cambridge University Press (http:// journals.cup.org) Elsevier: Science Direct (http:// www.sciencedirect.com) Highwire Press (http://www .highwire.org) Kluwer Online journals (http://kapis.www.wkap.nl/kaphtml.htm

7 ONLINE JOURNALS.

Oxford University Press (http://www3.oup.co.uk/jnls Springer-Verlag : LINK (http://link.springer.ny.com/ol/total/list.htm). Wiley Inter Science (http://www.inter science.wiley.com) Australian Electronic journals (http://www.nla.gov.an/oz/ ausejour.html). In social sciences some e-journals have been started by foreign universities. Some sites are http:/www.clas.ufl.edu/users/gthursby/socsci/ejournal. htm.;http// www.galaxy.com/galaxy/socialsciences/socialwork;http:// www.uic.edu/ depts/lib/reference/resources/journals/ journalcolls.shtml;http://www.linkspider.org/ index.ogi/Science/Social Sciences/Psychology/Journals.http://www.worldsearch.com /dp.lisa/ en/science/socialscience/politicalscience/publications;http:// www.stonybrook .edu/library/elcoll.htm.

Undoubtedly the speed of putting the literature related to social sciences is very slow. Electronic journals are not so useful to the readers. Advanced countries put only their literature on internet. Developing countries are not in a position to follow the same because of various reasons. Economic constraint is an important problem. On line journals are more costly than the printed ones. Slow connectivity speed, failure of electricity, space charges etc. hinder the free flow of information.

Inspite of all these factors all major universities, institutions and research centers in India are rapidly preparing the databases of their records of Theses, journals, books etc. INFLIBNET, NASSDOC, ICHR, INSDOC, DECIDOC etc. are contributing in the free flow of information for all by providing access to a number of services as well as databases. Though slow yet journey to fully automated libraries, information centers relating to social science has started.

6
EMERGING DIGITAL RESOURCES AND UNIVERSITY LIBRARIES IN DELHI AND HARYANA

Dr. (Mrs.) Ashu Shokeen*
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ABSTRACT

In this era of INTERNET and the World Wide Web, the long-time topic of digital libraries has suddenly become quite hot. As the Internet expands, particularly the World Wide Web (WWW), more people are recognizing the need to search indexed collections. Digital libraries are the collection of distributed digital resources, which are made available by the producers of information and consumers can find these through an automated agent. The paper describes the definitions, objectives, and key components of digital libraries. Discusses the challenges of digital libraries. Presents the status of digital resources of the university libraries in the states of Delhi and Haryana.

1 INTRODUCTION

The term "Library" invokes in one's mind a storehouse of information in the form of paper publication like books, conference proceedings, annual reports, monographs, journals, etc. and also of documents in other forms like films, filmstrips, audio and video cassettes, CDs, etc. The term "digital" is actually somewhat of a misnomer. Digital libraries basically store materials in electronic format and manipulate large collections of those materials effectively. The key technological issues are how to search and display desired selections from and across large collections. In this era of the Internet and the World Wide Web, the long-time topic of digital libraries has suddenly become

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quite hot. As the Internet expands, particularly the World Wide Web (WWW), more people are recognizing the need to search indexed collections. The Internet and WWW technologies are providing the technological environment and intellectual impetus for the development of 'digital libraries' – libraries without walls, with container less data and ideas. The Internet has enabled global connectivity of computers and the development of various tools and techniques for networked information provision and access. Any information is just a click ahead to the user as he/she can access the required information on Internet on just a click of mouse. The fantastic tools like messaging (email), ftp, and telnet provide user-friendly tools like Gopher, WAIS and the WWW for information access.

Digital Libraries-Defined:

Digital library is an evolving area of research, development and application. Workers in this area have offered multiple definitions.

Edward Fox has defined the digital library as "the new way of carrying out the functions of libraries encompassing new types of information resources, new approaches to acquit ion, new methods of storage and preservation, new approaches to classification and cataloguing, intensive use of electronic systems and networks and dramatic shifts in intellectual, organizational and electronic processes." [1]

In ODLIS (Online Dictionary of Library and Information Science) digital library has been defined as "A library in which a significant proportion of the resources are available in Machine-Readable format, as opposed to print or microform." [2]

Therefore, operationally digital libraries will be network based distributed systems with individual servers responsible for maintaining local collections of digital documents ranging from sets of electronic texts to video-on-demand services. Any given digital library system should provide a coherent, consistent view of as many as of these repositories as possible and allow users to seamlessly connect and interact with information with no regard to geographic location or time.
Key components of Digital Libraries

The key components of digital libraries are:

- Geographically distributed digital information collections
- Geographically distributed users
- Information represented by a variety of digital objects

- Large and diverse collections
- Seamless access

2 OBJECTIVES OF DIGITAL LIBRARIES

The major objectives of a digital library are listed as under:

1. To collect store, organize and retrieve digital information
2. To provide effective and efficient digital information services
3. To minimize massive storage and space problem in libraries
4. To share the networked information
5. To save the time of library staff as well as users
6. To perform various library activities economically
7. Ultimately to satisfy the users' requirement

2.1 Issues of Digital Library

Before starting the digitizing process, the libraries should first consider certain issues like: Intellectual Property right, cost, Quality of contents, technological developments (Both hardware as well as Software). In addition, decisions also should be made regarding Standards to be followed. The main issues are discussed as under:

1. **Intellectual Property right**: Digital resources are very easy to copy, replicate, message and distribute. Hence enforcing copyright is a major issue. Apart from it, somebody already holds a copyright of a published document. Therefore, the question now arise that who will hold the intellectual property right of this digital resource or document. Whether the library, which converts the document to digital form or the former copyright holder, will hold Intellectual Property right. Before going to digitize any document, a library must go for an agreement with the publisher of the document.
2. **Cost of regular refreshing**: The preservation of digital resources will be an ongoing routine, which require a recurring expenditure. It is true that due to rapid increase in storing capacities and the cost per byte is decreasing. However it needs a regular fund. Hence before going for digitization, one should make it sure from where the regular funds will be available for maintenance of digital resources.
3. **Networking:** Networking of different digital libraries is another challenge posed before the librarians? Given the distribution of library resources around the world, no one expects that there would be a single digital resource. Therefore, we need

methods for searching either individual items or collections in different places, and assembling virtual collections that users can search or browse.

4. **Technological Obsolescence**: Another key issue is that of technological obsolescence. We can discuss the technological obsolescence issue in two points:i) Hardware: The major risk of digital resources is not physical deterioration, but technological obsolescence of the devices to read them. Here the risk is that the lifetime of optical and magneto-optical cartridges is expected to be in decades, but the lifetime of reading devices are almost one decade. ii) Software: The problem of software obsolescence in not less than the hardware. The variety of software formats exceeds the number of hardware devices manufactured, and these softwares come and go more quickly than the hardware does. Hence libraries should rely on Standards like MARC and SGML.
5. **Image document versus ASCII document:** There is another problem in digital libraries that some digital resources are available in the form of images, whereas some are available in the form ASCII documents. Both these types of digital resources occupy different sizes of space. Images occupy almost 10 times more space than ASCII. With the continuing fall in disc prices, the issue is not of storage cost, but that of network time and display capacity. When we scan a book an image of the book is created, whereas when we keying the data it results in an ASCII document. The cost of keying in data is almost ten times more than of scanning.
6. **Preservation**: To provide continuous digital information service, one should not only have current information sources, but should also have the historical information sources. Preserving these documents is an inherent challenge. To preserve digital information, recurring expenditure (as discussed in Para 2) is required.
7. **Pricing:** In the digital world, pricing of digital information service is very complex job. On the other hand libraries are non-profit organizations. However pricing can be done on per use basis.

3 DIGITAL RESOURCES IN THE UNIVERSITY LIBRARIES OF DELHI AND HARYANA

During a survey it is revealed that the university libraries in the states of Delhi and Haryana are going slowly forward for library automation. The situation is not much convincing and there is a need to take the automation work at war footing.

It is evident from table 1 that the availability of digital resources in the university libraries of Delhi and Haryana is negligible. The total digital collection of all the university libraries is only 0.13% of the total collection. This figure is 0.14% in case of University libraries of Delhi and 0.11% in case of University libraries of Haryana. We can say that in spite of the fact that the digital collection is much less in the university libraries of Delhi and Haryana, the university libraries of Delhi have more digital resources as compared to university libraries in Haryana.

Four university libraries have access to INFLIBNET. Three university libraries have access to DELNET and INTERNET. No university library has access to NICNET and SIRNET.

4 CONCLUSION

In spite of the efforts made by INFLIBNET for Training of the Library Professionals, the progress of automation is slow. These libraries have started the work of library automation and all are creating the databases of their collections. The digital resources in the university libraries of Delhi and Haryana are very much less. Nowadays online journals are cheaper than the print versions, these libraries can think of subscribing the online version of journals being subscribed currently. University grants Commission can enhance the digital collection of these libraries by allocating special grants for purchase of digital resources.

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Annexure 1

Table1
Printed V/s Digital Documents

Name of the university	Printed documents	Digital ocuments
GJU, Hisar	14761	16
CCSHAU, Hisar	263178	377
MDU, Rohtak	223350	278
KU, Kurukshetra	275394	245
DU, Delhi	1306643	868
JMI, Delhi	279550	624
JNU, Delhi	462330	1386

Table 2
Network access of University Libraries of Delhi and Haryana

Name of Network	Access	Not access
DELNET	3	4
SIRNET	0	7
ERNET	1	6
INFLIBNET	4	3
INTERNET	3	4
NICNET	0	7

8
ENGINEERING INFORMATION SOURCES ON INTERNET: A STUDY

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ABSTRACT

Information is now available in various formats. It is the basic responsibility of any information center to make available all types of relevant information from different sources in different formats. In the present day environment, librarians are facing many challenges posed by the availability of the electronic information sources as CD-ROM databases, online database and web resources. This paper makes an attempt to project some of the important web resources on Engineering subject. Due to limitations of space only electronic information sources available on Internet have been highlighted in the paper.

1 INTRODUCTION

Rapid developments in technology facilitated the origin of new electronic devices, media and formats. Libraries with a vision are trying to accommodate all types of media and providing services to their clientele in a more convenient and efficient way. As already discussed by many authors, electronic sources have an edge over their printed counterparts. Though they cannot fully replace the printed collections but can definitely augment these collections. In this paper effort has been made to enumerate the sources of information on selected engineering subjects available on Internet. The net, with its ever-growing resources base contains rich information on a wide spectrum of knowledge. It is a living library where one can find up-to-date information on any subject. Now it is also possible to access all

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online databases through the Internet. Access is made simple on Internet through various mechanisms. All the links listed in this paper can be accessed directly through the URLs mentioned.

Internet contains and provides access to many sources of information related to different disciplines in different formats. Following is the list of some relevant and important web sites and webpages covering the engineering information in general. An attempt has been made to indicate the URLs and relevant links to cited sources as far as possible in the list.

2 ONLINE DATABASE SOURCES AND SERVICES ON ENGINEERING

Following are some of the important websites meant for engineering information users. They are the main links which will lead to many sub links in the form of collection of the home pages, related links, databases and other electronic resources covering a wide spectrum of engineering information.

2.1 Engineering E-Library, Sweden (EELS) http://www.eels.lub.lu.se/

The Engineering E-Library, Sweden (EELS) is an information system for quality assessed information resources on the Internet. EELS are an attempt to provide mainly the technical universities with links to evaluated resources. EELS is a cooperative project of the Swedish Universities of Technology Libraries.

Almost all of the selected EELS resources are free of charge and no special conditions for accessing them exist. However, for most subject fields within engineering there are also very important databases distributed through Internet but not free of charge. Passwords are needed to use these databases and they can be reached through other networks as well. The reason for including them is to emphasize their importance in subject orientated information searching. The coverage will vary from subject field to subject field during the first period of EELS.

2.2 EEVL http://www.eevl.ac.uk/

EEVL is the Internet Guide to Engineering, Mathematics and Computing. EEVL's mission is to provide access to quality networked engineering, mathematics and computing resources, and be the national focal point for online access to information in these subjects. It is an award-winning free service, created and run by a team of

information specialists from a number of universities and institutions in the UK.

EEVL's target audience is students, staff and researchers in higher and further education, as well as anyone else working, studying or looking for information in Engineering, Mathematics and Computing

2.3 Australian Virtual Engineering Library (AVEL) http://www.avel.edu.au/

AVEL has been recently changed as the AVEL Sustainability Knowledge Network with a vision to create a web space that brings people and information together around the overlapping themes of engineering, new technologies and the imperatives of sustainability as it impacts on a diverse range of industry and community sectors.
AVEL SUSTAINABILITY KNOWLEDGE NETWORK
AVEL Sustainability Knowledge Network is a portal and brokerage service for engineers, other professionals and researchers concerned with sustainable systems. It is also a resource for students in senior secondary and tertiary education.

Sustainability is used in the sense of the triple bottom line, i.e. financial (including technical), ecological and social sustainability. The products of engineering must not only be technically sound and cost effective, they must also be sustainable in both the ecological and social dimensions. This demands innovative solutions built on solid engineering foundations, drawing on emerging technologies and incorporating ecological and societal considerations systemically.

The concept is to create a web-place - a Sustainability Knowledge Network - that brings people and information together around the overlapping themes of engineering, new technologies and the imperatives of sustainability as it impacts a diverse range of industry and community sectors. The goal is to evolve the Network into a semantic web that supports research, practice and e-learning as the web tools allow.

By creating the Sustainability Knowledge Network, the AVEL team is leading the development of a global network called the Virtual Environmental and Sustainable Systems Engineering Library or VESSEL. The International Council for Engineering and Technology (ICET) initiated the VESSEL project.
The Sustainability Knowledge Network is the logical development of

the award winning Australasian Virtual Engineering Library (AVEL). AVEL is a gateway of quality web resources developed collaborativelyby a national team through an Australian Research Council (ARC) Research Infrastructure Grant from 1998-2002.

3 AVEL- VIRTUAL ENVIRONMENT AND SUSTAINABLE SYSTEMS ENGINEERING LIBRARY (VESSEL)

VESSEL is the name of the World Virtual Engineering Library Network which is being established by the International Council for Engineering and Technology (ICET) with the support of the United Nations Educational, Scientific and Cultural Organization (UNESCO).
The principal emphasis of the VESSEL network will be to provide developing nations with improved access to resources that can assist in education in science, technology and engineering, at senior levels in schools and technical colleges and universities. The network will aim particularly to provide resources to teachers and lecturers, and will seek to meet the requirements identified within the developing countries.
Australian Virtual Engineering Library (AVEL) is the lead library for the VESSEL network. With the support of the Institution of Engineers, Australia (IEAust) and the Institution of Professional Engineers, New Zealand (IPENZ), we are currently building up a substantial virtual engineering library.

3.1 Elsevier Engineering Information (Ei) http://www.ei.org

Engineering Information Inc has an important role in the engineering community. For the universities, Ei products and services provide both faculty and students the most current information available anywhere. In addition, Ei educates students in the use of formal information tools. For those in the corporate community, Ei has been able to provide timely information to facilitate innovation, deliver critical competitive information and directly contribute to the enhancement of product design.

In 1998 Elsevier Science, the world's largest publisher of scientific, technical , technical and medical publications, acquired Ei. Ei's headquarters are based at the Stevens Institute Campus in the town of Hoboken, New Jersey, USA. Ei also has offices in the United Kingdom and Japan.
Engineering Information Inc. is the leader in providing online information, knowledge and support of the highest professional

relevance for research and industrial practitioners in applied physical sciences and engineering. Their mission since 1884 has been to keep our customers competitive with our up-to-date research and information services. They are working to fulfill their mission primarily through the creation of timesaving, cost-effective and efficient products.

The history of their products have spans over a century's worth of time. The founder member Dr. John Butler Johnson first published Index Notes, in 1884. The first resource of its kind, Index Notes only articles of permanent value, providing a concise description that allowed the reader to determine its importance. Now in the 21st century Ei products have taken advantage of the electronic information age by enabling its customers to reach millions of pieces of information in one step. The following section presents details about each of the above services of Ei.

Engineering Information (Ei) offers an array of products and services for universities, corporations and government organizations. Products include:

Engineering Village 2™: A desktop information delivery system that provides access to multiple databases via one interface

ChemVillage™: Provides access to multiple chemistry databases via a single interface. Research bibliographic, news, patent and handbook databases through a single point of entry.

Paper Village 2™: Electronic information service for the Paper & Pulp Industry

Compendex® : A comprehensive interdisciplinary engineering database with over six million summaries of journal articles, technical reports, and conference papers and proceedings in electronic form, dating from 1970 forward

PaperChem™: Comprehensive bibliographic database that covers international journal literature related to the pulp and paper industry

EnCompass™ : An electronic database that provides timely technical literature and patent information for the petroleum, petrochemical, natural gas and energy industries.

The Engineering Index: An organized compilation of bibliographic citations and abstracts covering the world's technological literature in all disciplines

Abstract Bulletin of Paper Science and Technology: Crucial coverage for the pulp and paper community, this important resource contains hundreds of records each month

Chemical Business NewsBase: A leading database of worldwide

chemical business news and information

3.2 ENGINEERING VILLAGE is a powerful way to search across multiple databases via one interface. In just a few seconds even the first time user can reach over 6,000,000 summaries of journal articles, technical reports, and conference papers and proceedings dating from 1970 forward as well as more than 10,000 website abstracts, and 80 full-text searchable handbooks, patents and standards.

- Links to full-text articles from Elsevier Science, the Institute of Physics, the American Institute of Physics (including the American Society of Civil Engineers and the American Society of Mechanical Engineers), Springer-Verlag, John Wiley & Sons and Academic Press.
- Ability to order individual documents from the Linda Hall Library
- Fully customized features
- Two levels of search capabilities: Quick search and Expert Search.

Multiple Databases to choose from:

(1) Ei Compendex® : The most comprehensive interdisciplinary engineering database in the world:

- Over 6,000,000 records from 1969 to the present 250,000 records added annually
- Updated every seven days
- References and abstracts from over 5,000 journals, conferences and reports

(2) United State Patent and Trademark Office:

- Existing Patents and Trademarks dating from 1976
- Access to the Patent and Trademark Depository Libraries
- How to apply for a patent
- Register practitioners registered to practice before the PTO

(3) CRC Press: One of the world's leading publishers of engineering handbooks:

- On-line access via ENGnetBASE
- Over 80 engineering handbooks on-line and full text searchable

*Additional subscription fee required for handbook access

(4) Industry Specs and Standards:

Comprehensive collection of industry standards and specifications

- Over 20,000 abstracts available with links to full text articles

*Initial fees required for full standards

(5) Website Abstracts:

- Access to more than 10,000 website abstracts
- Consistent search results ensured via the Ei Thesaurus
- Websites evaluated based on research value, technical content and relevant information

Abstracts ranked based on content, ease-of-use, presentation, and organization of information

ii)CHEM VILLAGE is a new resource that provides a 'first stop shop' for scientists and professionals in the chemical industry.

The features of ChemVillage include

Three Databases:

- Chimica
- Chemical Business NewsBase
- Beilstein Abstracts

Other features include:

- Links to full text articles in online journals
- Search assistance using Reference Services and Ask a Chemist
- Unlimited usage for one annual subscription fee

4 ENCOMPASS

With access to over 1.5 million selections, the EnCompass® database is the premier international information source for the petroleum, petrochemical, natural gas and energy industries. Providing timely as well as technical literature dating from 1964, EnCompass™ provides historical technical literature, patent information, technology applications, and business news and market intelligence. All information is easily found because of precision searching based on a controlled vocabulary.

- EnCompassLit™ is the technical literature database focusing on worldwide petroleum-related materials. Records are derived from trade and scientific journals, conference proceedings, and technical reports with original abstracts plus abstracts from other important sources.
- EnCompassPat™ is the patent database covering patents from nearly 40 countries. It contains EnCompass world-renowned value-added indexing, which is designed to allow researchers to

locate all relevant patents with ease and confidence. It includes special features not available elsewhere, such as roles and links.

Available Databases:

(1) PaperChem™ : A comprehensive bibliographic database covering international journal literature related to pulp and paper technology. Includes abstracts of journal articles, conference papers and technical reports with more than 480,000 records covering:

- Forestry
- Hemicelluloses
- Carbohydrates
- The Chemistry of Cellulose
- Lignin and Extractives
- Engineering and Process Control
- Corrugated and Particle Board
- Corrosion
- Equipment
- Packaging
- Pollution
- Water & Power

(2) Website Abstracts:

Over 3,000 websites selected and reviewed by industry experts based on their research value, technical content and relevant information

(3) US Patent Office and Trademark Office:

- Over 6,000,000 patents dating from 1976
- Access to the Patent and Trademark Depository Libraries
- How to apply for a patent

4 PAPER VILLAGE

is the electronic information service for the paper and pulp industry professional in engineering, research and development and management.

Designed to find informed answers quickly, the PaperVillage2™ provides access to a series of databases and multiple websites.

5 E4 ENGINEERING :www.e4 engineering.com

The e4 network is a group of sites from UK business publisher centaur communication dedicated providing information and services to those working in industry and the engineering professions. The first two sites in the e4 network ,e4 engineering.com and e4 data.com, our job site e4 jobnet.com and directory site subcontract services, e4 subcontracting.com E4 engineering.com is a First European portal site, brings content. from centaurs market leading engineering magazines along with news and features updated.

E4 data.com is a subscription based service- data is the place to look for technical specification and data sheets.

E4 jobnet.com is a specialists recruitment site for engineering industries at regular intervals throughout the week updation.

E4 subcontracting.com is a directory of subcontracting services easy searches by company, service, location or by quality approval.

6 INFOMINE: http://www.infomine.com

INFOMINE is a virtual library of Internet resources relevant to faculty, students, and research staff at the university level. It contains useful Internet resources such as databases, electronic journals, electronic books, bulletin boards, mailing lists, online library card catalogs, articles, directories of researchers, and many other types of information.

INFOMINE is librarian built. Librarians from The University of California, Wake Forest University, California State University, The University of Detroit - Mercy, and other universities and colleges have contributed to building INFOMINE.This web site is designed to work with any web browser that has the ability to display HTML and forms. Some JavaScript is used, but it is not necessary.

7 ONLINE ETHICS CENTER FOR ENGINEERING AND SCIENCE: http://www.onlineethics.org/

The Online Ethics Center for Engineering and Science has been launched with a mission to provide engineers, scientists, and science and engineering students with resources for understanding and addressing ethically significant problems that arise in their work, and to serve those who are promoting learning and advancing the understanding of responsible research and practice in science and engineering.

8 BUBL LINK : http://www.bubl.ac.uk

Bubl is the name of a catalogue of selected Internet resources covering all academic subject areas and catalogued according to DDC (Dewey Decimal Classification). All items are selected, evaluated, catalogued and described. Links are checked and fixed each month. LINK stands for Libraries of Networked Knowledge. BUBL 5:15 provides an alternative interface to this catalogue, based on subject terms rather than DDC. The aim is to guarantee at least 5 relevant resources for every subject included, and a maximum of 15 resources for most subjects, hence the name 5:15. Big subject areas are broken down into smaller categories. However, the upper limit of 15 is not rigidly applied, so there may be up to 35 items for some subjects.

The BUBL LINK catalogue currently holds over 11,000 resources. This is far smaller than the databases held by major search engines, but it can provide a more effective route to information for many subjects, across all disciplines.

9 ENGNETBASE : http://www.engnet.com

Database of engineering information providing access to data, facts, figures, graphs, equations, illustrations and charts. Information in the database is critically evaluated by prominent authors in the field. Disciplines covered include General Engineering, Structural Engineering, Communications, Electrical Engineering and Digital Signal Processing. The service is subscription-based, with a short free trial available. Auther of the site is Chapman and Hall.

10 ERA TECHNOLOGY CONFERENCES AND COURSES http://www.era.com

Diary of technical conferences, exhibitions, training courses, and seminars which concern the impact of developments in technology, the practical application of technology in a market, and the legislation or knowledge of industry. Author or this site is ERA Technology subjects covered include engineering news, technology transfer

11 FLOW SIMULATION'S ENGINEERING LINKS: http:www.englinks.com/

A list of links to engineering resources on the Internet, arranged by category of engineering. Includes links to resources on aerospace engineering, CAD, civil engineering, marine engineering, materials science, and mechanical engineering.

12 CONCLUSION

The availability of and complex nature of innumerable number of sources on Internet demands lot of thinking, knowledge and awareness for selecting and accessing databases and evaluating the sources in terms of their authenticity.Especially acquisition librarian should have the knowledge in interpreting legal conditions and terms of license and negotiation skills.

For evaluating electronic sources, besides testing the purpose authority and scope of the source, additional factors to be considered are various storage formats used; the search facilities offered to access the data in depth and rapidly; updating policy or currency of the information; and software and hardware required for optimum utilization of the electronic sources. Individual electronic sources have to be checked in terms cost, coverage of all types of materials; indexing practices followed in issues like provision of back issues of electronic sources.

The advantage of Internet for information professionals when compared with traditional online databases and CD-ROM databases are: more potential, inexpensive and speedy communication with many databases, low cost communication to vendors sites, help desk information via e-mail, international/global ness, improved document delivery, and full text search facility.
Potential reasons for the use of Internet as identified by professionals, are: more current information, better search facilities and multiple and network access. Many authors,espeially librarians have also pointed out many specific applications and uses of Internet for library and information centres.

Libraries are found to be a major market for CD-ROM products and obline databases. Major and large databases like ERIC, NTIS, COMPEDEX, Applied Science & Technology Index are some of the CD-ROM databases on Engineering & Technology available from Silver Platter and H.W. Wilson, UMI etc.Many of these databases are procured by different university libraries And R&D institutes.But access to them is restricted.Only staff, faculty and students of these organisations can avail them.Subscribing these databases individually by single user is really expensive.Institutional membership through subscription is always advisable.

The criteria used for evaluating online databases by different authors

includes subject coverage, currency, ease of use, type of output, index language, cost, documentation and search aids and time span. For downloading information from the online databases and preserving as institutional source there is a need to develop a comprehensive copyright system and standard publication structure that provides specifications for representing content of the electronic resources.

Electronic resources have brought many changes to the library users, services and functions. Electronic resources including hardware, software and network technology are potentially more expensive than any type of material previously acquired in the libraries. While subscribing the CD-ROM or online databases for the library the librarian should ask the publisher or vendor provide the product on free loan/trial access bases for evaluation of the databases content retrieval software etc., through checklist. After selecting the databases the librarian has to negotiate with publisher/vendor for several other issues like lease/license period, subscription and renewal price, mode of payment, ownership and number of update with frequency. For successful completion of acquisition of these sources, the librarian must have clear and thorough understanding of the above aspects. Careful examination of the list of available sites on engineering reveals that almost 95 percent of the sites are developed and maintained by agencies and institutions abroad. Though the review of literature in Indian professional journals indicates about the efforts being made by Indian libraries and institutions for generating local and institutional databases,majority of them are not available through Net.The main reason is many of these institutions have no home pages or web sites of their own.

The URLs of sites mentioned in the article will assist the professional librarians and users of engineering information to locate and access them. But access to the full-text may not be possible in many cases. For this one needs mebership. However one need not get disappointed, as many more sources are also available full text online free of cost.

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4

FREE ONLINE ELECTRONIC INFORMATION RESOURCES ON APPLIED SCIENCE ANDTECHNOLOGY

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ABSTRACT

The paper discusses free online electronic information resources and different means of collection of the resources. The online electronic information resources on "Applied Science and Technology are compiled and linked at URL: http://www.geocities.com/ghosh_svrec and described the different free Internet resource like online electronic journals, online electronic books, online databases, organizations, virtual libraries on Applied Science and Technology and special page on earthquake information..

1 INTRODUCTION

With the rapid development of technology and emergence of Internet, electronic publishing is getting a tremendous impetus form the publishing industry as well as libraries and information centers. E-books, E-journals, E-magazines, E-conferences, etc. are the leading digital resources and exerting a dominant pressure on the publishing world and paving the way to the transition from print to electronic media.

The enormous changes that are taking place in the information and communication technology have stretched too far into all walks of life. Library and information centers are no exception to this. Librarians of Engineering Institutions have traditionally been at the forefront in the integration of new technologies into their services and the explosive

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growth of Internet has created innumerable opportunities and challenges. Engineering Libraries have immediately realized that there is a need to organize the information sources available on the web so that their users could find resources for their research, teaching and consultancy services.

2 ONLINE ELECTRONIC INFORMATION SOURCES

Over the last decade all aspects of computer technology, processing techniques, storage media and input/output devices have become faster, more compact, sophisticated and less expensive. Internet is one of the boons of information technology. Introduction of Internet and web technology has reduced the cost, time and manpower of publishing documents. As a result organizations, institutions and even individuals are publishing on the Internet.

The place of exploitation of Internet by the Library and information center are unlimited and endless. Internet provides a wealth of information such as online E-books, E-journals, E-news letter, E-database etc. These vast resources can be accessed by the library and information centers and can be provided to the users.

3 LIMITATIONS OF LIBRARIES AND INFORMATION CENTRES

Information resources are unlimited but the budget of the institution is limited particularly in case of self financed engineering and technical institutions. The ministry of Human Resources Development has arranged for Consortia based subscription of online electronic journals and databases for IIT (Indian Institute of Technology) REC/NIT (Regional Engineering Colleges / National Institute of Technology) on the other hand personal experience of the author found that self financed engineering college libraries except a few have been suffering from acute shortage of budget and they are not in a position to subscribe core journals of the concerned discipline. Looking in to this problem the author has started to compile the links of online electronic books, electronic journals, online databases on Applied Science and Technology which are accessible free of charges at URL: http://www.geocities.com/ghosh_svrec In addition to online books, journals and databases author has also created the links of other Engineering Institutions, Organizations, Engineering Digital and Virtual Libraries and other reputed libraries for the use of engineering academics and professionals

4 FREE ONLINE ELECTRONIC BOOKS (http://www.geocities.com/ghosh_svrec/ebook.html)

Due to advancement of web technology different organizations and institutions like Virginia University, Pennsylvania University and other organizations have taken up digital library and E-book projects. As a result different E-books are freely available online. Freely available online electronic books on Applied Science and Technology are identified and linked in this section. Near about 1067 number of E-books on Applied Science and Technology as stated below are freely accessible online.

Subject / Topic	Number of Books AvailableOnline
Applied Science	
Mathematics and Computer Science	375
Astronomy	52
Physics	60
Chemistry	78
Geology	40
Total Applied Science	**605**
Technology	
Engineering (General)	31
Hydraulic and Ocean Engineering	06
Environment (including Pollution)	46
Highways, railways & Bridges	01
Building Construction	07
Mechanical Engineering	17
Manufacturing	34
Electrical Engineering	53
Motor vehicle, Air and space technology	84
Mining and Metallurgy	06
Chemical Technology.	16
Photography	04
Total Technology	**305**
Other Interdisciplinary subjects	
Handicrafts, Arts and Crafts	08
Home Economics (Including Food & Cooking)	42
Military Science	98
Naval Science	17
Total Applied Science and Technology	**1067**

In addition to the above a few e-books on Applied Science and Technology are available online at Gutenberg Project (at http://www.promo.net/pg/) and some e-books on Computer and Internet are also available at Hogan Publishers at http://www.hoganbooks.com . The publishers are keeping these books on line for free access for a specific period of time.

5 ONLINE ELECTRONIC JOURNALS (http://www.geocities.com/ghosh_svrec/ejnl.html)

About 104 number of journals on Applied Science and Technology including Information Technology and Internet those are freely accessible are identified and linked with the above mentioned URL. Out of 104 journals 71 journals are available in full text and abstracts/ contents of the remaining journals are also available free of charges. The number of journals is not exhaustive as the work is going on and it is a continuous process.

6 ONLINE DATABASE (http://www.geocities.com/ghosh_svrec/dbase.html)

Different databases on Applied Science and Technology like Compendex, INSPEC, ASTP etc are available on CDROM as well as online, but it is not possible to subscribe the same for small and medium sized libraries and self financed Engineering colleges due to high rate of subscription. Near about 29 numbers of Online Databases which are freely accessible through Internet are identified and linked with URL http://www.geocities.com/ghosh_svrec/dbase.html. Out of 29 databases followings are the most important for the students and faculties of Applied Science and Technology.

6.1 Earthquake Engineering Abstracts (http://nisee.berkeley.edu/eea.html)

This database is maintained by the National Information Service for Earthquake Engineering (NIESEE), University of California, Barkeley. It covers the world's technical literature in earthquake engineering since 1971. Coverage includes technical reports, conference papers, monographs, journal articles. Provides Query by author, title, keywords, date. View citations and abstracts. It contains 10,00,000 records and is updated continuously. A maximum of 200 records will be displayed at a time. It provides author, title and keyword search and Boolean search under author, title and keywords and searchable in any range of year from 1971. A search example is stated below in figure no. 1 for clear understanding.

A sample search is made under the term "earthquake resistance" for the year 1994 1995 and 1996 and total 32 documents are retrieved as shown in figure 2.

If the user click on the required article the abstract will be displayed on the screen as shown in figure no. 3 and the user can download or can take printout of the same. Materials in EEA are available on loan from the Earthquake Engineering Library at the University of California, Berkeley. More information will be available from EERC Library, 1301 S. 46th Street Richmond, CA 94804-4698, Phone: 510-231-9403, Fax: 510-231-9461 Email: eerclib@nisee.berkeley.edu

6.2 U.S. Patent Full-Text and Full Image Database (http://uspto.gov.patft)

This database contains two parts i.e. (1) Patent Grants Database and (2) Patent Applications Database. Patent Grants Database includes full-text since 1976 and full-images since 1790. Patent Application Database is being published since 15th March, 2001. The databases are having following searching facilities:

- Quick search
- Advanced Search
- Patent number search (In case of Patent Grant Database)
- Application Number Search (In case of Patent application Database)

Index page of the Database is shown in figure number 4:

It also provides Boolean search facilities and the database may also be searched by type and year as shown in figure number 5: The search was conducted under term (1) "Digital signal" and (2) "processing" and option of year was "1996-2002". It retrieved 33013 number of documents as shown in figure 6. If the user click on the particular document the full text of the document along with abstract will be displayed and the user can download or get printout of the same.

6.3 NASA Technical Reports Server (http://techreports.larc.gov/cgi-bin/NTRS)

The NASA Technical Report Server is an experimental service that allows users to search the many different abstract and technical report servers maintained by various NASA centers and programs. Specifically, it is a unified interface to many separate WAIS servers. NTRS is both a superset of the of the various servers, and a canonical listing of the servers. It includes following databases:

Ames Research Centre	NACA Reports (Abstracts only)
Astronomy & Astrophysics (ADS)	NACA Reports (Full text)
Dryden Flight Research Centre Glenn Research Centre	Physics and Geophysics (ADS)
Goddard Institute for Space Studies	CASITRS (RECONselect)
ICASE	Space Instrumentation (ADS)
Jet Propulsion Laboratory	Stennis Space Centre
Johnson Space Centre Marshal Space Flight Centre	LANL Astrophysics e-Prints (ADS)
Kennedy Space Centre	Selected Current Aerospace Notice
Langley Research Centre	Goddard Space Flight Centre

NTRS is intended for use by the various research communities targeted by the various report and abstract servers. It is open to all members of the Internet/World Wide Web community. It provides Boolean search facilities. A sample search has conducted under the term "digital signal processing" as shown in figure 7.

177 numbers of records are retrieved as shown in figure number 8. The user have to single click on the required item to see the abstract and the full text is available in PDF format. Abstract is shown in figure number 9.

6.4 Conservation database (http://www.wcmc.org.uk/cis/index.html)

This database is maintained by UNEP (United Nation Environment Project) WCMC (World Conservation Monitoring Centre). It provides information services on conservation and sustainable use of the world's living resources, and helps others to develop information systems of their own.

It is beginning of the process of making this information available through the Internet with this collection of the links, such as Species databases on the world's threatened animals, Plants and trees, Protected Areas, Forest, Marine and National Biodiversity profiles.

4.5 AIRS: Aerometric Information Retrieval Systems (On Atmospheric Pollution) (http://www.epa.gov/airs/airs.html)

In 2001 EPA (Environmental Protection Agency) changed the Aerometric Information Retrieval System (AIRS) to a database that solely related to tracking the compliance of stationary sources of air pollution with EPA regulations. It provides information on Air Pollution,

Air facility subsystems, Air quality systems, Air toxics etc.

7 LIBRARIES-VIRTUAL LIBRARIES-DIGITAL LIBRARIES (http://www.geocities.com/ghosh_tbd/lib.html)

In this section reputed libraries all over the world, different digital libraries and virtual libraries are linked. Among all the libraries following are the most important ones.

7.1 World Libraries on the World Wide Web (http://www.123world.com/libraries/index.html#t)

It provides ultimate source of authentic and reliable information about 137 of libraries of the world on the net. This list of libraries includes the link of public libraries, research libraries, state libraries, national archives, libraries of different educational institutions, agricultural and technical libraries, business libraries, science libraries, and IMF libraries all over the world. It is arranged in alphabetical order.

7.2 Digital Library of Virginia Tech (Virginia Polytechnic Institute and State University): (http://scholar.lib.vt.edu)

It provides (1) Scholarly Publishing services including E-journals, Electronic theses & dissertations, news, reports, survey database and Virginia Tech Publications and (2) Library Services and Archives including E-reserves, special collections, manuscripts, rare books, University archives and searching digital library and archives.

7.3 Digital Library: University of California : (http://elib.cs.berkeley.edu)

The University of California, Berkeley Digital Library Project is a part of Digital Libraries Initiative, sponsored by the National Science Foundation and many others. It provides quick access of the collection, overview of the collection, image retrieval by image content, document image analysis and distributed search.

7.4 Australian Virtual Engineering Library (http://avel.edu.au)

It provides Australian Digital Theses, ENGINE Database from IEAust, SciTech Library Newsletter and Full Text Papers on Biomedicine & Biotechnology, informatics, Nanotechnology, Robotics, Solar Energy, Sustainable Development, Chemical , Civil, Electrical, Environmental and Mechanical and Mining Engineering, Computer Science & I.T. and Engineering Education. This is one of the best site for Engineering and Technology field. It provides full text search facilities. This virtual library is most useful and interesting to the engineering students and academics. The most interesting feature of this library is that users

can access and can download their full text resources whatever they digitized. It contains 3,950 documents till date. The retrieval process is shown in the following figures. Figure no 10 is the main index page of the Library:

Search has conducted under term "Waste water treatment" and total 9 numbers records are retrieved as shown in figure number 12. If the user click on the required item the full text of the document will be available and the user can download the same and can get printout.

7.6 Other Virtual Libraries

All the virtual libraries on Applied Science ands Technology can not be described in a single paper, but among the other virtual libraries following libraries are the most important sources to the academics of Applied Science and Technology.

- Science Virtual Library: http://vlib/Science.html
- Engineering Virtual Library: http://vlib/Engineering.html
- Environmental Virtual Library: http://vlib/Engineering.html

8 EARTHQUAKE INFORMATION (http://www.geocities.com/ghosh_svrec/eqi.html)

In this section following links on earthquake are linked from where the users can get up-to-date information like Earthquake News, Earthquake warning and prediction Research, Earthquake report on different earthquake allover the world.

- US Geological Survey's Earthquake Information
- Earthquake News
- Quakeline Database
- Earthquake Image Information System
- Earthquake warning and Prediction Centre and many other sites on earthquake

9 CONCLUSION

The challenge of the libraries in India are facing with is not a paperless society but to maintain, nurture and optimize the resources of the libraries with the help of new technology. Mutual exchange of information and resource sharing will be the objective of our professional ethics and it has to be nourished in future for growth and healthy development of our library and information center. It is the duty of the library and information and information service professionals to find out a which of the sources are useful to their users and to integrate their resources and to provide better service

to the users. There is nc doubt that these type of competition of the website of freely available online information resources will be more relevant and effective to save the space, time, money and manpower of any library and information center.

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9
INDMED: INDIAN BIOMEDICAL RESEARCH DATABASE DEVELOPED AT NIC : A CASE STUDY

Sukhdev Singh*
Naina Pandita*
Surinder K Gaba*
Rajesh Agarwal*

ABSTRACT

IndMED is an online bibliographic database covering 75 Indian Biomedical Journals. It was conceived to fill up the gaps of reporting medical research from India by incorporating those peer reviewed journals which were not indexed by major abstracting and indexing services such as MEDLINE. These journals were selected based on certain criteria fixed by Journal Selection Committee. A database structure was framed using Common Communication format and adopted International standards for laying out data in the database. Suitable back-end and front end were developed to publish it on the web. It is available from Internet free of cost. Along with the bibliographic details of the articles it also provides links to the available source journals on the web.

1 INTRODUCTION

Adequate publicity and dissemination of Indian biomedical research has been a matter of concern for Indian medical professionals for many years, particularly in the context of numerous bibliographic database, compiled and disseminated worldwide, both online and

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through CDROM. Indian contribution in the areas of biomedical research and healthcare has been significant and conforming to international standards. However, only a small fraction of it, is covered and cited. There could be many factors responsible for this poor representation biomedical research published in India.

One of the factors could be that third world countries, including India, are facing the predicament of neglect of biomedical research, irrespective of its value to mankind. The issue has been distinctly addressed in the 1st November 1997 issue of "New Scientist" under the editorial page [4] and one of the articles entitled "The price of prejudice" [2].

Other important factor of poor citation of Indian Biomedical Journals could be Internet "Invasion" which made more and more researchers and practitioners choose World Wide Web as their primary tool of information search. Thus, those publication which are not available "Online" runs the risk of becoming "Invisible" [5]. To get noticed, the journals need not only be covered in indexing services but be made available on the Internet. However very few Indian biomedical journals qualify these requirements.

MEDLINE is the most sought bibliographic database in the area of biomedical research and practice. However, the coverage of Indian journals is very limited. ICMR-NIC Centre has developed a bibliographic database by indexing Indian biomedical journals. As these journals are not covered in MEDLINE database, it supplements MEDLINE for the coverage of biomedical literature published from India. It provides the much-required exposure to Indian biomedical research and caters to the requirements of information seekers.

2 IndMED

IndMED is produced by Indian Medlars Centre (IMC) (http://indmed.nic.in). In 1986, National Informatics Centre (NIC) and Indian Council of Medical Research (ICMR) (http://www.icmr.nic.in) jointly set up a centre called *ICMR-NIC Centre for Biomedical Information.* The primary goal of the Centre was to meet the information needs of the medical professionals in India from the MEDLARS (Medical Literature Analysis and Retrieval Systems) databases of United States National Library of Medicine (NLM), USA (http://www.nlm.nih.gov) and other databases. In 1990, the Centre was recognized as the 17th International MEDLARS Centre (IMC) and is

known as Indian Medlars Centre (http://indmed.nic.in). The Centre provides information from various databases and biomedical resources to the users in the country. In recent past, the centre has been more focussed towards the content generation and distribution.

IndMED is a bibliographic database. "**Bibliographic databases** are text databases that contain references to journal articles and sometimes chapters in books and conference proceedings. References are usually supported by abstracts or summaries of the contents of the article to help you gain a clear idea of the information that each article contains." [1]. A bibliographic record usually have information like Author(s), Address of the Author(s), Title of the Article, Name of the Journal, Volume of the Journal, Issue of the Journal, Pagination of the article, Abstract of the article and Keywords representing the theme of the article. A bibliographic database is characterized by having variable number of fields and variable record length.

IndMED is available free-of-charge to the individuals through Internet at http://indmed.nic.in. Its Web interface provides three levels of searching and three levels of display of the search results. The display of references also provides hypertext links in case source journal is available on the Internet.

3 DEVELOPMENT OF INDMED DATABASE

IMC had been making efforts to build bibliographic databases from biomedical journals published in India. An initial effort to this was the database on Neurology, developed by IMC in 1989. In 1993 a database on Population was compiled by IMC. Tuberculosis Research Centre (TRC), Chennai was given a project to index articles from journals pertaining to "Tuberculosis & Allied Chest Diseases" in 1995. Another project was given to Kidwai Memorial Institute of Oncology (KMIO), Bangalore to index articles from journals related to "Oncology". A common database structure based on the "Common Communication Format, 2nd Edition [3] was used for all these databases. CDS/ISIS Version 3.07 [7] was used as the DBMS. Later it was decided to include more journals from other subject areas as well and club all these databases into one national database called IndMED. It has been named as IndMED to reflect its scope of covering Indian biomedical literature.

4 SELECTION OF JOURNALS

IndMED was designed and developed on the lines of MEDLINE database. It indexes Indian biomedical journals and covers 75 journals from the year 1986 onwards. The Aim of IndMED database is provide exposure to articles published in learned biomedical journals from India. A "IndMED Journals Selection Committee" (IJSC) does the selection of journals for indexing in IndMED. Presently, the IJSC has laid down the following criteria for selection of journals:

- Journal should be Peer-reviewed.
- Journal should be published on time.
- Journal should be published atleast twice in a year.
- Journal should have started atleast three years prior to selection.
- Preference is to be given to Non-MEDLINE journals to avoid duplication of efforts.

5 INDEXING PROCESS

The timely receipts of journals are tracked and reminders to the publishers are sent at regular intervals if required. On the receipt, the journals are assigned to indexers for indexing. The indexing work involves: -

- Reading and understanding of the articles by indexers;
- Finding key concepts discussed;
- Standardizing these concepts into keywords according to MeSH [8];
- Rendering of bibliographic details in indexing sheets along with standardised keywords.
- Indicating of presence of author written abstract if any.

Once the indexing is completed data entry is done. Data from indexing sheets is entered in flat text files in tagged manner. These text files are then subjected to spell checking process using standard word processing software. After the spell check the files are converted into ISO2709 format. The data is then imported in temporary ISIS database for further processing. This database is then edited and

standard journals' IDs are added to facilitate "relational linking". Once the data in the database is found is order, it is exported in ISO 2709 format. This data is then merged in the IndMED database on the database server and made available for the public access. This addition of data to IndMED database is an ongoing and continuous process.

6 WEB INTERFACE TO IndMED

IndMED was made publicly accessible in December1997 through WEB (World Wide Web) using BASIS+ Webserver. The data was converted from CDS/ISIS into BASIS+ by using writing special utility for this purpose. The WEB interface was later on improved and redesigned. It made use of i) Three levels of search interfaces as front end; ii) ISIS database file structure as the backend and iii) Web-Database Connectivity using CGI and implemented by PERL scripts [6].

Searching IndMED through WEB Interface is relatively easy. Search terms can be entered in one of the three query forms i.e. Simple Form, Minimal Box or Advance Search Form depending upon the complexity of the query. Minimal Box is available at the top of most of the pages of the site. The Simple Form and Advance Form are available at IndMED Page. Right truncation of the search terms is also available by using an dollar ($) sign. Single words can be combined with Boolean Operators (AND, OR, and NOT) to form a complex query. For some fields "Phrase searching" is also available. Further by using Advanced Search Form, searches can be restricted to particular fields like Authors, Journals, Article Title, Keywords and ISSN etc.

Search results are displayed by generating dynamic HTML pages. The display has a top "manipulating tool bar"; middle portion displaying references retrieved in response to the query and a bottom reusable search box showing the query. All or selected references can be redisplayed by using different display format. "Citation" format displays the Author(s), Address, Title and Source. Citation+Abstract format displays Abstract along with the Citation. Full Record format displays Keywords, Other Keywords and No. of References in addition to elements displayed by Citation+Abstract Format. In all the formats, the journals available on Internet are shown as hypertext links.

7 CONCLUSION

IndMED provides much needed exposure to biomedical research published in India and acts an important resource to biomedical information seekers. It is being updated on an ongoing and timely basis. It has received tremendous response from the biomedical community bot at national as well as international level. It has been listed at several resource directories as a useful resource for biomedical research and practice. Links to Full text articles would be made available through NIC servers by developing full text archives of indexed journals.

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11
INTERNET BASED LIBRARY SERVICES

Dr. Anil Kumar Dhiman*

ABSTRACT

We are passing through the age of information and communication technology, in which there are available lot of options for retrieving relevant information. Internet is one of the facilities through which the information can be stored, arranged and can be transmitted back to the users quickly, timely and accurately. This paper discusses Internet and Internet based library services through which the right information could be provided to the users quickly, timely, accurately and efficiently.

1 INTRODUCTION

The Internet is a vast, worldwide system consisting of people, information and computers. It is so huge and complex that it is beyond the comprehension of a single human being. Historically, its roots lie in a project called ARPANET, which was sponsored by the United States Department of Defense, Advanced Research Project Agency (ARPA). The department of defense was interested in building a network that could maintain itself under adverse conditions. This project was started in 1968 and soon evolved into a more general goal of developing techniques to build a large – scale network. ARPANET continued for years and was gradually phased out after being officially declared completed. By then the technology to connect computers reliably and economically had been developed and today the ARPANET's spiritual descendents form the global backbone of what we call, INTERNET.

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It is a network of interconnected worldwide webs of different types of organizations like universities, business, defence and science organizations etc. The emergence of INTERNET has changed the role of libraries radically. Now, the library users have no barriers, as the entire information is available on web. Today, the libraries have important functions of collecting, distributing and depositing of local information, talent and resources available with them to users world wide and also connect, retrieve and disseminate the information available across the globe to local users. All this could be possible only due to INTERNET.

- Dennis et al., (1997), stated that the INTERNET can be used for: Accessing the electronic resources, such as bibliographic records, full text electronic journals with images, links to local and remote indexes and databases document delivery and links to library – prepared user guides integrated through a common user interface like a hypertext browser.
- Expanded access beyond locally held resources via the OPACs as gateway.
- Seamless links from resource to resources.
- Support of multiple electronic field and document formats and
- A graphic user interface display that can accommodate more textual explanation of searching instruction descriptions of resources.

In the words of Quterman, (1993) and Yumba (1997), the uses of Internet are:

- It is useful as search utility to access information stored on millions of computers world wide without the danger of being shut out.
- It gives to an array of on-line journals and database on various subjects and users can ignore irrelevant information.
- It gives access to colleagues through instantaneous transmissions/ receipts of e-mail messages and files as several people can provide input at the same time.
- It also facilitates book reviews that could enhance research and journal publications. It also encourages anonymity and constructive criticism of bad ideas.
- It also helps in distance education like co-operative projects and also used in solving conflicting viewpoints.
- It disseminates all kinds of data and information by keeping in

touch with the latest developments in various disciplines.

- It serves as an index to educational and socio - economic developments.

2 BASIC FACILITIES ON INTERNET

The basic facilities, which can be availed through INTERNET, may be summarized as follows (Dhiman, 2001, Sinha and Dhiman, 2001, Dhiman, 2002, Dhiman and Sinha, 2002 and Dhiman, 2003):

(i) Electronic Mail or e-mail: It is the most used service of the Internet. The messages can be sent to a single person to a group of persons separately at the same time through this facility. Its speed is high and charges are low in comparison to postal service; owing to which, it enables one to be in touch with the rest of the world in most economical and efficient way. E-mail programs allow us to save, print or reply the messages and also to attach word processing documents, graphics of video images with our reply.

(ii) List Servers: This is a discussion group created to share ideas and knowledge on a particular subjects. The discussion groups are created and monitored by some one with an interest in that subject and are open to anyone. One can join the list simply by sending an e-mail request to the list. The programme automatically reads e-mail message and extracts your address and adds this to the circulation list. The message sent to a list is copied and then forwarded to every subscriber of the list. The first message tells you that you have successfully subscribed to the list.

(ii) Usenet/News Groups: Unlike the list servers, the news group servers provide access to thousands of topic – based discussion group services that are open to everyone. The newsreader software allows you to post an article to any group for others to read. A comment to a message can be added to the thread of the article and one can find answer to a specific question.

(iv) File Transfer Protocol or FTP: This is mechanism that allows placing and retrieving of files over the Internet. It allows downloading of software, product up gradation and other things. Ftp servers also supply a small amount of text information. With the 'help' command one get online help to know more about any doubts.

(v) Telnet: This is used to denote the networking over the telephone. It is a simple programme created by the National Center for Super

Computing Applications (NCSA) that uses transmission control protocol/internet protocol or TCP/IP to provide connection onto another computer. Using telnet you can contact a host machine by typing host name of IP member and can transfer files, from the TCP/IP host to your own computer and can access databases.

(vi) Gopher: The Gopher was created by the Microcomputer workstation center of University of Minnesota to find information on the Internet in a user-friendly way. It is a menu driven programme that allows you to click with information servers or 'Gopher holes' on the Internet to retrieve the information including text, sound and images.

(vii) World Wide Web or WWW: The web is a large system of servers and combines many of the Internet applications, which offers all kinds of information to any one on net. This is a series of interconnected documents stored on computer sites. If you use your computer and a software program called browser to visit a site on the web, the screen displays a document called a home page. Home page gives the name of the organization or individual sponsoring the web site and displays a slot of highlighted words, buttons or pictures. It is the text and graphical screen display that welcomes the user and explains the organization that has established the page. Information using client/server architecture, graphical users interfaces (GUI) and a hypertext language enable dynamic links to other documents.

3 INTERNET RESOURCES AND INTERNET BASED LIBRARY SERVICES

Until, the emergence of World Wide Web, INTERNET surfing was not an easy task for the common man not having some skills and knowledge of commands and the ways of computers but World Wide Web or www has made it enable to reach this information just by clicking the highlighted terms and icons on the screens. Now, it is very easy to access the information from the net. It can be used to access the information from the remotes to read, download and print the electronic books and journals and in reference service beside some of the housekeeping operations like acquisition and cataloguing etc. As per Quterman (1993), Internet services fall into two basic categories; computer mediated communication (CMC) services and resource sharing services. The CMC allows users to exchange message while resource-sharing services allow users to access computing resources. There are vast resources of information available on the net. The libraries can avail this opportunity of suing

information available on Internet are electronic journals, electronic discussion forums, preprints, technical reports, content page of journals, databases, patents, standards, library catalogues, directories, on-line education materials and e-mail base information services etc (Singh, 1999). Some of the Internet resources and library services, which may be useful to a library, are discussed below:

a. Library Catalogues: The Internet gives access to the bibliographic records of millions of books and details on the holdings of an academic and research libraries around the world. One can check the new titles and even order them from a number of universities. The two directories available to locate address of libraries and for descriptions of software are:
Internet – Accessible Library Catalogue and Databases that is also known as St. George Director. And UNT's Accessing online Bibliographic Databases.
Besides these, a number of software likes UBS, LIBTEL, HYTELNET are available on Internet, which can be used to access various library catalogues.

b. Electronic Journals: Hundreds of electronic journals are available in the different fields of study, particularly in the library field on the Internet for the benefits of information users; as for example LIBRES (Library and Information Research Electronic Journals), MC (The Journal of Academic Media Librarianship), and Electronic Journal of Communication etc. All these journals also provide information on how to access the back issues and focus on a specific topic. The important resources are:
Acqnet http://www.lib.nscsu/acqnet-index.intms
Ariadne http://www. ukoin.bat.ac.uk/areadne
E Journal http://www.hanover.edu/home etc.

c. References Sources: A number of reference sources are also available on the Internet as Martindales Reference Desk which have sites of various science-related reference tables and databases, Physics – Astronomy – Mathematics (PAM) and Division of Special Libraries Association, which gives access to physics, astronomy and mathematics reference sources.

d. Discussion Groups: There are thousands of discussion groups available on net for various subjects, which act as forum for discussion and even as a media for exchanging the information. The PRL library has subscribed to PAMNET. STS-L, LIBREFL and LISTFROUM for such purposes.

e. Discussion Lists: Hundreds of electronic discussions lists and conference proceedings available over the Internet. They give direct access to scholars in their direct field of interests with an

opportunity of assistance in the form of online help.

f. On line Public Access Catalogues: The Online Public Access Catalogues OR OPAC's also play an important role in information retrieval. These are broadly divided into (i) OPACs, which are used in a particular library using either a multi-user system or a local area network and (ii) those, which can be accessed by other libraries through emergence of Internet. These are very easily and quickly accessible on the Internet from any part of the world. The availability of these catalogues on web allows any one to see the contents of various library collections at their home.

g. Newsgroups: There are many sites, which give news for various subjects and also bring out electronic newsletters as, Young scientist Network Digest, Yahoo Physics etc. In addition to these, there are thousands of Bulletin Board Services (BBBs) covering various subjects.

h. Databases: There are available different types of databases, which are exceedingly useful; for example, Carl Uncover is a database that contains table of contents of over 17000 multidisciplinary journals published since 1988. The uncover database search is free for periodicals.

i. Distance Learning: Unlike their counterparts in various colleges who have regular opportunity to get into contact with the faculty members to clear their doubts that may arise the students of distance education or correspondence are in a disadvantageous position. Here, the use of computer and its services may be utilized. Computer Aided Instruction (CAI) may be used for distance learners. Internet can be utilized for distance learners as follows:

(i) Providing reference materials to learners though e-mail.
(ii) Providing accessibility to the course material of one university to the other universities.
(iii) BBs to provide information regarding various activities of the university libraries.
(iv) Forming newsgroups/study groups to facilitate contact with other peer groups for exchange of information on current events.

For the purpose, a Distance Education Network (DEN) can be formed under the umbrella of National Open University covering all other open universities of the country.

j. Subject Directories: These are also known as subject guides, which allow people to browse information by subject. These are hierarchically organized indexes of different subjects with links

to different websites on each subject. For example: Libres http://www.indigo.lib

The search engines like, yahoo.com and altavista.com etc. are also considered subject directories.

Besides, the above sources on Internet, it provides access to software achieves, directory of electronic serials, Frequently Asked Questions (FAQ) documents, workshops etc.

4 CONCLUSION

On the basis of above discussion, it is concluded that though, Internet is giving us various opportunity and the librarians and the users are getting much benefit from its use, yet this in not the perfect medium but there are some threats in using Internet in a library as summarized by Dhiman (2002). These include the authenticity of web-site records after modification of the website, problem of intellectual property rights including the problem of copyrights, hacking of websites, problems of viruses in receiving the message through e-mails and of cookies beside, the problem of the authoritativeness of the information available on the net as most of the information available online has been supplied by volunteers and while we can often trust them they can also occasionally contain inaccurate and misleading information.

But it is true that in spite of some of the above threats, the Internet is one of the best medium today for getting relevant information in time and we should be prepared for accepting the challenge of the change of technology to be remained in the race of modernization.

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7

ONLINE JOURNALS HOW TO GET UP-TO USER'S DESKTOP A CASE STUDY

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ABSTRACT

In this article, we have described the importance of online journal its overview and its kinds according to their methods of access and described procedure for having online journals access up-to user desktop, based on experience. And also given brief overview about IUCAA and its library and with one of its importance service which has been given to its users that is full text access of online journals.

1 IMPORTANCE OF ONLINE JOURNALS

Online journals are the wave of the future. Online journals in the scientific world, much like their close cousins– online newspapers, are an attempt to harness the powers of computer – mediated communication networks to scientific communication and discourse. E-Journals in the broader context of information technology and the electronic age; comparative cultural perspectives from the past twenty years.

The World Wide Web in particular, and the internet in general, have opened new vistas and opportunities to extend the reach of messages via novel and exciting channels and modes of communication. Online journals are already becoming the mode of choice for academic

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publication. Last one decade has witnessed a great boom in scholarly electronic journals which, in addition to making great impact, has generated enormous debate among researchers and information professionals Now it is evident that scholars universally agree that journals will have to be available in digital formats. What is still not clear is whether they can be much less expensive than print journals. Even though the electronic format can save at least 30 percent of the costs, saved on printing and mailing of paper versions, the saving may get offset with the extra recurring expenses which the publishers have to incur in maintaining the system used for storing the electronics journals and for providing uninterrupted service on the net. An electronic journal will have software and hardware costs of some kind in addition to the editorial cost. There are a variety of dimensions for the attraction inherent to online journals. Let me try to sketch these out, relying on examples taken from the journal list, the Astrophysical Journal is a scholarly, refereed journal. It has been in publication from 1895 and available online from 1996 onwards. I expect the trend flowing toward online presentation and publication to gather even more steam in the near future. In the long run, online journals will no doubt become the major form of scientific publication.

2 OVERVIEW OF E-JOURNALS

Several categories of electronic serial literature can be identified.

- Individual e-journal titles — either frees or fee-based.
- Internet-accessible sites (aggregates of individual journal titles), either Made available on a subscription basis by individual publishers (As Science Direct (URL: http:// www.sciencedirect.com/), INFORMATICS India Pvt. Ltd. (URL: http://www.informindia.co.in/)
- CD-ROMs that aggregate titles, often with common subject matter, such as some of the citation indexes, with link1s too full-text.
- Web-based databases of journal literature, such full text aggregation of STM journals.
- Online databases— Web-based (As ADS database) (http:// adsabs.harvard.edu/abstract_service.html) (IUCAA mirror site for The NASA Astrophysics Data System)(URL: http:// ads.iucaa.ernet.in/)

3 ONLINE JOURNALS TYPES:

Many Electronic journals are available as offline products, i.e. on CD/ DVD. Therefore in such case certain barriers such as Internet connectivity and bandwidth do not concern. However, majority of the journals, both free and paid, are available on-line with downloading facility. Based on the availability and pricing electronics may be categorized as follows:

- Journals which are totally free online.
- Journals with online access free along with print subscription
- Journals which are online and priced (very few)
- Journals with online access whose price marginally less than the print version

The online access to journals is provided by the publishers or through their aggregators and the access policy varies from publisher to publisher. The access could be through a password or could be through IP address. Some time a small program, which locates on the workstation, may also be needed for the access.

4 ABOUT IUCAA & ITS LIBRARY

The Inter University Center for Astronomy and Astrophysics (IUCAA) is an institution set up by the University Grants Commission to promote nucleation and growth of active groups in Astronomy and Astrophysics in Indian Universities. IUCAA is a national autonomous institution and aims at being a center for excellence within the University sector for teaching, research and development in Astronomy and Astrophysics. IUCAA is a premier Scientific Institute engaged in promote nucleation and growth of active groups in Astronomy and Astrophysics in Indian Universities as well as engaged in research in frontier areas of Astronomy and Astrophysics. Its holds a prominent position among the top few institutions in the World. The Institute boasts of more than 60 scientists from IUCAA as well as from Indian Universities, who rate among the top scientists in India and many of them are held high esteem worldwide

The IUCAA Library is one of the most advanced modern libraries specializing in astronomy and astrophysics in India. It was the first library in the country to dispense with the card index in favour of a computerized database. Serving as the main resource library in astronomy and astrophysics in the university sector, it is extensively

used both on and off campus. In the latter mode it provides references, copies etc. of relevant literature to users from all over India. The object of the library is to support the main objectives and to achieve the goal of parent organization. The books include major collections of astronomy and astrophysics, physics, mathematics, statistics, computer science and electronics, and also a representative collection of books from other branches of science. The library subscribes to important journals in the field of astronomy and astrophysics, many of which are received by airmail. The library is providing excellent service to the in-house faculty as well as to the associates, visitors, students, amateur astronomers, and teachers coming to IUCAA. It is extensively used both on and off campus. In the latter mode it provides references, copies etc. of relevant literature to users from all over India. Contents pages Service being provided to University community by IUCAA Library. The main purpose of IUCAA library is to promote the economical and efficient delivery of information within the university-sector for teaching, research and development in astronomy and astrophysics. It also encourages co-operative efforts for research resources, computing and communications network. Library also strengthens communication and collaboration between research and educational communities. Library takes an national leadership role in the generation and dissemination of knowledge in areas of strategic importance to India in the field of astronomy and astrophysics and also contributes to the lifelong learning opportunities to of all users of the community. The goal of E-journals subscribed by IUCAA Library is to provide desktop access to electronic version of journals to its users and free e-journals of relevance to IUCAA to this end, we have developed a web-accessible directory database of all journals currently subscribed by library. IUCAA library has access to 110 online journals out of 130 journals subscribed by it. (http://www.iucaa.ernet.in/~library/Online.html)

5 ONLINE JOURNALS SUBSCRIBED BY IUCAA LIBRARY

The goal of online journals subscription is to provide desktop access to electronic version of journals subscribed by IUCAA Library and free e-journals of relevance to IUCAA To this end, we have developed a web-accessible directory database of all journals currently subscribed by IUCAA. (IUCAA library has 110 online journals access out 130 journals which is subscribing by IUCAA) The directory also contains several free, peer-reviewed electronic journals /database sites. We have stored variety of information for each journal, including

link to the journal website. Using these links, you can visit the journal site and access the full text of Articles.

Procedure: How to get Online Journals (Full-text version) upto user's desktop (PC)

Procedure for having online access:

- Procedure for having online access of any particular journal, we have to Complete following steps for its online activation.
- Registration formalities/ Agreement between customer and Publisher of Journal for having online access of subscribed journals.
- Download the Registration form/Ask them to send form by e-mail /mail. OR Direct fills the online registration form.
- Read carefully its instructions before filled it.
- General condition for full-text access

Access can be granted form workstations anywhere on site falling under the domain name(s) given in the registration form. Dial-in access form outside the authorized site is only permitted for users whose primary work location is within authorized site. Public access may be provided from workstations on library premises, for scholarly research, educational and personal use. Access includes the retrieving, displaying, searching, downloading, printing, or storing of individual articles from any journal in the system for scholarly research, educational and personal use. Copying and storing is limited to single copies of a reasonable number of individual articles. Copying and storing of entire issues is not permitted.

5.1 Fill the form as per the information required as:

- Internet Protocol (IP) addresses ranges as 202.141.155. *
- Institutes Domain name as "iucaa.ernet.in"
- Fill the Customer number, which has received with print ver sion, given by publisher.
- Name of journals with their customer ID numbers that we are subscribing from Publisher.
- Institutes proper mailing address with phone, e-mail, fax no. etc.
- Information about Institute's System Administrative.

- If extra amount has required for online access than attached Amount in form of DD/ Cheque
- Send the filled form to publisher by e-mail/fax/mail.
- After receiving the filled form by publisher, they will set up our IP addresses ranges and others information in their server and also let us know type of access, which they provide us as: Multiple user access
- with authentication via user ID/password
- with authentication via IP-address

5.2 Keep inform regularly to users about Online Status

We have to keep inform by e-mail to users about online journals activities regularly. In case any online access problem with any particular title, than inform immediately status of that particular title. Keep regular follow-up/checking of the Online journals weather they are having proper access or
Not, if not than we have to rectify the problem by sending e-mail to publisher and if local network problem then contact to system administrator.

6 PROBLEMS

There are, of course, issues of copyright, ownership, privacy, the response of established publishers, the training of users, accessibility and universal access, and more.

1. Due to regular increase of subscription cost of journals, Problem is appearing to keep regular online access year-wise.(Till to day we do not have budget problem)
2. Keep regular touch with publisher in case link automatically de-links.
3. Some time, Local Networking problems are appearing for online journals. In that case keep regular touch with System administrative.

7 CONCLUSION

The Online, internet-based journal opens rich and variegated new vistas. Clearly, online journals allow easy bridging of distances. The Internet leaps over continents. Online journals are fast. There is no mail delivery lag, and the cycle of publication is therefore a lot shorter.

Online journals are a much less expensive option from the point of view of printing and dissemination. They have no paper or ink costs, Minimal connectivity costs, and no mail delivery cost.

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5
ONLINE SERVICES TO BIOSCIENCE DATABASES : TRENDS AND ISSUES

K. P Singh*

ABSTRACT

Information is the sine-quo for all activities in today's information society. Databases are the most demanded and needed one among various research groups and individuals. Online bioscience databases are prominent sources for the research purpose. The article discusses various issues like, information retrieval versus data retrieval, development of online services, categories of databases, functions, components of online services and studies of some important databases in the field of bioscience.

1 INTRODUCTION

The exploitation of scientific and technical information for advancement in economic and industrial sectors, national defence, transportation, pollution control, education and related socio-economic issues has become a major national concern in most countries. Significant advances have been made in the technological and organizational aspects of the generation, bibliographical control, digitization, dissemination and utilization of scientific and technical information. So many numbers and diverse are the plans, projects, and systems that are being designed and implemented at international, national, and local levels for maximum utilization of the electronic information.

The concept of online services has changed dramatically over the past few years and similarly the way we search for and disseminate the information has also changed. It has been over three decades

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since the online bibliographic searching changed. The National Library of Medicine (NLM) of USA was the first to introduce online service in the area of biomedical sciences. Since then a lot of technological innovations have been taken place that have completely have revolutionized the scenario of online services and online information retrieval. Online searching has developed into an integral part of the library and information centers. Appropriate technologies of computer together with time –sharing, remote terminals and communication networks have made large – scale online information retrieval possible. The online information systems and networks provide access to a variety of databases, bibliographic and non-bibliographic, numeric, factual, news analysis, etc.

2 DATA RETRIEVAL VERSUS INFORMATION RETRIEVAL

Data retrieval is the simplest and involves executing a command to retrieve a specific fact from a system or to executive a procedure that will result in specific effect. When the data is to interpreted it becomes information; data becomes information when uncertainty is removed. Examples of data retrieval are airline/rail reservations and banking information. Users interacting with either these systems known specifically what they want from the computer – flight information/reservation or account information. The limiting factor is the limited knowledge of commands needed to operate the system.

However, in information retrieval, strategy and planning are significant. Strategy becomes increasingly important when the data stored in the system is to be manipulated and combined in some systematic manner. The user has to be a skilled searcher and be well versed in the information retrieval techniques.

3 DEVELOPMENT OF ONLINE SERVICES

In the fifties, the computers were used for bibliographic searching in the batch- processing mode. In the sixties national Library of Medicine (NAL), USA extended a batch service using Medical Literature Analysis Retrieval System (MEDLAR) database. The offline batch processing offered significant advantages over manual searching, like providing multiple accesses, i.e., simultaneously a large number of searches could be conducted conveniently and economically. The offline batch mode-processing mode had a number of disadvantages like being non-interactive and delay in getting search results. To over these disadvantages, online searching was subsequently introduced.

The first large scale online retrieval system to be developed was the Remote Console System (RECKON) of National Aeronautics and Apace Administration (NASA). RECKON is an international system;

NASA databases is available for online searching in Europe through the Europe Space Agency/Bibliographic Retrieval System (ESA/BRS) in Italy. Another important online information retrieval system is Online Retrieval of Bibliographic Information Time Shared (ORIBIT) developed by System Development Corporation (SDC), USA.

Since then a number of vendors have made it possible to have online access to a number of databases. Some of there are Knight Riddar Information Service (Formerly DIALOG), STN International, BLASÉ, WILSONLINE, DIMDI, DATASTAR, TECHDATA, CASONLINE, FIZ TECHNIK, GEOSYSTEMS, SDC, WoS, etc.

4 COMPONENTS OF ONLINE SERVICES

An online service has usually has the following components

- Database producer or information providers who collect and process and supply data in generally in form of separate records of computer processing
- A host or search service that loads the records onto one or more databases on large computers and provide search software that enables many users to access simultaneously the database and records from remote locations
- Telecommunication connections between information serachers' terminals or workstations and the host using special networks and ordinary telephone lines
- A computer terminals or workstation with appropriate communication facilities providing access to the service.

5 GENERAL FEATURES OF ONLINE DATABASE SERVICES

The databases can be grouped on the basis of different attributes like subject scope, geographic and chronological coverage, periodicity of release of new information by database producer, frequency of updating, and type of information/records they contain. Hence, the databases can be classified as follows:

5.1 Reference Databases

Which refer or point the user to another source, such as document, organization or individual, for additional information or the full text. These include

a) **Bibliographic databases:** which contain citations and often abstracts of the printed documents, such as articles in periodicals,

conference proceedings, patents, reports, theses, newspaper items, books etc. e.g. SCISEARCH, AGRIS, CASEARCH etc.

b) **Referral databases:** which contain references to, or addresses and descriptions of, institutions, persons, audio visual material and non print media for further information.

5.2 Source databases

which contain original source data, or full text of original information source or materials prepared specifically for electronic distribution. These include:

a) **Numeric databases:** containing numeric information such as original survey data, scientific/ technical data (measurements), statistically manipulated representations of data time series, production of statistics of product(s), etc. e.g. Encyclopedia of association databases and Biography master database.

b) **Textual-Numeric database:** it contain a number of data elements/ fields some of which may contain numeric data, for example, company reports, handbook type of data of chemical and physical properties

c) **Full-text databases:** containing records of complete text of an item, such as, a full newspaper item, a technical specification, a court decision or a newsletter. e.g. New Net and News Search.

d) **Software databases:** Containing computer programs that can be down loaded for use on a local computer.

In addition to above the bibliographical databases can be divided in to following categories:

a) Specific subjects: CA Search, BIOSIS, AGRIS, MEDLINE, ERIC, etc.
b) Multidisciplinary: SCI SEARCH, ISA, etc.
c) Mission-oriented: NASA, NTIS, etc.
d) Problem-oriented: ENVIRONLINE, TOXILINE, CANCELINE, etc.
e) Referral: Foundation directory, ULRICH Plus, etc.
f) Factual: PTI forecasts, CARIS/FAO (ongoing research), etc.
g) Textual: DRUGLINE, dictionaries, encyclopedias, etc.

6 FUNCTIONS OF AN ONLINE SERVICES

The usual functions of an information service are:

1. Retrieval of records with some unique characteristics

a) Bibliographical record -by name of author(s), a particular subject

b) Land record -by name of owner, registration number, etc.

c) Hospital patient record -by name of patient, admission number, etc.

2. Retrieval of a set records likely to be relevant to a particular topic (Example: all publications by S. R. Ranganathan)
3. Retrieval of a group of records within a specific field. (Example: Papers on evaluation of information systems)
4. Selective retrieval of materials to provide a general or critical overview of some specific subject. (Example: Evaluative documents on industrial development in India)
5. Verification of some fact
6. Retrieval of documents/information so as to gives an update on specific subject or entity
7. Ascertaining an answer to a specific question
8. Sequencing of a set of retrieved documents according to some estimate of probable relevance
9. Arranging a group of records in a helpful sequence either by sorting or partitioning
10. Conversion of search terms from one system to another
11. Conversion of search terms from one language to another
12. Helping a searcher to make all necessary decisions

7 STUDIES OF IMPORTANT ONLINE DATABASES IN BIOSCIENCE

7.1 BIOSIS Previews

BIOSIS Previews is a complete index to life science and biomedical research through Web, CD, and online formats. It contains millions of records from thousands of life science literature sources across the globe including journals, reports, conference proceedings, patents, and books.

The database is multidisciplinary and the best single source for references to the international life science research literature. BIOSIS indexing presents key terms in the same context used by

the original author. This allows you to search the database for items, such as organisms or biochemical, taking into account the relationship between them in the source literature.

7.2 AGRICOLA

AGRICOLA (Agriculture Online) is the most comprehensive source of bibliographic citations covering US agricultural and life sciences information. AGRICOLA offers vital agricultural information from 1970 to the present. It contains over 3.7 million citations to journal articles, monographs, theses, patents, software, audio-visual materials; and technical reports related to agriculture science and applied technology. These records describe publications and resources encompassing all aspects of agriculture and allied disciplines, including animal and veterinary sciences, entomology, plant sciences, forestry, aquaculture and fisheries, farming and farming systems, agricultural economics and earth and environmental sciences. AGRICOLA serves as the document locator and bibliographic control system for the NAL collection. The extensive file provides comprehensive coverage of newly acquired worldwide publications in agriculture and related fields

7.3 AGRIS

AGRIS (International Information System for Agricultural Sciences and Technology) database contains four million bibliographic references (1975-1996) in hard copy (Agrindex) as well as in computerized form i.e. on compact Disks (CD). The data is received from FAO in return to our being an input centre of AGRIS for India. It is built a bibliographic database since 1975.

Upto 1985, it was purely a bibliographic reference database, but from 1986,it started indexing. Agris provides worldwide bibliographic coverage of agriculture, forestry, animal and veterinary science, food and nutrition, environment, etc. The Agris database is fully computerized and is accessible on Internet. It is also published on CD-ROM as well as in print form under the title "Agrindex"(monthly service).

7.4 BIOSIS

Biosis (Bioscience Information Service, Philadelphia) is the world's most comprehensive bibliographic database in the field of bioscience, including life sciences, genetics, toxicology and zoological literature. Its Biosis Preview database on hard disk contains over 7 million bibliographic records with abstracts since 1985 and is available online as on CD-ROMs. For example

- Biological Abstracts/ RRM on CD (1989-)
- Zoological Record on CD ROM (1985-)
- Biosis Gen Ref on CD (1985-)
- Foods Intelligence on CD (1985-)
- Toxline Plus on CD (1985-)

7.5 BIOTECHNOLOGY

Derwent Publications Ltd. Since 1982 have designed a computerized databases in the field of biotechnology scanning over 1200 world's leading scientific and technological journals. The Online database is known as "Biotechnology Abstracts". It contains 140,000 abstracts in the field of biology, biotechnology, chemicals, food and agriculture, genetics, health sciences, pharmaceuticals, plant genetics and breeding and wastes, etc.

7.6 CABI

CABI (Commonwealth Agricultural Bureax International), World-renowned CAB databse is the largest professionally-produced database covering international issues in agriculture, forestry, and allied disciplines in the life sciences has built a computerized bibliographic database covering 3 million records. CAB international has published its database on CD-ROM in 5 volumes since 1973 to date. It is available on different aspects of agriculture, like agronomy, botany, horticulture, fertilizers, entomology, ecology, environment, economics, and dairy science and aquacultures. CABI adds 1,60,000 references annually to its database.

CABI also has issued specially database CD-ROMs under its spectrum series just like its by-product commodity based specially abstracts, namely:

- Ag Econ CD
- CAB Pest CD
- Crop CD
- E-CD
- HORT CD
- Plant Gene CD
- Soil CD
- Tree CD

7.7 Current Contents Search

Current Contents Search (CCS) is the electronic version of Current Contents, (CC) the highly regarded current awareness tool from Institute for Scientific Information, Philadelphia, USA. Providing unlimited access to tables of contents and bibliographic data from over 7,000 of the world's leading scientific and scholarly journals and 2,000 books, Current Contents Search provides users with the most up-to-date research information. Each journal meets stringent qualitative and quantitative standards such as impact factor, timeliness, depth and breadth of coverage, and editorial integrity. Complete bibliographic information is provided; including English-language author abstracts (for approximately 85% of the articles and reviews in the science editions), author keywords, Keywords Plus, reprint and research addresses, and full journal information.

7.8 FSTA

FSTA (Food Science and Technology Abstracts) is the internationally recognized world's leading food science and technology abstracts database. It is designed to meet the needs of all those looking for fast and efficient access to the world's literature for the food and drinks sector. It comprehensively covers every aspect of food science, food technology and food-related human nutrition for all commodities with over 560,000 bibliographic records from 1969 to date, this database can help you develop new ideas and products, structure your research program, plan your export market, solve your manufacturing problems and protect your profits. FSTA contains crucial information from scientific journals relating to food science and technology published throughout the world, as well as important information from patents, books, and conference proceedings.

7.9 ASFA

ASFA (Aquatic Sciences and Fisheries Abstracts) is the premier database in aquatic sciences, providing unparalleled access to global developments in the science, technology, and management of marine, freshwater, and brackish water environments and organisms. ASFA offers more than 550,000 citations and abstracts from the world's published research in aquatic sciences, including journals, conference proceedings, and hard-to-obtain gray literature and 36,000 records are added annually.

7.10 Wilson General Science Abstracts Full Text

General science abstracts full text contains abstracting and indexing coverage for all 191 periodicals included in general science index as

well as the full text of over 52 periodicals, offering instant access to information from publications such as: American Scientist; Astronomy; Conservationist; Discover; Ecologist; Environment; Geriatrics; Health; Issues in Science & Technology; Natural History; Public Health Reports; Wilderness; World Watch. Subjects: Biology; Botany; Chemistry; Environment; Mathematics; Medicine; Nutrition; Oceanography, etc.

7.11 Agriculture and Natural Resources

Agriculture and natural resources contains ABOA (Australian Bibliography of Agriculture), STREAMLINE, ARRIP (Australian Rural Research in Progress) and CARRP (Completed Agricultural Rural Research Projects). Produced by RMIT publishing in collaboration with four database providers, these databases contain the most comprehensive coverage of bibliographic and research-in-progress information available. Subjects covered include all aspects of Australia's natural resources, crop, pasture and animal production and processing, land resources, fisheries, horticulture, soil sciences, water resources, conservation, vegetation, forestry, ecology and the rural environment.

7.12 INIS

INIS (International Nuclear Information System) is a cooperative computerized decentralization information set up by the international atomic energy agency and its member state. Its purpose is to build a database containing citation to publications relating to nuclear sciences and it's peaceful applications. India has been participating in the INIS right from its inception in 1990. The LISD of BARC is responsible for all activities related to INIS in India. INIS is a bibliographic database covering the worldwide published literature in nuclear research, technology, and biological sciences.

7.13 MEDLINE

MEDLARS (Medical Literature Analysis and Retrieval Systems) are the largest subject oriented database. Online version known as MEDLINE (Medical line). The subject area covered by the database medical science and related subject aspects for example biological sciences, physical sciences, anthropology, sociology, education etc. The database provide print version in the form of Index Medicus. It covers about 4 million citation of world leading scientific and technical literature published in journals, conference proceedings, reports, patents, dissertations, etc.

7.14 SCISEARCH

SCISEARCH (Science Citation Index Search) a multidisciplinary citation index database designed by Institute for Scientific Information, Philadelphia, USA. A world class scientific and technical information published in various knowledge containers like, journals, conference proceedings, technical reports, dissertations, patents, standards in the entire field of core of science and technology.

7.15 ISA - INDIA

Indian science abstracts (ISA) on CDs is a cumulative database of nearly two lakhs Indian science abstracts covering the period from 1990-1999. The database is searchable by a variety of parameters such as keywords, class number, author, corporate author, ISA issue number and year of publication, source journal and type of document. The retrieval software is window based and user friendly. ISA on CD-ROM is an excellent replacement for hard copy ISA leading to considerable saving in shelf space, and it is also an electronically searchable collection on Indian science.

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10

WEB ENABLED EXPERTS' DATABASE IN SCIENCE AND TECHNOLOGY : DESIGNED AND DEVELOPED BY INFLIBNET

Prem Chand*
Sonia Dube**
Umesh Gohal***

ABSTRACT

On consequent emergence of new disciplines, institutions do factions in a constant mode of change. It becomes very difficult to know and find suitable and desired person for the institutions who has desired expertise. Many institutions are addressing this problem by creating a database of experts as a mechanism for identifying key people who can solve the problems by sharing the information through the web. Such database can be great source to identify right kind of persons for the jobs. INFLIBNET in collaboration with NISSAT has designed and develop online database of experts in Science and Technology (EDST), covering all major scientific institutions (ICAR, ICMR, CSIR DST , DEBT, DAE, Universities etc.). EDST contains 18,000 profiles of scientific communities in India, which can be major source for researchers and scientists. It contains important information about expert's background, contact address, publications, skills and accomplishment. A state of the art software, based on client server architecture has been developed to maintain and validate the online records. Web interface to search and retrieve this database facilitates to the registered experts to submit a query and update a record through the network. The searches can be made under all-important fields and records can be displayed at various levels. The interface of export/ import of profiles according to ISO 2709 is another added advantage of this database, which

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can be ported on any other backend server.

Keywords : *Database, Expert Database, INFLIBNET Centre, Experts-Science and Technology. Information storage and retrieval*

1 INTRODUCTION

In India, though the Internet technology use is increasing rapidly, there is still a vast paucity of reliable and authentic information sources. In fact, much of the information base about India is hosted on the servers located outside the country. Country like ours, no such efforts have been made before, to develop the national database of expert of senior faculties and explore the potentials of our research. INFIBNET under NISSAT project took this initiative to capture the valuable contribution by the scientist and researcher in the form of database. Under the project, INFLIBNET has mandate to collect, update, maintain and host the profiles of scientists and other senior faculties working in leading R and D Labs, universities, Science and Technology departments of central and state governments in the country

2 WHO ARE EXPERTS?

The terms experts can't be defined explicitly. Webster's New Collegiate Dictionary defines an expert as "having, involving, or displaying special skill or knowledge derived from training or experience." The critical word in this definition is "special". It is very difficult to judge who are the experts? The experts chosen for inclusion in this database are the people who are working at senior positions in government sector. Those who are involve in scientific or scholarly research in scientific organization and universities are invited to join the expert's database. The existing profiles includes the profiles of scientists, Project Leaders, Group Leaders, Chairman, Directors, Professors and Readers and other senior faculty members working in government and R & D Labs.

3 SCOPE

INFLIBNET in the past has compiled the profiles of academicians and made them available for online access. Further it winded the scope by including experts from all disciplines. It is most comprehensive database of its kind in the county and continues to expand further. It comprised of detailed professional information for nearly 20,000 scientists and scholars from more than eight hundred reputed institutions across the country. It provides comprehensive information about background, skills and accomplishments of

individuals. It provides access to relevant and accurate information supplied by the institutes, faculties themselves, and downloaded from institute's web site.

4 AIMS AND OBJECTIVES

Country like India, where large numbers of people carry out depth research in various disciplines, but there is no authentic source in any form. INFLIBNET has made efforts in this direction and developed EDST. This database will help the peers to exchange the information on similar subjects, encourage student/faculty contact, enable collaboration among students, support diverse ways of learning and can exchange his expertise to the person in same disciplines in different geographically area by means of modern technology. The basic objectives of database are:

- Quickly and conveniently provide information about themselves to peers, prospective collaborators, and funding agencies in the country
- Communicate directly with the experts who possess the expertise they need
- To provide current and future estimates of available resources in Science and Technology in the country
- Establish a home page for their curriculum vitae
- Keep track of internal research capabilities
- Publicize research capabilities externally
- Identify peer reviewers for articles and proposals
- Discover prospective collaborators for ongoing research projects
- Identify prospective funding agencies and collaborators
- Leverage existing R&D efforts
- Keep up-to-date with basic science and academic research
- To promote and support research into areas relating Science and Technology
- To promote the research of individuals and institution
- To track current research
- Stay informed about the constantly changing world of basic science and scholarly research.

- Information exchanges and networking opportunities for scientists

5 EXPERTS PROFILE

The profiles in the database include contact information, position held, publications, project handled, awards and honours etc. It describes current research activities and expertise. It also include direct links to e-mail, a personal home page, an online registration of CV, and current publications

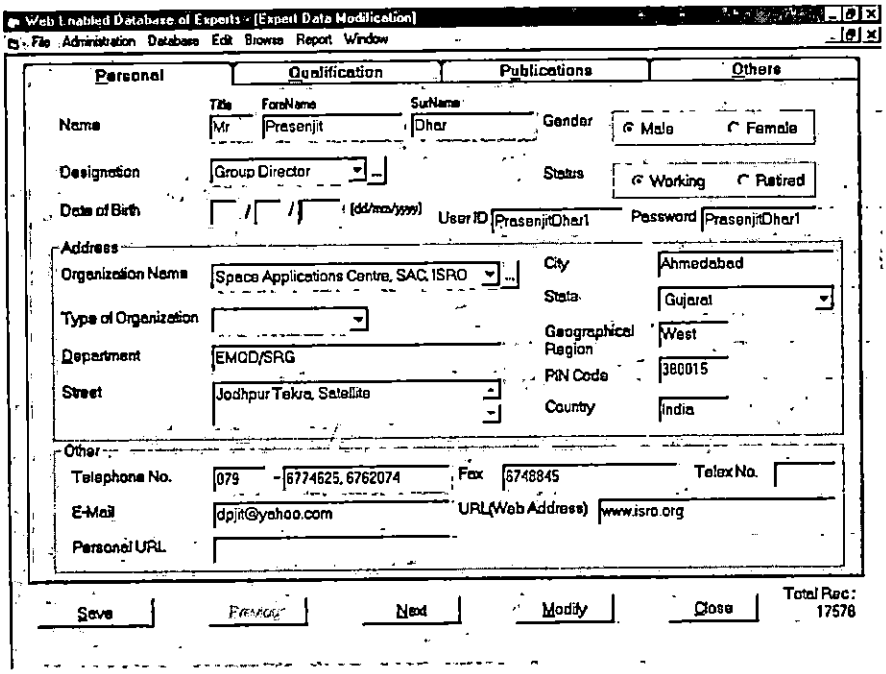
6 INFORMATION STORAGE AND RETRIEVAL TOOLS

There are several critical variables to examine, when selecting tools for storage and retrieval for managing such a huge database. Maintenance of the profiles up-to-date and database security are some of important factor in selection of software and hardware. Keeping in view the popularity of the web based information; we have also selected latest tools (software & hardware), which are based on client server based architecture. Following software and hardware were selected for overall design of the database.

- Windows 95/NT
- MS SQL 7
- Visual basic
- Front Page
- Apache web server
- HTML, Java Servlet and JDBC.
- TOMCAT as a servlet container.

7 DATABASE MANAGEMENT SYSTEM

Initially CDS/ ISIS was used for the storage and retrieval of database. Later on new tools based on client server based on three-tier architecture, using Visual Basic as a front-end tool and MS SQL as backend tool has developed. After the thorough testing of newly developed software, data collected and stored in CDS/ISIS have been transferred to new software. Main page of the software is given in figure 1.


Web Enabled Database of Experts - [Expert Data Modification]
File Administration Database Edit Browse Report Window
Personal
Qualification
Publications
Others
Title
ForeName
SurName
Name
Mr
Presenjit
Dhar
Gender
Male
Female
Designation
Group Director
Status
Working
Retired
Date of Birth
(dd/mm/yyyy)
User ID
PrasenjitDhar1
Password
PrasenjitDhar1
Address
Organization Name
Space Applications Centre, SAC, ISRO
City
Ahmedabad
State
Gujarat
Type of Organization
Geographical Region
West
Department
EMGD/SRG
PIN Code
380015
Street
Jodhpur Tekra, Satellite
Country
India
Other
Telephone No.
079
6774625, 6762074
Fax
6748845
Telex No.
E-Mail
dpjit@yahoo.com
URL(Web Address)
www.isro.org
Personal URL
Save
Previous
Next
Modify
Close
Total Rec:
17578

This software has all important factions to manage the data which is being stored from various clients. Some of the important features of the software are listed below.

1. Facility to add, delete, edit and update the records in windows environment
2. Efficient Duplicate detection of records
3. Conversion of records in to ISO 2709 standards. Data can be Imported/Exported to CDS/ISIS and vice-versa
4. Master databases of organization, state, designation and area of specialization.
5. Managing the User ID and Passwords
6. Tracking of records, feedbacks and recommendations.
7. Validations of the records received through online mode.
8. Backup and restore of the records
9. Search, save and display of the records under all important search field
10. Generation of various reports
11. Provision for global change according to selected fields.

8 WEB INTERFACE

INTERNET, especially World Wide Web became so popular, which allows anyone connected to INTERNET to retrieve information on his/her desktop. Considering the widespread use of the Internet and Web Browser technology to deliver the content of the database it is essential to adopt right kind of technology to make the database interactive and dynamic. We have configured separate web server exclusively for this database to enable the experts to search, edit and register through online mode. With the help of this interface expert can register their profile and existing experts can update the profile. Each expert has been given Login and ID, which enable him or her to update the profile at regular interval. It has been designed by using HTML, Java Servlet and JDBC technology. Apache is used as a web server and TOMCAT as a servlet container. Sample web page of the database is given in figure-II. Apart from the online registration, web page offers many more facility viz. searching, feedback; recommend experts, discussion forum and related sites.

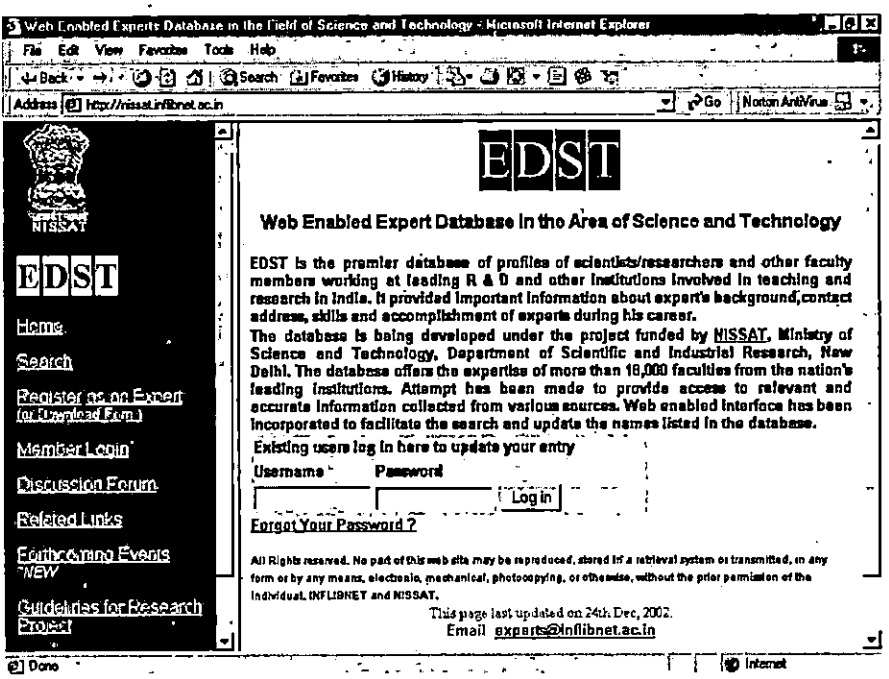

Web Enabled Experts Database in the Field of Science and Technology - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://nissat.inflibnet.ac.in
NISSAT
EDST
Home
Search
Register as an Expert (or Download Form)
Member Login
Discussion Forum
Related Links
Forthcoming Events NEW
Guidelines for Research Project
EDST
Web Enabled Expert Database in the Area of Science and Technology
EDST is the premier database of profiles of scientists/researchers and other faculty members working at leading R & D and other institutions involved in teaching and research in India. It provided important information about expert's background,contact address, skills and accomplishment of experts during his career.
The database is being developed under the project funded by NISSAT, Ministry of Science and Technology, Department of Scientific and Industrial Research, New Delhi. The database offers the expertise of more than 16,000 faculties from the nation's leading institutions. Attempt has been made to provide access to relevant and accurate information collected from various sources. Web enabled interface has been incorporated to facilitate the search and update the names listed in the database.
Existing users log in here to update your entry
Username
Password
Log in
Forgot Your Password ?
All Rights reserved. No part of this web site may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise, without the prior permission of the individual, INFLIBNET and NISSAT.
This page last updated on 24th Dec, 2002.
Email experts@inflibnet.ac.in
Done
Internet

Figure II

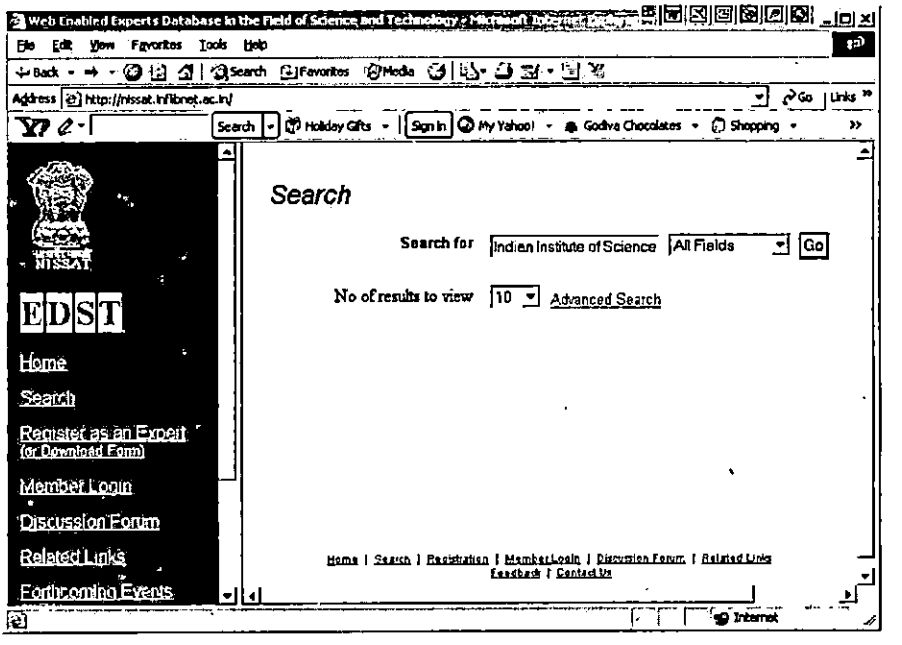

Web Enabled Experts Database in the Field of Science and Technology
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://nissat.inflibnet.ac.in/
Search Holiday Gifts Sign In My Yahoo! Godiva Chocolates Shopping
NISSAT
EDST
Home
Search
Register as an Expert
(or Download Form)
Member Login
Discussion Forum
Related Links
Forthcoming Events
Search
Search for Indian Institute of Science All Fields Go
No of results to view 10 Advanced Search
Home | Search | Registration | Member Login | Discussion Forum | Related Links
Feedback | Contact Us
Internet

Figure III

9 RETRIEVAL

It allows you to search the profiles currently in the database. The efficient search interface has been developed to retrieve the data from database server. For searching the database, user can visit INFLIBNET web site at http://nissat.inflibent.ac.in (See Figure-III). User can select the field from the drop down and enter search term. And click on search button **"GO"**.

Database can be searched under All fields, Name, Designation, Organization, City, Specialization, State, and Awards & honours. For efficient retrieval, advanced search (Boolean) searches can be used which combines two or more fields.

All fields search option is used to search across all of the fields in the database. It will retrieve results that contain the term(s) anywhere in the profile. By selecting under name search option, user can find results according to first name, last name or both. User can restrict your search to specific organization. It is particularly useful to retrieve the experts belonging to one specific institution. It allows you to limit your search to a specific geographic area or country. Similarly searches can be made under state, areas of expertise and research interests etc.

Example: if you are looking for someone with expertise in SPACE, putting SPACE in the expertise field restricts the search to just the expertise description. If user enters this word in the All Fields box, user will retrieve all profiles with the word SPACE anywhere in the profile, including, for example, profiles of everyone at the "SPACE APPLICATION CENTER".

10 DISPLAY OF SEARCH RESULT

The search results list is presented in various formats for easy reading and scanning.

- In the first level, results displays brief information with hyperlink under name of experts.
- The first level result list displays the name, area of specialization and Institution of experts.
- The results are listed according to alphabetical order under name of experts.
- The numbers of records found are displayed on the top of every search results.

- Use the check boxes to the left of each profile name to mark the records you want to view.
- Navigation of the results list by clicking on a hyper linked name to go to that person's individual profile display.
- Click on the Next button to view records (if any) beyond the number displayed on the first page of results.

11 CONCLUSION

The compilation of the profile is tedious job. It needs active participation, involvement and willingness of expert's for sharing their resume on this domain. Efforts are on to collect as many as records, so that users can make use of facility and interact frequently with each other. New Search techniques are to be incorporated in the future for speedy access to the database. Web enabled access to users have been provided over Internet to extend the availability of this information both for content creation and retrieval. Future scope for this expert database is to bring out the profiles in CD-ROMs.

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ELECTRONIC LIBRARY : SERVICES AND PRODUCTS

G. Ramdas*

1 INTRODUCTION

The digital revolution of sweeping all aspects of life in civilized world and library is also not an exception. Libraries have to assume some new and revised role with the advent of electronic media for as LIS professionals are concerned it as a logical extension of resources and services and argumentations of physical libraries in the electronic information society. In the digital environment, libraries need to play the role as a gateway to information, as center of expertise, as a way of meeting the need for physical identity and as a place for social meeting & sociology interaction.

Librarian profession is poised to move collection management to content management even though collection management in the traditional sense is concerned with storm and manage the information source in their physical form at document level. The upcoming area of content management looks beyond documents and beyond a given library for storing manager and retrieving information in e-form. Electronic contents have several advantages like economy in providing multiple pointers (access points) location independence, easy manipulations of contents, breaking and boundary between metadata secondary information and primary information, capability to handle dynamic content and possibility of collaborative working even though, web captured information, taxonomies topic maps and categorization / classification of web captured information are significant areas for LIS professionals.

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The Libraries have changed with time from mere static storehouse of interested collection of documents to dynamic service centers serving all professional and non-professional utilizing useful and need-based information storage has changed from clay table to papers and now to electronic and optical media of CD-ROMs.

The increased availability of CD-ROM products the electronic publishing activity, the education and training activities in the country have focused on the application of hew technology in the libraries. This ultimately resulted in the expansion of utilization of computers and their application in many areas. With the utilization of computers, the libraries to today have equipped themselves with the latest information and communication technology to provide efficient service.

This has brought a revolutionary change in the way libraries adopt and function shifting from print to electronic information dissemination these libraries are addressed as
Electronic Information Resource Library

2 DEFINITIONS

Electronic information other wise called as digital information, in the new era is changing the duties and services in all fields from tradition to Digital form. Libraries also facing changes in new form and library professionals are doing their best to meet new challenges.

Digital Libraries appear to have thrown open an exciting new area for interaction between information technologists and library 'demise of the book' libraries without walls and knowledge centers are being floated to describe the concept of the library of the future. Digital or electronic libraries are 'organized collection of digital or electronic information. They combine the structure and gathering of information.

A collection of digital objects including text. video and audio along with methods of access and retrieval. Its managed collection of information with associated service with the information is stored in digital formats and accessible over a network.

The only consensus appears to be with the word digital implying the process of 'digitization' (conversion of printed matters to electronic form and storage on magnetic media)

An Informal definition of a digital library is a managed collection of information with associated services where the information is stored

in digital formats and accessible over network. A crucial part of this definition is that the information is managed. A stream of data sent to earth from a satellite is not a library. The same data, when organized systematically, becomes a digital library collection.

Digital libraries are organization that provide the resources, including the specialized staff, to select structure often intellectual access to interpret; distribute preserve the integrity and ensure the persistence over time of collection of digital works. So that they are readily and economically available for use by a defined community or set communities

The term digital library is being used to describe any of the following

- Collection of electronic journals & books
- On line - education portals
- Repositories of multimedia files
- Achieves information created from local knowledge
- Electronic version of libraries
- The entire Internet.

It is evident that a digital library is being interpreted simply as a collection of digital 'objects' (electronic documents, digitized picture, sound, video) that people can access from their desktop personal computers.

3 OBJECTIVES OF ELECTRONIC INFORMATION LIBRARY

Main objectives of Electronic Information Library are :

- To capture, store, manipulate and distribute information,
- To introduce and provide new services.
- To provide need-based and retrospective search services to the user
- To have large number of database in CDs
- To avoid routine and redundant activities
- To provide facility for networking and resource sharing
- To digitalize the document for preservation and for space saving

- To support library functions such as circulation, serial control, acquisition control stock maintenance and other routine office. Office works and developing in house database and to improve the cost effectiveness of library operations.

3 FUNCTIONS OF ELECTRONIC LIBRARY

The primary function of digital libraries is to enable searching of electronic collection distributed across networks, rather then merely creating electronic repositories from digitized physical materials.

A electronic resource center should have the following mainly five integrated functions.

1) Creation and capture of content process of turning Integrating and importing multimedia objects into electronic information. Electronic library content from many diverse sources different type of format

2) Storage and management.
Process of organizing and management digital content to ensure that it is available to user whether they want access to it providing stable reliable storage and management of data in an open environment across abroad spectrum of platform

3) Search and Access: To be able to access what the user need quickly.

4) Distribution : To enable information owns to distribute the material in numerous ways: though existing networks clients /server business solution or the internet

5) Right Management: Providing extensive access control capabilities enabling content owners to capitalize on their protected assets

4 PURPOSES OF ELECTRONIC LIBRARY

- To expedite, the systematic development of the means of collect, store and organize information and knowledge in digital form and of digital and electronic library collection
- To promote the economical and efficient delivery of information

to all sectors of society. To encourage co-operative efforts which leverage to considerable investment in research resources, computing and communication network.

- To strengthen communication and collaboration between and among the research, business government and educational communities.
- To take an international leadership role in the generation and dissemination of knowledge in area of strategic importance.
- To contribute to the life long learning opportunity to all.

5 FEATURES OF ELECTRONIC INFORMATION ENVIRONMENTS

Provide access to very large information collections including access to primary and complete information, not merely surrogates or indexes.

- Supporting multimedia content
- Network accessibility
- User friendly interfaces
- Unique referencing of digital objects
- Multi use and refer various area in same time
- Current information services
- Advanced search and retrieval
- Supporting both formal and informal learning
- Remote access
- Online discussions and commands.
- Accessibility from anyone anywhere, any time, during travel, hotel etc., supporting, opportunity to publishing, annotation and integration of new information.

5.1 Components to use Data Capture for the electronic conversion and cataloguing

- Scanners
- CD Writers
- Multimedia
- Technical Data, Numeric data, Graphic data, Photographs, audio data, video data, indexing, linking, software's.
- Z39.5

- Client Servers
- Metadata
- Dublin core
- MARC 21 etc

5.2 Differentiation in Electronic Information from other Resources

- Organization in term of digital files/objects
- Contain material digitalized form
- Key-meta data
- The only services are those performed by computer software
- There is no librarian
- Objects are fluid (can disappear and mutate at any time).
- Objects are transient (can disappear at any time).
- There are no defined user groups
- Use of library mostly requires payment
- No concept of author
- Objects are not located in a physical or logical place
- No authority control
- No organization
- Objects are not only information resource, it cab be anything at all.
- Objects are searchable.

5.3 Preservation and permanence of electronic Resources:

Preserving Digital information is difficult. We are faced with the threat of ' disappearing digital objects' as the technology to create, store or give and preserve digital information itself in rapidly changes.

Permanence of digital information refers to the extent to which digital information remains available through its known channels and form. There is a general lack of confidence on the permanence of information on the internet. .Some example of schemes to support persistent identification are the uniform resource name, The Digital object identifier, persistent URL and Archival Resource key (ARK)

Digital information is traditionally preserved by transferring the files

at regular intervals to the latest new information carrier available. But multimedia resource restore in digital format may not be possible without the original software and hardware.

Preservation metadata is a strategy to provide sufficient technical information about the resource and to support two primary strategies for preservation of digital resource migration and emulation.

Conversion of paper in to digital or electronic form is expensive and time consuming. Some types of objects, such as photographs. Bibliographic sound and video are readily digitalis able but books, Journals and maps are not. The fact that special hardware and software are essential to view digit objects compounds the problem. This is especially true in developing countries, where by the time the necessary hardware/software are acquired and installed a new version is released in the market.

Just as paper is subject to deterioration on account of climate, magnetic media too get damaged, probably at a faster rate special types of media may be required for use in hot tropical climates of the developing countries. Also the problem of obsolescence is true even with such media (example DVD replacing CD)

5.3 Advantages of Electronic Library Resource

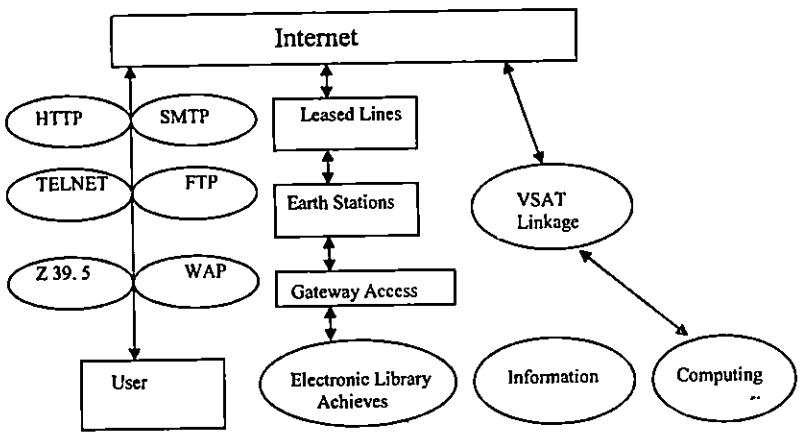
5.3.1. Ability to Search

The Ability to search provides an enormous advantage to electronic material when an ASCII version is available on line searching as for some years been replaying printed abstract journals. Since most current materials are now produced via computers it can generally be provided rather then reading electronically can be expected to take over shortly.

5.3.2 Ubiquity: Another key advantage is ubiquity. Many simultaneous users can access a single electronic copy from many locations. Copies can be delivered with electronic speed, and it would be possible to reformat the material as per the reader is performance. Since readers get a screen display of the object rather then a physical objects, loss rates by them are eliminated.

5.3.3 Digital information can be copied without error. As a result preservation in a digital world does not depend on a permanent

Most Relevant Function of Electronic information Resource Flow Chart



Change approaches

Traditional	Automated Improved	Electronic information
AACR2	AACR2	Metadata
CCC	ISO2709	DCMI – W3C
CC / LCCS	CCF	EAD, Tel, DTD
DDC / UDC	MARC	Z 39.50
Thesauri / LCSH	Thesauri	Marc

objects and keeping it under guard, but on the ability to make multiple copies assuming that at least one will survive access current information: for Research, digital libraries provide access to up to date current literature and thereby hap them to be aware of current trends.

Avoiding Huge space, and dust and dumping, handlingtransporting, are possible in this electronic environment.

The emerging challenges and trends of the next millennium for library and information profession

- Information revolution will continue to accelerate the exponential growth of information with multimedia carriers leading to a break down of traditional library system.
- Developments in it and telecommunication will lead to in exorable information networking of libraries, database and publishing enterprises into a single information resource warehouse
- The library with printed documents will decline with increasing preponderance of multi-media information carriers such as CD-ROMs and online information services. As we approach the end of the next century. It is predicted that print media in the libraries may see its end or may be marginalized.
- Already libraries are being marginalized as purveyors of information because of user departments having their own on-line access to database. Most specialized periodicals will publish in electronic form mailing recent information available to researches instantly.
- Change mind-set and enter Electronic era by Revising professional methods techniques and tools.
- Re-model professional education and training to meet new demands and challenges.
- Promote Research and development to contribute to solving problems of it and Networking and information services to meet user needs in a Electronic era.
- Education system to be changed from memory – centered system to information based system with library, Internet usage to be encouraged.
- Promote use of information for genuine knowledge, awareness, education and human welfare in school and college with systematic programmers.

6 ROLE OF LIBRARIAN IN ELECTRONIC LIBRARY AND SERVICES

Librarian in the 21st century is expected to play a multiple role to suit to the changing needs of tomorrow. Traditionally, librarians have often organized and classified information in such a way that they can find, the information on behalf of the user in other words the librarian as fulfilled physical role of advisor, interpreter and mediator for the user information needs. He should embrace the entire new information cycle from the creation restructuring and representation of information to its dissemination and use. Librarian's future is in doing what computer cannot do. In other words he or she should be information 'Life Guard'

Librarian should include professional aspects and an open altitudes that enabled him or her to anticipate and respond to inevitable changes that are going to emerge as a result of its implementation, corporate downsizing and out sourcing and other influences.

The new and fascinating role of librarian and librarian is beginning to evolve the heart is being felt by libraries and librarians, which will force the growth of qualified and technically sound professionals which will evolve new 'information species'.

7 BARRIERS TO ELECTRONIC INFORMATION

7.1 Economic Barriers: A developing country such as India has the major barrier of scarcity in all its development activities. The Indian society is labor intensive and total computerization and total electronic conversion is hard to find full acceptability. Another problem is low availability of capital especially the hard currency foreign exchange. The several budgetary constraints forced on libraries may not absorb recurring costs and expenses in international competition in developing skills to cope with electronic information centers and to provide opportunities to implement them and sustain them.

7.2 Barriers of existing information Infra – Structure: These barriers are more prominent in developing countries like India. The barriers related to technology and availability of basic facilities. The barriers include poor quality communication media services like telephone lines, unreliable power supply. Stringent customs and other legal restrictions, inability to join telecommunication network

inadequate computerization of libraries in the country lack of library information and technology standards computability problems, lack of spare parts, maintenance, poor library collection absence of sufficient information flow.

7.3 Lack of availability in National information, dependence to others, problems transactions and communication, discontinue of Publication, speed changes in instrument. Machine and standards Registration, License agreement etc.,

7.4 Copyright Law: Copyright law is the major issue faced the electronic information. The copyright protection is a difficult taste here. Using the digital technology it is easy to create electronic copies of the texts photography's etc., but illegal copying and copyright violations may result in losses to electronic information publishers.

8 CONCLUSION

It is clear that emergency of 'Electronic Information will severely affect the traditional function of libraries, readers, library staff, authors, editors, publishers, book sellers etc., These changes may occur slowly but certainly in the Indian context, the revolution of Electronic information has been intiated, should now pick up pace and accelerate in order to meet challenges of the future taken into consideration, The Global phenomena

At the same time the limitation like economic aspect of cost and compatibility, copyright, lack of standardization and full-fledged electronic information is some what difficult to achieve.

Unlike these intricacies other side of electronic information and digital database is quite fascinating. It draws the attention of benefiting challenges of cutting edge technology, globalize society economic stresses, system, friendliness, cost effectiveness of information use effects strategic and managerial processes.

It is fully depended to network and resource sharing system. The librarian needs to have parallel touch with the cutting edge developing. He has to overcome the most laudable security shocks which are the most pressing challengers of electronic affairs like that of the piracy of database, copyright infringement, intellectual property right, viral invasions, parallel satellite networking, stress are some of the issue in electronic data and Digital information to be confronted as a way of routine.

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EVALUATION OF DIGITAL LIBRARY WITH SPECIAL REFERENCE TO SCIENCE & TECHNOLOGY

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M.D. Baby**

ABSTRACT

With the advancement of computer and information technology, vast variety of information are available on-line in the world wide web. The conversion of the traditional library into the digital form is taking place at a rapid pace all over the world. in this millennium. The evaluation of the quality of the digital library is a very important and hot topic in this context in this digital era. In this paper, various parameters involved in the evaluation of a digital library such as cost, quality, time, service, collection development, user's satisfaction etc are discussed.

1 INTRODUCTION

The term digital library can be referred as the "electronic library", the "networked library" or the virtual library. It is often defined in narrow terms as just a collection or repository of electronic resources as well as the printed resources and the technology needed to provide access to it. In a digital library large number of heterogeneous data can be organized into interoperable collection which can be searched and manipulated in new ways to yield useful information. Digital libraries give access to the scientific developments searching across the multidisciplinary repositories around the world.

Digital libraries are able to integrate the freely available information on the web with the more formal literature for which licenses on

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electronic versions are arranged with publishers. These licenses enhance and replace traditional collection development policies. Digital libraries facilitate time and place independent information services for students, which is necessary in active learning styles..

2 NEED FOR EVALUATION

An evaluation is basically a judgment of worth. or in other words evaluation studies are conducted to compare the merits(or demerits) of two or more systems.

Evaluation or the performance measurement is of growing importance to libraries operating in today's competitive environment, where services are being contracted out to different agencies. The current environment in which economic rationalism and quality management are dominant ideologies has demanded of libraries their services are effective, efficient and customer driven and meet world's best practice. Evaluation indicators need to be both quantitative and measure inputs, outputs and impacts.

3 EVALUATION PARAMETERS OF A DIGITAL LIBRARY

Libraries are traditionally categorized according to their performance using statistics such as number of items in the collection, number of items issued per annum, number of users, number of visits made to the library and number of queries quantitative rather than qualitative statistics. In the case of digital library the evaluation parameters are cost, quality, time, collection development, service, user satisfaction etc.

4 COST/ECONOMIC IMPACT OF THE DIGITAL LIBRARY

Cost or economic impact of a digital library is the important aspect of the evaluation of digital library. Lot of discussions are going on in this topic. Even though digital libraries are expensive, the over all performance compensate the initial cost of establishment library's operational cost associated with infrastructure, resource management, space, preservation cost is different form that for a traditional library

5 INFRASTRUCTURE

The infrastructure cost includes server and workstation and software

purchase and maintenance for both the hardware and software. The initial cost of the infrastructure is higher while the overall operational cost of the library systems are substantially reduced.

6 COLLECTION DEVELOPMENT

The collection development or the resource discovery of digital library mainly includes methods such as direct purchase of electronic version of the documents, in downloading from the web. Purchase cost of the electronic version (a handbook or an encyclopedia in CD) is much lower than their print version.)Since the institutional budgetary allocations are minimal in order to move towards more cost effective publishing, the APS offers on-line only access to its journals. This on-line access is priced 15% below than the print version. IOP is giving 15% discount for their e-books, also the cost of subscribing e-journals which can be downloaded as soon as it is published is lower than buying the printed version.

6.1 Space

In a conventional library, physical space such as shelves, racks etc are required for managing the collection The transition to electronic form essentially eliminates space problems

6.2 Preservation

The subscription of a e-journals are more cost effective, but the preservation or the archives required an extra care. The purchase of archival collection in digital version is much more costly than the binding and traditional way of preservation of old issues. The following aspects are very important for preserving the on- line journals.

- **Skilled professionals**
- **Hardware support**
- **Software support**

6.3 Quality

The information in a digital form provides different formats such as motion video and film, still photographs, text, graphics, animation, sound, number and data. The users have an interactive experience with a multidimensional interaction of reading, viewing, listening, and interacting through activities such as exploring searching, manipulating, writing, linking etc.

6.3 Time

Digital library supports the 4th law of library science. "Save the time of the reader". One of the major advantage of the digital library is time saving. It is available 24 hours a day, 7 days a week. Access to a content will not be constrained by the time. For a short term reference or the query answering etc the time taken as much less. When clients issue long queries ,the response time become poor, the poor performance is due to the high utilization of the server. Digital library supports to save lot of works like resource management like book order , and technical work like cataloging classification etc,

6.4 Service

Following services are available for the user of a digital library

- To identify document of interest
- To assess the relevance of an article before retrieving and reading the full text.
- To create a customized document retrieval which includes combination of bibliographic and other elements
- To access specific pieces of information such as an equation a fact or a diagram
- To access information through movies, sound and simulations of scientific experiments

Looking to the management aspects, a digital library has the following features:

- To support the information discovery
- To support the consortia for collection development
- To supports resource sharing in different ways
- Document delivery system

6.5 User satisfaction (user oriented evaluation)

The evaluation conducted in the users point of view is called user oriented evaluation it is mainly concerned with

- Accessibility of the system
- Availability of guidance by professional staff
- Volume of retrieval item

- Facilities for interaction with different sources
- Nature of output, bibliographic reference, abstract or full text.

6.6 Users satisfaction depends upon the

- Queuing time for access to the system
- Downloading time
- Availability of the resource
- Pages of print option
- Availability of skilled professional staff

7 CONCLUSION

Since we are in a period of transition from the conventional form to the digital form, we can't reach at a conclusion regarding the merits and demerits. All the aspects discussed above are to be analysed and improvements are to be made after taking into account the suggestions from different corners such as computer experts, users, administrators, etc.

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EVALUATION OF ELECTRONIC INFORMATION RESOURCES (EIRS)

Sachin Vaidya*

ABSTRACT

This paper stresses the importance of evaluating EIRs and lays down different criteria for evaluation.

1 INTRODUCTION

Electronic information is available in the form of CD-ROMs, DVDs, or floppies. It is also available through the Internet or through online databases. Electronic Information Resources (EIRs) contain originally published information in electronic form or information originally published in print form and then made available electronically. Some information is available simultaneously in print as well as in electronic form.

2 REASONS FOR EVALUATION OF EIRS

Traditional sources undergo different stages of filtering. These sources are evaluated by a referee, or an authority, or an editor, etc. For a journal article to be published, it usually goes through some peer review before it is accepted for publication. Unlike most traditional information sources (books, journals, organizational documents, etc.), no one has to approve the content before putting it on the Internet. Information available on CD-ROMs and through on-line databases is usually scrutinized before making it available to users, as it is sold for a price. [1]

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3 NEED FOR EVALUATION OF EIRS

Need for evaluation of EIRs arises because:
a. Information may not be authentic / reliable.
b. The author may not be qualified / experienced.
c. The information may not be current.
d. It may not be filtered.
e. It may not be focused towards the target audience. [2]

4 CONTEXT IN WHICH EVALUATION OF EIRS IS TO BEDONE

There are two contexts to this issue:

4.1. The user context

The most important factor while evaluating EIRs is the user and his / her needs. The purpose of using EIRs may be entertainment, academic work, hobbies, or vocational interests. This purpose should be kept in while evaluating an academic journal and a popular magazine.

4.2. The electronic context

Some of the visual distinctions that signal the nature of content in print sources hold true for the EIRs as well, although, because the EIRs encourage wider use of graphics, electronic versions of printed works usually contain more graphics and more colour than their print counterparts. [3]

5. CRITERIA FOR EVALUATION OF EIRS

5.1. Authority

The reputation of an author is an important factor in evaluating the traditional resources as well as EIRs. Some of the following factors that are to be taken into consideration are as follows:

- Is it clearly written who is the author of the information?
- What is the author's position, qualification, past writings, etc.?
- Is the author associated with any organization / sponsor / publisher?
- What is the credibility / reputation of the organiza

tion / sponsor / publisher?
- Is there any address, telephone & fax number, or e-mail id provided for contact?

5.2. Accessibility / availability

In case of Internet resources, accessibility counts and in case of CD-ROMs and on-line databases, availability matters.

5.2.1. Internet resources

The factors, which guide to judge the accessibility of Internet resources, are:
- How easy it is to get to the website?
- Does the website prefer a particular browser?
- How easy it is to use the website?

5.2.2. CD-ROMs and on-line databases

Those, for availability of CD-ROMs and on-line databases, are:

- Are they available for preview / free trial?
- Are they available through local distributors?

5.3. Currency

Whether the EIR is current or updated regularly, is an important criterion to critically analyze the EIR.

5.3.1. CD-ROMs

The factors governing currency of CD-ROMs are:

- What is the date of publication?
- Whether there are any considerable additions to knowledge in that subject field after the publication?
- Whether the CD-ROM provides links to the Internet?
- What is the interval between two succeeding editions / versions?

5.3.2. Internet and on-line databases

The factors governing currency are:

- Whether the date of creation and last updation is given?
- What is the frequency of updation?
- Is the information up-to-date till the last date of updation?
- In case of Internet resources, are the hyperlinks relevant and alive?

5.4. Accuracy

Information provided should be accurate. If it is not so, then it is of less / no use, Accuracy can be judged by considering the following factors:

- Is the information reliable and error-free?
- Is there any editor or other who checks the information?

5.5. Coverage

Factors governing coverage are:

- What subjects / topics are covered?
- How in-depth is the material?
- Which languages are used?
- What is the time period covered?

5.6. Arrangement

The arrangement of information within the EIR should be systematic and easy to access. There should be a contents page and an index and / or searching by query facility.

5.7. Objectivity

Whether the information is without any bias is to be seen. [4] [5]

5.8. Cost

The factors governing cost are:

- What is the basis of pricing?

If the database is available online as well as in print, what is the difference between the pricing of the two versions? And whether the customer is eligible for online access if he / she pays for print version? [6]

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INFORMATION RETRIEVAL SYSTEM OF KIT LIBRARY: AN EVALUATION STUDY

Dr. J. Dominic*
P. J. Nirmala**

ABSTRACT

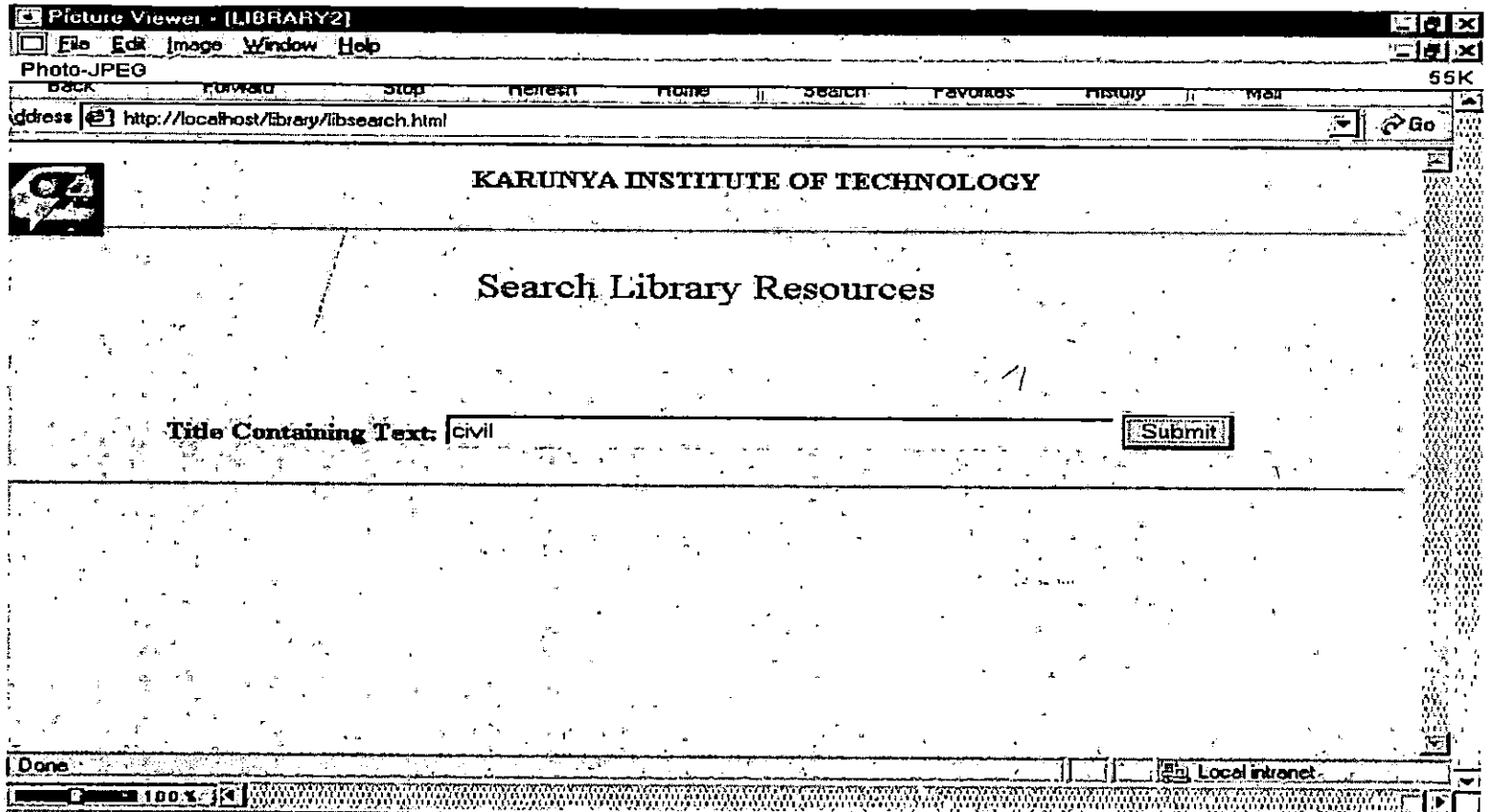
This paper discusses the aspects of the design and use of document access and retrieval system based on library automation of KIT Library. The data used for analysis were collected from the Library user who came to retrieve the documents. It describes the evaluation of the information retrieval system and to find out the relevance of documents accessed. The effective measures like precision and recall were used to analyze the result

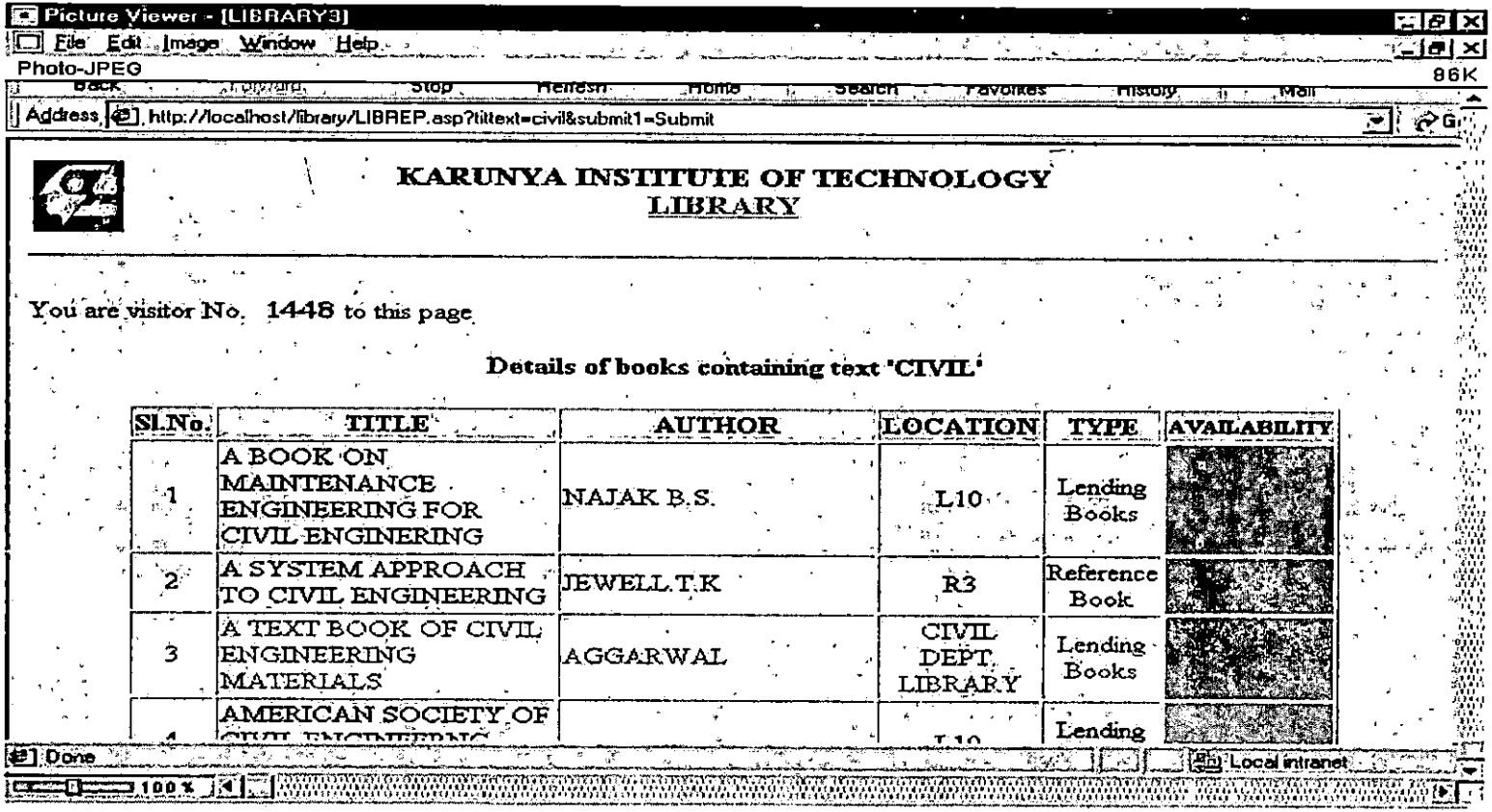
1 INTRODUCTION

A growing interest is evident in the design and implementation of mechanized information systems. Over the last few years, the general feeling is that something should be done to help organize and store some of the available information resources has given way to the widespread impression that modern computing equipment may in fact be capable of alleviating and solving to some extent so called information problem. Specifically, it is believed that the required capacity to store many data or document collections of interest does exist, that procedures are available for analyzing and organizing the information in storage, and that real – time software and hardware can be used to ensure the retrieval of stored information in response to request from a given user population in a convenient form and at little cost in time and effort.

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Picture Viewer - [LIBRARY2]
File Edit Image Window Help
Photo-JPEG
55K
Back Forward Stop Refresh Home Search Favorites History Mail
Address http://localhost/library/libsearch.html
Go
KARUNYA INSTITUTE OF TECHNOLOGY
Search Library Resources
Title Containing Text: civil
Submit
Done
Local intranet
100%



Picture Viewer - [LIBRARY3]
File Edit Image Window Help
Photo-JPEG 86K
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Address http://localhost/library/LIBREP.asp?tittext=civil&submit1=Submit

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Details of books containing text 'CIVIL'

Sl.No.	TITLE	AUTHOR	LOCATION	TYPE	AVAILABILITY
1	A BOOK ON MAINTENANCE ENGINEERING FOR CIVIL ENGINERING	NAJAK B.S.	L10	Lending Books	
2	A SYSTEM APPROACH TO CIVIL ENGINEERING	JEWELL T.K	R3	Reference Book	
3	A TEXT BOOK OF CIVIL ENGINEERING MATERIALS	AGGARWAL	CIVIL DEPT. LIBRARY	Lending Books	
4	AMERICAN SOCIETY OF CIVIL ENGINEERING		L10	Lending	

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WEB BASED INFORMATION RESOURCES PARAMETERS FOR EVALUATION

Dr.B.S.Biradar*
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ABSTRACT

Internet world has been revolutionised by the World Wide Web. Almost all of the access and search techniques are integrated and consolidated by Web. Because of this high features it gives access to vast amount of information. Web has made the Internet easier to both for searching information and publishing it electronically. The ease of publishing information on the Web results suspicious in the quality of information, because usually no one evaluates the content before it is made available to the public. So information found over the Web is a little like swimming in a beach without a lifeguard. It is a job of the librarian/ information searcher to evaluate what he locates in order to determine whether it suits with user needs or not. For evaluating the same Web environment needs some of the important parameters for thorough evaluation. Hence author made an attempt to give a lifeguard to swim in the flood of information by bringing out the comprehensive possible parameters for evaluating Web based information resources.

1 INTRODUCTION

The availability and growth of the Web offers all of us, the opportunity to find information and data from all over the world. Internet resources, in particular World Wide Web resources, continue to proliferate at an astonishing rate. Some experts say that a new site is placed online every 3 seconds. It is possible for almost any one to place

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anything on the Web. Companies, organizations, educational institutions, communities and individual people all serve as information providers for the electronic Web community. This sharing of resources and information is an example of societal cooperation on a grand scale and has fostered professional and personal communications throughout the world.

Users of the Web were initially impressed that they found useful information of any kind. However now that anyone with access to a server and passing knowledge of HTML (Hypertext Markup Language) can put information on the Web, the problem has become one of the sifting through a mass of advertising material and vanity publications in order to find information of high quality. Matthew T. Ciolek expressed a concern that the WWW (World Wide Web) may become the MMM (Multi-Media Mediocrity).

For librarians and library users to make effective use of Web resources, they need criteria to evaluating the information. As has been noted by James Retting, many Web sites that select and review Web instead of focusing on information content.

2 WORLD WIDE WEB: SOME BASICS

The World Wide Web (WWW) or W3 or simply to Web it is fastest growing Internet tool for information retrieval. WWW is a set of servers on the Internet that are interconnected through hypertext. The hypertext is a method of presenting information where selected item(s) that are highlighted in different color, can be expanded at any time to provide other information about the item. These selected items are links, which allow to move from document to document and server to server. The useful aspects of the Web is the ability to browse through a list of subject headings to get an idea of just what kinds of materials exists on the Internet in a given topic

WWW is a method by which information can be published across the globe by just placing one soft copy of the document on the Internet Web server. Millions of persons can search it, down load it to their system and have it printed on their own printers. A few years ago e-mail, gopher, WAIS, FTP, Telnet, news services and mailing lists used to be distinctly different services on the net.

3 NEED FOR EVALUATION OF WORLD WIDE WEB

Evaluation can be seen in many lights. It is essential and ongoing

process for information managers. It is a system of continuous improvement, it a journey and not a destination. Keeping this in view library resources like books, journals and other printed materials have already been evaluated by a librarian or by a mechanism set up by a librarian. When we use an index or a database to find information on any given topic, the index or database is often produced by a professional or scholarly organization that selects the journals to be indexed on the basis of their quality. Every resource we find has been evaluated in one way or another, before we ever see it. When we are using the World Wide Web, none of this applies. There are no filters in between the Web and us. Now that anyone with access to a server and a passing knowledge of HTML (Hypertext Markup Language) can put information on the Web, the problem has become one of sifting through a mass of advertising material and vanity publications in order to find information of high quality. Information can be spread over the Web by anyone without regard to accuracy, validity, or bias. Due to its global structure, which encompasses a variety of legal systems and cultures, it is unlikely any one individual or nation able to significantly influence, regulate, or change the chaotic state of flux that characterises the World Wide Web. So using and citing information found over the Web is a little like swimming on the beach without lifeguard. Hence there is a need for librarians to evaluate Web based information sources in order to

- Decide whether a Web information source should be linked to a resource guide or library Web site.
- To judge the quality or appropriateness of information for a particular query or user.

For librarians and library users to make effective use of the Web resources, they need criteria to use of the Web; they need criteria to use in evaluating the information found.

Without explicit criteria for selection of these resources, libraries risk wasting their user's time with tools of dubious value.

The accuracy and functionality of search engines leaves much to be desired in the way of evaluative information. Results, for the average user, are often links to the same site or commercial pages. The reviews, if any, consists of brief uninformative blurbs on the site. There remains a significant need for evaluating Web resources.

Issues of unevenness of quality, lack of peer-review or accountability, the increasing number of sites on the same topic, and the potential

degradation of popular Web directories and search engines continue to create difficulties in finding and using quality resources on the Web. Hence it is necessary to evaluate Web resources with following criteria.

1. **Authority:** What are the qualification of the author(s), editor(s) and the reputations of the publisher(s)? Are they experienced? Acknowledged experts in their field?
2. **Scope**: What items are included in the resources? Is the scope only implied? Or is it stated through meta information such as an introduction? Does it actual scope of the resources match expectations? Does aspects of the resource such as depth, breadth, time and format (whether its scope restricts to certain classes of resources, for example Telnet, Gopher or FTP resources may be included from WWW-oriented site) are clearly stated?
3. **Content:** Is the information fact or opinion? Does the site contain original information or simply links? Site can be useful both as information resources in themselves and as links to other information, however user can be frustrated by list of resources which looks promising, but run out to simply contain more links.
4. **Accuracy:** It is much important criterion for Web resources, because of self-publishing done on the Web. Hence it needs to be applied rigorously.
5. **Revision:** In case of resources revision can be made regularly without any delay, so it is very essential to know whether the content is updated, if yes how frequently are links checked and updated?
6. **Purpose and Audience:** What is the purpose of the resource? Is it clearly stated? Does the resource fulfill the stated purpose? Whether the purpose needs to fit the intended audience of the resource?
7. **Uniqueness:** Is the content of the resources available in other forms (other sites, in print, on CD-ROM)? What advantage does it have all the features of original? Have extra features been added? Does it complement other resources? For example by providing updates to a printed source.
8. **Comparability:** Currently absents from most reviews of Web resources, comparison need to be made as a matter of course; even though it is a lot more work for the reviewer.
9. **Illustrations and Multimedia Design:** In an intensely visual medium such as the Web, this is a critical criterion. Does the design add to clarity of presentation? Is the resource interesting to look at? Do the visual reality modeling or other effects are

used? Are they appropriate to the purpose of resource? These items to be checked and verified.

10. **Cost:** Currently Internet information resources are perceived as being free. However, costs do exits and they are likely to become more important. Costs can be divided in to cost of connecting to the resources and cost associated with the use of intellectual property contained in the resource.Internet users paying traffic charges already have considered the costs of connection and they may want to include this in criteria for selection. For example they may favour text-based rather than image-intensive sites if the information content is the same.

11. **Permanence:** Permanence is important criterion to evaluate the Web resources. It measures the rate, that both Web site and Web pages continue to respond the same URL (Universal Resource Locator). This needs to be identified and evaluated.
12. **Bibliography:** A Web resource analog to a book, bibliography is its hot links. Are they appropriate? Are there links to sites that don't fit in with the response purpose? Are links that ought to exit missing?
13. **Index**: In case of Web resources index is analog to the search engine. Does the resources include one? If so, does it provide sufficient, flexible and robust retrieval capabilities? Can the user define search criteria?
14. **Required computing environment**: Can the resource be accessed with standard equipment and software, or are there special software, password or network requirements? Has the resource been designed to work well with one software and user interface?
15. **Searching**: How effectively can information be retrieved from the resource? Is a useful search engine provided? What operators are ranking features available? Is use of the search engine interface intuitive? Does the search engine index the whole resource.

4 CONCLUSION

To sum up the same we can say that evaluation criteria for printed and Web resources are almost similar to printed resources except some criteria like multimedia design, interactivity & connectivity, searching, computing environment which are essentially used as criteria for Web resources. The traditional criteria viz. authority, scope, currency, cost, arrangement, index, special features etc can also be

applied for the evaluation of Web resources.

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CREATION AND BROWSING OF ICAR & SAUs AGRICULTURAL WEB SITES FOR RESOURCE SHARING

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ABSTRACT

Describes agricultural situation in India, objectives of information communication technology and use of web pages in resource sharing. Gives tips for designing of web site of agriculture, software requirements and guidelines for web pages and creation of web sites / home pages in ICAR.Provides a detailed list of web sites in agriculture.

1 INTRODUCTION

Agricultural development in India has faced new challenges in this century. India has agricultural diversity. Its population is one hundred crore 70 percent population live in 6 lakhs villages cultivating 184 million hectare land broadly demarcated in to 20 agroclimatic zones and harnessing 2.02 million sq. kms. of exclusive economy zones. It has around 8129 km.tropical coast line. About 143 m ha of net area one cultivated in farms of 1-2 ha range holdings called small and marginal farms. These accounts for over 3/4th of the farmers. The National Agricultural Research System (NARS) of India caters to the need of agricultural research and education .It has a vast network of 48 Central Institute , 4 Bureaus, 10 Projects Directorates (PDs), 27 National Research Centre (NRCs), 90 All India Co-ordinated Research Projects (AICRPs) and 261 KVKs, 31 State Agricultural Universities (SAUs) with 120 Zonal Research Stations (ZRSs), 8 Trainers Training Centre and one Central Agricultural University (CAU) It caters to the needs

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of more than 30,000 personnel out of which nearly 7000 are engaged in active research and management.ICAR decided, in 1991, to bring the power of new information technology to the Indian NARS. Initiatives were taken in 1994 - 95 to create Agricultural Research Information System (ARIS) for India with a view to provide modern tools of information technology for information management in agricultural research . ICAR requested ISNAR, Netherlands to formulate a strategy to establish Agricultural Research Information system(ARIS). Subsequently National Centre of Software Technology (NCST), Mumbai prepared an action for implementation of ARIS. The ARIS aims to provide E-mail and Internet connectivity to research & education centres are also being facilitated to create database and digitised documents and information generated by them. The Planning Commission of India created National Information Centre (NIC) that has network (DISNIC) upto district level. NIC is also Internet Service Provider (ISP) for ARIS.

2 WEB SITES :

The world wide web (www) is a navigational tool one the internet that enables browsing of information linked to other related information . Web sites help in accessing universe of knowledge irrespective of their location. With the help of www and related internet technology anyorganisation and institution can make their presence on the internet. Web sites are for giving information regarding institution and its activities for promotional aspects their providing information activities available are on - line , for giving links to relevant important sites and for collecting feed back from scientists and researchers. The ICAR web sites should also support the ICAR, SAUs mission to strengthen and enhance the ICAR, SAUs research, teaching and other activities are early access to information and resources.

3 OBJECTIVES :-

1. To improve the capacity of researchers, teachers and extension specialists to organize, store, retrieve and exchange information
2. To evolve mechanism of information sharing.
3. To improve the capacity to plan, monitor and evaluate research and extension programmes.
4. To strengthen national libraries and library's network through electronic access.
5. To reduce time for page to load browser, read or download,
6. To provide current information to scientist and researchers .

4 TIPS FOR DESIGNING OF WEBSITE

Before creation of web site for an organisation, a few decision are to be taken. A step wise analysis of the website creation procedure is as follows:-

(i) Purpose of website : We must decide the purpose of our web side for which it is being created .Answer simple question why do you need a website? It could be research oriented, educational , and for information or a combination of these .

(ii) Index page and site organisation: It is also called home - page, which describes our organisation, services provided, news and other information .It has to be attractive & information.

(iii) Site and domain names : Determine a tentative name for the web site. Name should to descriptive, unique, short, and memorable.

(iv) Main graphic to highlights: "Index" or home" pages should ensure simplicity, art, elegance and quick loading features.

(v) Background colour or texture : Both texture and color will make website special. Make the text carefully so that it is easily readable it. Don't let the background overwhelm the text, but subtly complement it.

(vi) Basic page elements : Check Page title, top-of page, graphic, page background, text, last update, URL address, Linkes, E-mail address
included on every page.

(vii) Finishing touch : Horizontal Rules, Coloured Lines, Bullets, Coloured balls, arrows and pointers, Colourful "New" or "Updated" markers. One checked before giving a finish touch.

(viii) Photo and Graphics: Images could be Black - and - white image or color image, or even Clickable thumbnail images . Type of image is like GIF,JPEG etc. are to be decided. GIF, files can be viewed by all web browsers and work best with images created in a graphics program. JPEG images compress better for photographic graphics, or those with color gradients and thus load faster.

(ix) Forms to get user response: These are options, which return information from your user to you by e-mail. i.e. Guestbooks, Requests for Information etc.

(x) Uploading and testing the page : There are three different practices followed each with their pros and cons, viz., (i) upload the pages yourself, (ii) send the pages to the Internet Service

Provider on a diskette to upload for you, (iii)have your web designer upload and test the pages for you. Any of thede can be adopted depending on avail availability of facilities.

(xi) Registering and advertising web site: The users should be able to find the web site, and hence are need to register it. There are several ways of registering a web site.

(a) Web search engines : There are half a dozen important web search engines for the Internet like Lycos, Web Craweler, Atla Vista, HotBot, Excite, and Infoseek. The most important directory by far is Yahoo. Register the "index" page with each of these. (b.) Links from Related Pages : You may find some people in a complementary business who will agree to reciprocal links with your page. (c.) Links from Industry Index pages : There are many an " advertising" page which links all related pages at no cost. Tell them about the web site. (d.) Press release : Send brief "press release" announcements to services which announce " what's new on the Internet. (e.) Display of web site : Print web site address or URL on all your display ads, literature, stationary, and business cards.

(xii) Maintaining web site: Once the web site is up and running after testing all links and correcting the inevitable errors, we need to keep the web site current. We need to handle following.

(a) Adding pages to describe new parts of organisation i.e. new division created, new project started, etc.

(b) Updating links which have become obsolete. Also the webside n eeds to be regularly updated with more emphasis on the information sought by most of the users. It can be assessed by placing counters on the pages, or by analysing the log files on the web server.

(c) Updating images to match with the latest content of the page.

(d) Re - doing the "look" of the pages as and when required and necessary.

5 SOFT WARES FOR CREATING WEB SITE:

There are various soft wares viz. Macromedia Dream Weaver, MS FrontPage, Adobe PageMill,Netscope Computer, HoT Metal Pro, Hot Dog Express, Arachnophilia (shareware), ec Buider Pro, etc available in the market to create web- site for an organisation and for e-commerce. Frontpage is popular, because tool bars and icons used are similar to those used in MS Word. It is a advanced software to create professional looking Web - sites, Lately, it has been packaged

with MS Office 2000 which is supplied to various NARS institutions alongwith computers under ISD(ARIS) component of NATP.

6 GUIDELINES FOR WEB PAGES :

Following should be taken as guidelines for web page designing as issued by ICAR.

(1.) At present ICAR Home Page (http :// www.nic.in/icar) is maintained by National Informatics Centre (NIC) on their www server. Institutes web pages may also be added to the ICAR Home page.

(2.) Institute who wish to install and maintain their own web server may do so with prior intimation to ICAR , provided they have good connectivity and can operate the web server round the clock. SAUs may, preferably, have their own web server.

(3.) Those who are not in position to operate their own web server may sent their manuscripts of the web page to the ICAR for hosting it on existing ICAR Home page.

(4.) Home pages of those institution / SAUs who are maintaining their own web server will also be linked to ICAR Home Page.

(5.) The Web Page must be in HTML (Hyper Text-up Language) format.
Images may be included in GIF or JPG format.

(6.) Efforts should be made to keep it concise and to the point with minimum numbering pictures

(7.) The web page included Location , Brief history of the Institution, Mandate, Manpower, Budget, Resources like important instrumental facilities, farms genetic resources etc., Major achievements Current activities, Future perspective etc.

(8.) To protest intellectual property developed at the Institutes from misuse/ patenting etc. if the information is included in the Home Pages of the Institutes, it is essential that the material is thoroughly screened by the Director . It is essential that only published matter/
matter in public domain be included. The material should be so designed that no possible. SAUs may also follow similar procedures.

(9.) Home Page should be efficiently designed with suitable index and linkages for convenient and fast browsing.

(10.) The home Pages would be required to be updated at suitable intervals say every 3 months.

(11.) Specific financial assistance for creation of home pages or

server may not be available from ICAR headquarters separately.

7 WEB BROWSING

Surfing the net is an art to get any kind of information from all over the world , is a facility which can be utilized by all with the help of web - browsing software viz. Internet Explorer, Netscape Navigator, Voyager (Under QNX, where QNX is a real time operating system), etc. After entering in to these browsers we have to give Uniform Resource Locator (URL) viz. http://www.nic.in/icar. which is an address of the web site.(Alta Visa, Info seek) Besides it has ARIS newly (www. nic. in /icar) .

Agricultural Scientists Recruitment Board announcements, web sides of many
PDs, KVKs, SAUs etc, to various announcements regarding events , workshops, conferences,results of examinations conducted by ASRB are made trough the ICAR web sites. Important announcements pertaining to agricultural research and education from all over National Agricultural Research System (NARS) available on ICAR web sites etc.

One of the popular search engines is Yahoo. To enter into this search engine , the URL is http:// www.yahoo.com. After entering into any of the search engine, browsing is done either by giving desired Keyword/ Title in search option or by selecting the appropriate titles from the front page. Each search engine has its own style options like displaying web - pages, page numbers etc.

Browsing the net is interesting, but we have to pay for each hour of browsing. The other search engines do Alta/vist ,InfoSeek, Excite, Lycos, Yahoo, Snap, Northern Light, GoTo, Directhit, Google, All The Web, Web Crawler, etc. Browsing : Following tips help us to browse net faster

(i) Using URL http:/ /www. internetrafficreport. com, helps us to know the traffic for a particular country's network router. If we know in which timings the particular web sites download fast, we can use those timings to visit that particular web sites eg. people from India can search Indian web sites in the night.

(ii) While browsing the net, the information displayed on the screen are stored in cache memory. So that, when the user

goes back to the previous pages by clicking Back button those pages will be displayed from the cache memory. We can increase this cache memory size, if there is option

(iii) Temporary Internet files option helps to view the pages which have been recently visited. These pages are stored in a special folder for quick viewing later. By deleting these counters we can get more free disk space in the hard disk.

(iv) The URL of frequently visited sites can be added to favourites, eliminating the need to give options trough search engine.

(v) Web pages can be viewed offline by downloading them into the hard disk .

(vi) Information on the Web is published as a series of pages.This sequence is based upon Relevancy Ranking. When large number of pages are there , If we select the pages from first, 1to 3 pages will give more relevant information then last sequence.

(vii) Larger files should be downloaded when internet traffic is less.

(viii) When downloading the files from the net, it is better to avoid Graphics and sound so that files can be down loaded faster than earlier one.

(ix) By using Book mark we can go to our web page which we need to visit frequently.

(x) Remove the software and files which are not necessary at present in the computer system. This will give lots of free space in the hard disk which will increase the speed of internet browsing.

(xi) It is better to use always the upgraded version of Web - browsing software.

8 HOME PAGE OF ICAR :

ICAR made a beginning by hosting its home page on the web of National Information Centre (NIC) in February 1997 . Uniform Resume Locator (URL) of the ICAR page is http: www.nic.in/icar . It contains only very basic and concise information . Efforts are being made to publish ICAR's quarterly publications, ICAR News and ICAR Reporter, on the web. Information on activities of institutes NRCs, AICRPs and individuals need to be added .

Indian Council of Agricultural Research (ICAR), has got Internet presence through its web-site which can be accessed by any one for seeking information on agricultural and allied subjects. The web-site has been designed in conveniently navigable sections including

Organization , Activities, Research Activities, Agricultural Research Information System (ARIS), International Linkages, Publications, Subordinate Offices, National Agricultural Technology Project (NATP), State Agricultural Universities (SAUs) etc. Some ICAR Institutes, NRCs, National Bureau, Project Directorate, and SAUs have web sites designed separately as per guidelines of ARIS Unit prepare the itself in HTML format using their server / connectivity. The web site designed in conveniently navigable sections including introduction of institutions, mandate, on going project , funds & budgeting, achievement, expatriations, AICRPs - centres ,subcentre, name, budget, staff position. achievement, staff position, scientist biodates, publication, extension activities, collaborative project details, facilities availability, library information, committees, administrative information. training, workshop/ conference / seminar information, HRD information etc. Important web sites in agriculture are given in appendix.

9 CONCLUSION:

Internet help researchers & students in saving time , money & energy. It minimiize drudgeries in research work & having quick access to recent advances on the type of their interest. Web sites are important tools of internet search. An intelligently designed web sites create interest among uses. They need to be designed carefully ICAR has taken in creating web sites but still many Institutes in agriculture do not have their web sites. To promote agricultural research and resource sharing , web sites are must and ICAR will have to take steps to create web sites of all the institutes in agriculture and publish a directory of web sites in agriculture on the net as well as internet.

9 SUGGESTION

1. Web sites must be updated on day to day basis
2. Revision of home pages should be done as and when required
3. Web pages of all institute in agriculture must be included as early as possible
4. There should be atleast one hour in every institute to update & maintain web sites. This can be done on regional / zonal basis in the beginning.
5. Web sites addresses must be made available early ICAR should put web site on web sites addresses in agriculture for early search ICAR should also publish such a book & distributed in all institutes in the

field.

6. ICAR should organise courses in web designing and maintenance frequently.

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Appendix 1

ICAR Institute / organisation Web site address.

1. Central Avian Research Institute, (CARI), Izatnagar (U.P)http:// www.nic.in/icar/cari
2. Central Potato Research Institute, Shimla (Himachal Pradesh)http:/www.cpri.hp.nic.in
3. Central Rice Research Institute, Cuttak http:// www.cicrindia. org.
4. Central Arid Zone Research Institute, Jodhpur (Rajashan) http:/ / www.nic.in/ icar / cazri. htm
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1. Assam Agricultural University, (AAU) Jorhat. 785013 (Assam) http:// www. aau. ac. in /
2. Birsa Agricultural University (BAU), Ranchi - 834006 (Jharkhand) www.icar. org. in /birsa /BAU.
3. CCS Haryana Agricultural University (HAU), Hisar-125004 (Haryana) hau.nic.in
4. Chandra Shekahr Azad University of Agricultural & Technology (CSAUAT), Kanpur -208002, (U.P.) http:// icar.org.in/ welcom.htm.
5. Dr. Panjabrao Deshmukh Krishi Vidyapeeth, (PDKV) Akola-444104 (Mah) http :// www. dpdkv.mah. nic. in. (In English and Marathi)
6. Govind Balabh Pant University of Agricultural & Technology,

Pantnagar -263145 (Utranchal) http:// www.gbpuat.ac.in /
7. Gujarat Agricultural University, (GAU) Sardar Krushinagar-385506 (Gujarat) http :// www. gau.guj.nic.in.
8. Himachal Pradesh Krishi Vishwavidyalaya (HPKVV), Palampur - 176062 (H.P.) hpkv.hp.nic.in.
9. Mahatama Phule Krishi Vidyapeeth (MPKV), Rahuri - 431402 (Mah.) MPKV.mah. nic.in.
10. Orissa University of Agriculture & Technology, (OUAT), Bhubaneswar (Orissa) http :// www. ori.in / ouat
11. Sher-e-Kashmir University of Agricultural Sciences & Technology, (SKUAS&T)Srinagar - 191121, (J&K) http :// www. nic.in./icar/ sherk/welcome. htm
12. Tamil Nadu Veterinary & Animal Sciences University (TNV&ASU), Madras -600 007 (Tamil Nadu) http:// www.tnau.edu/
13. University of Agricultural Science, Dharwad (Karnataka) http :// www. uasd. net
14. University of Agril.Sciences,(UAS), Bangalore-58 uasbng.kar.nic.in.
15. Yaswant Singh Parmar University of Horticulture & Forestry (YSPUH&F), Solan - 173230 (H.P.) http : file:// www.ysparmaruniversity. org./

Some useful web page address : - An agriculture important web address are given as bellows.

1. http :// cgswww.adl. hort. csiro. au/
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3. Africa Inrternet Forum www3.undp.org/aif.html
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5. Agric. Access Network www.bib.wau.nl/agralin/index.html
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7. Agricola probe.nalusda.gov:7020/77/agricola/agisx
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9. Amer. Soc. Hort. Science www. ashs. org
10. Asgrow Seed Co. www. asgrow. com/
11. Asian Development Bank www. asiandevbank.org/
12. AVRDC www.avrdc.org.tw
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19. Chile Product Sources neptune.netimages.com/chile/ catalogs.html
20. CIMMYT www.cimmyt.mx/
21. CRIS Reports ctr.uvm.edu/cris/theme.thm
22. Crop Sci.Soc. America www.crops.org/cssa.html
23. Crucifierous Vegetables www. dole 5ady.com/crucif.html
24. csiro www.csiro.au/
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DIGITAL LIBRARY: ISSUES RELATED WITH DIGITIZATION & SHARING OF RESOURCES

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ABSTRACT

Deals with digitization of information which is useful for researchers as well as the students who are scattered at remote places of India facing the problems concomitantly to get the desired information timely & in an economical way in their field of activity.It also deals with the criteria required for selecting contents for digital libraries, legal issues, marketability of digitized information, challenges & benefits as well as security aspects along with Indian scenario associated with digital library

1 INTRODUCTION

Digital libraries are a set of electronic resources & associated technical capabilities for creating, searching & using information.In this sense they are an extension & enhancement of information storage & retrieval systems that manipulate digital data in any medium (text, images, sounds; static or dynamic images) & exist in distributed networks.The introduction to the April 1995 Communications of the ACM special issue on digital libraries describes them grandly as the "opportunity ... to fulfil the age old dream of every human being : gaining ready access to hamanity's store of information. The content of digital libraries include data, metadata that describe various aspects of data(e.g. representation,creator,owner,reproduction rights), and metadata that consist of link or relationships to other data or metadata whether internal or external to digital library.Digital libraries are component of communities in which individual & groups interact with

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each other,using data, information & knowledge resources & systems.Thus they are an extension, enhancement & integration of variety of information institutions where resources are selected ,collected, organized , preserved & accessed in support of user community. It is a concept that has different meaning in different communities.To the engineer & computer science community, it is a metaphor for the new kinds of distributed database services that manage unstructured multimedia data.T o the political & business communities, the term represent a new market place for the world's information resources & services.To the futurist communities, digital libraries represent the manifestation of Well's World Brain.

Digital library is an analog or metaphor of traditional library.However, digital libraries differ from their counterparts in significant ways:storage is digital,remote access is quick & easy, and materials are copied from a master version.Further more keeping extra copies on hand is easy & not hampered by budget & storage restrictions , which are major problems in traditional libraries.Thus digital technologies overcome many of the physical & economic limitations of traditional libraries. We are already aware of that digital objects are the basic building blocks of digital library.therefore we have to adopt such architecture for digital library which supports two main needs. It must provide methods for grouping digital library objects & must provide means for its retrieval.The Kahn/Wilensky architecture supports these ideas.First approach is to have a digital object containing several digital objects.Thus several formats of a text might be assemble into a single digital object.Another approach is to have these variants stored as separate digital objects, each with its own handle. These handles are contained in a digital objects known as meta-object which acts like a catalog record.

In order to preserve the library resources for posterity and for rendering services and give access to this collection in an effective manner, it is imperative that these collections should be digitized.It is also desirable that print & non-print resources in library be seamlessly integrated through digitization. This organization of information is characterized by the absence of prior detailed knowledge of uses of information.The ability of the user to access ,reorganize & utilize this repository is enriched by the capabilities of digital technologies.The ultimate aim of Digital library is to provide services to the targeted user communities which include education institutes, libraries, researchers, publishers, service providers,industries & individuals at large.Its failure or success depends upon i) Selection of library

materials keeping in view of their target users ii) how fast digital library can provide access to the users about their field of interest. iii) day to day analysis of feed back received by user community through e-mail. iv) marketability of the resources available in the digital library through organising seminar/conferences for their user community. v) by paying visits to those places/libraries/universities by dedicated team (formed by the top management) which require these resources but are not aware of due to bad marketing policy/strategy.

2 WHY DIGITAL LIBRARY

We know that libraries in some sectors are being used more than ever. We also know that users are going directly to electronic sources. We might reassess ourselves that the interenet 's resources can not replace leisure reading of good books, but we also realise that the main business of libraries – organizing & storing information and helping clients to use it ——is being challenged.

3 GOALS & OBJECTIVES

a) Acts as a comprehensive collection of library in digital form. The selection is done by the expert team of library formed by the top management.
b) To share the digitized information in the emerging electronic library environment
c) To emerge as a window for information consolidation & dissemination
d) Customers can reach to their desired results with in 3 clicks so that they can access the digital libraries more & more in their field of activity.
e) To provide easy access of documents to the users by the guided search through help messages

4 BENEFITS

a) Digitization actually fulfils the need for preservation & conservation.
b) Value addition through new or improved searching aids, text retrieval & links to other items, through appropriate use of metadata.
c) Improved customer Service through virtually instant search & retrieval of documents
d) More efficient collaboration with other institutions.

e) Sharing the information internally within the organization or over World Wide Web.
f) Fast execution of Document delivery & Inter library loans.

5. ECONOMIC MODELS

Digital libraries will become more effective provided the four assumption are true:

a) That institutions can share the digital collections
b) That digital collections can alleviate the need to support full traditional libraries.
c) That use will increase will electronic access
d) That long term value of digital collections will be more economical.

6 CHALLANGES

Following issues are to be taken care of

a) Technological Obsolescence will effect the longevity of digital information
b) Media Fragility
c) Hardware & Software compatibility
d) Migration of digital information
e) Periodic transfer of digital material from one hardware/software configuration to another, or from one generation of computer technology to a subsequent generation.The purpose of migration is to preserve the integrity of the digital objects & to retain theability for clients to retrieve, display & otherwise use them in the face of constantly changing technology.
e) Legal and Organizational issues:

Uncertainty about legal and organizational requirements for managing the intellectual property that digital information represents.The parties who represent owners & users of different kinds of intellectual properties(eg text & other document like objects, photographs,film,software,multimedia objects).Each operate under very different organizational regimes with different experiences & expectations

The state of the copy right law which was once generated & developed in an analog world , but is applied in an increasingly digital universe is

- Is the work a product of a government?
- Is the work a Product of the state, country or local government? Does digitization of work Constitute fair use?
- If the material is protected by copyright, there is need to obtain permission for distribute the work?
- Was a deed of gift drawn up when the collection was acquired?
- Did the donor give permission to the library to make copies for userof materials?
- If the library has the rights to make photocopies does that mean
- rights to distribute the work on the Internet?
- Can digital preservation copies of archieved materials tobe made?
- If there is no copyright notice, does that mean there is no copyright?
- Does copyright give the owner an absolute monopoly?
- If the library receives permission to distribute the work does that
- mean it has the copyright?

9 INDIAN SCENARIO:

As far as India is concerned, awareness about digital libraries is felt now-a-day's in all the professional institutes in India.They are conducting number of conferences and seminars on it, but as far as global scenario is concerned regarding establishment of digital libraries,we are very much lagging behind due to the following reasons.

Digital libraries like in other part of the world are fast emerging even in India.Due to the economic reasons, non availability of hardware & software, absence of good number of usernets & other difficulties, we are unable to enter into digital library system into a big way. The problems that are faced while entering into the digital world can be listed as follows.

a. lack of adequate local & national infrastructure for handling IT and networks.
b. lack of well trained manpower
c. non availability of well organised usernets in different subjects both in public & private sectors.

d. possible control of censorship of information by local bodies, governments or other bodies.

e. lack of freedom to access international electronic documents.

Computer literates in India are still less in numbers, especially in library & information field.Even after many years of "computer talks", library automation activities are still in poor state of affairs;library networks are stll in their infancy states.Under these circumstances, handling digital libraries is extreamly difficult.

Furthermor, information requirement vary from information rich country to information poor country.The information requirements of general public is that of scientists varies from each other.The existing digital libraries hardly satisfy the user needs in India.This is because of non-availability of electronic documents of local interest.

In India, initial steps towards building a true digital library have been initiated at some places like IITs, the IIM's,JRD Tata Memorial Library, Hindustan Lever Research Centre, National Institute of Mental Health & Neurosciences,Indira Gandhi Memorial Library etcThe major problem with these systems in India are that these are developed in isolation & no integration of these systems are being thought of.

10 INTERNATIONAL SCENARIO:

Some libraries of USA,UK & Australia are in the process of establishing Digital Libraries in true sense,Some of these libraries are The British Library, The Library of Congress,Stanford Digital Library & some of the libraties such as University of Sydney Library,The state Library of New South Wales, The national Library of Australia & Monash University Library have taken up the collaborative projects for digital libraries.

11 CONTENT SELECTION:

It requires careful identification & physical examination of possibly thousands of documents & case-by-case decisions about the appropriateness of those documents.Such collection also depend on specified notion of an audience with a particular subject index & research needs.

One has also to keep in mind that the materials should be selected on the basis of targeted users & not on the basis of copy right or non copy right material.

Sometimes it so happens that after carefully selection of library materials for digitization by the expert committee,keeping in mind of the materials frequently used by the user community,it may be the case that the same materials may not be consulted in the future by the users.

It means that for the creation of Digital library, constant efforts should be made to know the requirements/future requirements of the targeted users through e-mails as their requirements may be changed from time to time.It may be taken care of by organizing seminars/ conferences for their user community & also by visiting to those places /libraries/universities(by the dedicated team) which do not have the resources to fulfil the demands of their user community.

12.IMPLEMANTATION METHODOLOGY

Converting collections into digital images begins with the planning followed by linear progression task which includes selection of library materials for digitization /scanning/ indexing/storage/retrieval..The work flow is given below.

12.1 Collection development & preparation

- Determine scope or extant of digitization(entire or subset)
- Access the best format, e.g. fulltext conversion,scanned page image
- Access the physical condition & readiness for scanning
- Select the collection

The following four steps are involved in the process of digitisation scanning, indexing, storage and retrieval. Software, variably called document image processing (DIP), electronic filing system (EFS) and document management systems (DMS) provides all or more of these functions.

12.2 Scanning

The process involves acquisition of an electronic image through its

original thatmay be a photograph, text, manuscript etc. into the computer using an electronic image scanner. An image is read or scanned at a predefined resolution and dynamic range. The resulting file, called 'bit-map page image' is formatted and tagged for storage and subsequent retrieval by the software package used for scanning Fax card, electronic camera or other imaging devices may also employed for acquisition of an image, howevaer, image, scanners are most important and most commonly used component of an imaging system for transfer of normal paper-based documents into an image.

12.3 Indexing

Indexing of a document converted into an image or text file is the second step in the process of document imaging. The process of indexing scanned image involves linking of data base of scanned images to a text database. Scanned images are just like a set of pictures that need to be related to a text database describing them and their contents.

An imaging system typically stores a large amount of unstructured data in a two file system for storing and retrieving scanned images. The first is traditional file that has a text description of the image alongwith a key to a second file. The second file contains the document location. The user selects a record from the first file using a search algorithm. Once the user selects a record, the application keys into the location index, finds the document and displays it.

Most of the document imaging software packages, through their manu driven or command driven interface, facilitate elaborate indexing of documents. While some DMS facilitate selection of indexing terms from the image file, others allow only manual keying in of indexing terms. Further, many DMS packages provide OCR capabilities for transforming the images into standard ASCII files. OCRed text then serves as a database for full text search of the stored images.

12.4 Storage

The most tenacious problem of a document image relates to its file size and, therefore, to its storage. Every part of an eletronic page image is saved regardless of present or absence of ink. The file size varies directly with scanning resolution, the size of the area being digitised, compression ratio, content and the style of graphic file

format use to save the image. The scanned images, therefore, need to be transformed the hard disc of scanning work station to an external large capacity storage devices such as an optical disc, CD-ROM/ DVD ROM disc, cartridge tape, etc. While the smaller document imaging system use offline media, which need to be reloaded when required, or fixed hard disc drives allocated for image storage. Larger DMS use auto changers such as optical jukeboxes and tape library systems. The image storage device may be either remote or local to the retrieval work station depending upon the imaging systems and DMS used.

12.5 Retrieval

Once scanned images and OCRed text documents have been saved as a file, a data base is needed for selective retrieval of data contained in one or more fields within each record in the database. Typically, a document imaging system usesatleast two files to store and retrieve documents. The first is traditional file that has a text description of the image alongwith a key to the second file. The second file contains the document location. The user selects a record from the first file using a search algorithm. Once the user selects a record, the application keys into the location index, finds the document and displays it. Most of the DMS provide elaborate search possibilities including use of Boolean and proximity operators (and, or, not) and wild cards. Users are also allowed to refile their search strategy. Once the required images have been identified, their associated document image can quickly be retrieved from the image storage device for display or printed output.

13 COST ESTIMATES FOR CREATION OF DIGITAL LIBRARY :

There can be no doubt that digital library activities – whether resource digitization, data migration, web site management, licensing, maintaining a sound infrastructure or staff skills development carry a high price tag.Therefore for calculating the cost estimates for creation of digital library,each & every minute details/processes should be worked out in details

Keeping in view of fact, the following processes/steps are identified in the total digital library solution.

1. Blue print of plan implementation – reference document for digital

library.

2. Infra structure i.e. Hardware, Software & peripherals for DATA Centre
3. Data Centre Site modifications: Civil, Electrical, Data cabling, Networking, Broad Band Width Connectivity, Environment control, Servers placement, Flooring, False Ceiling & Furnishing for Data Centre & Distribution Unit, Data Production & Capturing Unit & Work Areas.
4. Digital Resource Collection Development
5. Digital Conversion & Processing of Existing Data
6. Digital Product Generation
7. Outsourced Jobs for Digital Library
8. Consultant(if required by the organization)
9. Manpower Training
10. Information Services: Operations
11. Access Cost: Internet Operations, Payment Gateways
12. Copyright/IPR licensing fee & transaction payments
13. Testing & Debugging
14. Developing a secured Access Methods
15. AMC beyond warranty period for Data Centre.
16. Deployment & Retraining of Manpower
17. Publicity & Marketting
18. Users training & Awareness
19. Traveling
20. Contingencies

14 CONSTRAINTS FACED WHILE CREATION OF DIGITAL LIBRARY

These are the following constraints while creating a digital library

1.0 Fears about future funding of research

2.0 The stresses of grantmenship

3.0 Technical issues such as indirect costs, facilities support,government reporting & accountability requirements.

15 CONCLUSION

As we are all aware of that digital libraries are the libraries of future, efforts should be made to make it more & more user oriented. These libraries will also generate the demand for relatively unused materials. While providing the information to all its users, issues related to copy right should be well taken care of. The feedback of the user's should be critically evaluated as it's growth depend upon these factors. Sometimes it is seen that the payments made for downloading the materials through internet is more costlier than the cost of the book/books. In order to take the decision on this issue along with other related issues such as whether we have to restrict the materials of Digital Library for Indian community or we have to expand the geographical limitations to foreign community also, revenue models/ payment models should be carefully worked out with the close collaboration of provider of information & publishers. There are number of organizations such as SUN, IBM,HP,WIPRO which provide total solution (Hardware & Software both) for digitization of library resources therefore our main thrust is on the selection of Library Resources for the digitization keeping in view of the targeted users In the last but not the least , it is the need of the hour that librarian/ information providers should keep abreast to the broad issues & rapid development in the digital information field. Only the excitement by the librarian/information provider to create a digital library will not solve this problem. By acquiring the knowledge in this field of activity, they can contribute to the organization of such a vast array of essentially unstable & widely distributed resources efficiently.

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RESOURCE SHARING AND INTER-LIBRARY LOAN IN ACADEMIC LIBRARIES IN THE DIGITAL ERA

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ABSTRACT

The revolution of Information Technology has made an impact on the library routines and the invention computers, Internet and ftp protocols opened a new avenue for the digital information generation and resource production. The information industry has been almost switched over from the production of print resources to the digital resources and the resource sharing and interlibrary loan services which were functioning in the traditional methods have also got a new dimension and these essential and scholarly services needed for the students, researchers, staff and the faculty have been carried out through Internet, world wide web, e-mail, Online Data Access and Electronic Data Interchange. This paper describes the changing scenario of library services in the digital era. It explains various technological tools and networks available in the world for digital resource sharing and interlibrary loan for the benefit of the academic community. It finally discusses the advantages and problems in adopting the digital resource sharing and interlibrary loan services among the academic libraries.

1 INTRODUCTION

The changing atmosphere in the library organization and administration due to the impact of Information Technology and digital revolution in the field of Library and Information Science has initiated

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the library activities and services of the libraries to incorporate the new technologies in their routine and render better services to its users. According to the Michael Carpenter "In the best of all possible worlds, all materials germane to a scholarly project would be in a scholar's own library, and if not there, at the institution closest to the scholar. But this is not the best of all possible worlds. Some materials are unique, and others scarce. Some of these materials are scattered among different libraries. Even in a world characterized by plentiful financial resources, sharing of materials among different libraries would be necessary." The new environment has made the libraries to undertake the resource sharing and Inter Library Loan routines even for the digital resources especially for the web resources which will be very much useful for the essential and necessary services needed for the academic faculties, staff, students and research scholars.

2 CHANGING SCENARIO OF LIBRARY SERVICES IN THE DIGITAL ERA

Resources have been shared since the beginning of writing on documents that were portable. Much of this sharing has been informal. Readers and collectors share resources either by borrowing and lending. To day very large number of readers, viewers and listeners share resources from their own collections. The libraries have also shared their documents among themselves for many years but usually on item by item by special circumstance basis.

The impact of Information Technology revolution has made a tremendous change in the routines of libraries. Apart from the print collection, the libraries will have to accommodate the facilities for the collection of electronic and digital documents which are very useful to researchers and academic faculties. Due to the financial scrounges the libraries of homogeneous in character/ run by the same organisation will gather together and organise the Digital resource sharing and Interlibrary loan among its member libraries.

The academic community in the higher education environment is mainly depending up on the library resources for their academic progress and teaching. The continuous request from the users forced the libraries to borrow the digital resources by resource sharing and interlibrary loan. The internet, World Wide Web, e-mail, Electronic Data Interchange (EDI) and the Online Data Access (ODA) are very much useful for these processes and the digital resources are

transmitted by file transfer protocol (ftp) and Z39.50 interfaces from other libraries involved in the cooperative basis of action.

3 RESOURCE SHARING AND INTERLIBRARY LOAN IN THE DIGITAL ERA

Resource sharing and Interlibrary Loan have become very popular in the digital era and a lot of hardware and software technologies have been devised for the same. The libraries and Information centres throughout the world have started to offer these services in the new digital environment. Many likeminded institutions in higher education have formed the networking among them and shared the digital resources available all over the world among themselves. The following are some of the new technologies, service providing institutions and networks involving in digital resource sharing and Interlibrary Loan from all over the world through Internet and World Wide Web.

3 OCLC ILLiad

It is a comprehensive resource sharing management software that automates routine interlibrary loan functions. Libraries can manage all of their borrowing, lending, and document delivery through a single Windows-based interface. Library users send and track their requests electronically through the web.

4 ICA2

The Internet Classroom Assistant 2 has been devised by the NICENET in 1998 as a sophisticated communication tool that brings the following intellectual services.

- Powerful World Wide Web based conferencing
- Personal messaging
- Document sharing
- Scheduling
- Link/resource sharing to a variety of learning environments.

5 ILLINET ONLINE

It is organised by the Illinois Library Computer Systems Organisation (ILCSO). It functions as the resource sharing system for the 44 Illinois Library Computer Systems Organisation Libraries.

6 INN-REACH

This Innovative Interfaces which is one of the highly sophisticated integrated software used for the resource sharing of electronic documents has the following tools for various functions of library activities.

- INN-Reach Catalog
- INN-Reach Circulation
- Interlibrary Loan
- Z39.50 Client
- Z39.50 Server
- INN-Reach Union Catalog and Direct Consortial Borrowing

7 MORE (MOVE OHIO RESOURCES EVERYWHERE)

It is used to connect all the Ohio statewide libraries in the statewide resource sharing network. MORE uses various standard technologies for various functions as follows.

- The Shared Catalogue – Z39.50
- Patron Authentication- Standard Interchange Protocol (SIP)
- Advanced functions- Standard Interchange Protocol (SIP2)
- New Standard- NCIP, Z39.83 approved by the National Information Standards Organisation (U.S)

8 CERN AND MIT INTERNET TECHNOLOGY SERVICE

It is the Internet Technology Service offered by the Corporation for Research and Educational Networking (CREN) and the Massachusetts Institute of Technology (MIT) of Cambridge for Resource sharing among their higher education institutions which will enable students, faculty, and staff to make significant advances in their teaching and research over the Internet.

9 UWORLD EXPRESS

This resource sharing service is provided by the University of Washington. *Desktop document delivery* is one of its services carried out by its internet delivery options and under this service Journal articles, book chapters, and other documents up to 50 pages in length will be delivered directly to the desktop via email or the World Wide Web in Adobe Software's Portable Document File (.pdf) format.

9.1 TexShare

It is a statewide resource sharing consortium designed by the Texas State Library and Archives Commission in partnership with academic and public libraries in Texas to enhance library services for Texas institutions of higher education and public libraries.

9.2 TexNet Interlibrary Loan

It is a statewide interlibrary loan network which includes academic, public and special libraries throughout Texas managed by the Texas State Library and Archives Commission, TexNet Interlibrary Loan embodies several grant programs that work together to enable library users, access to materials not available at their local library.

10 INFLIBNET

It a resource sharing network sponsored by the University Grants Commission connecting all the University libraries in India. This Information Library Network has developed a software SOUL which is used in all its member institutions helps to share the bibliographical details of resources available in Indian libraries.

11 MALIBNET

This Madras Library Network in India connecting the libraries of the higher educational institutions in and around Chennai city and helps to share the resources available among its members.

Advantages and Problems in resource sharing and Interlibrary Loan in the digital era

The following are some advantages and problems in adopting the digital resource sharing and interlibrary loan in the academic libraries.

A. Advantages

1. Same Resource can be shared by more members at a time
2. Resource sharing process can be done quickly by email/ World Wide Web.
3. As libraries are less able to support all the needs of their local users, Cooperative collection development becomes imperative
4. Patrons of participating libraries may directly request and

borrow materials from other participating libraries.

5. Patrons can search the union catalog from the local library's OPAC and make requests for materials from other libraries without having to complete messy paperwork
6. As the check in of all books takes place in the same program, staffs do not need to sort books for processing nor go in and out of different programs.
7. Entries are easily added or modified in the Z39.50 interfaces by authorized library staff at any time.

B. Problems

1. Quantum of work will be increased in smaller libraries as these will have to respond to the requests more quickly with their limited human resource.
2. Many patrons, dissatisfied with the limitations of our interlibrary loan services, avoid using them if possible.
3. The timeliness of service is not adequate for most scientists and many other scholars.
4. Costs charged by other libraries are often passed on to users.
5. Technical and budgetary needs often set priorities not supportive of resource sharing needs.
6. Copy right is also often cited as a problem.

12 CONCLUSION

The digital resource sharing and interlibrary loan services have created an awareness among the academic community and developed a hope that they could get any latest updated information and resources quickly and cost effectively from any where in the world. The union catalogues, OPAC systems, the technological inventions and the development of cooperative thinking among the participating libraries have made these routines, a grand success by overcoming the barriers like financial scrounge etc. If the Government frames its policies and plans to support the development of digital information technology and establishes high-tech libraries in all the educational institutions, the Indian higher education will become a model for all.

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ROLE OF INFLIBNET IN THE GROWTH AND DEVELOPMENT OF UNIVERSITY LIBRARIES IN THE CHANGING SCENARIO

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ABSTRACT

Education has been recognized as an instrument of change. Its impact on the social, cultural and economic development of a nation is indisputable. India has, therefore, very rightly placed greater emphasis on education in the post-independence era. This has resulted into considerable growth and development of colleges and universities and their libraries. However, in the changing scenario there is an urgent need for strengthening IT infrastructure for modernizing university libraries. INFLIBNET has taken initiatives both for training and IT infrastructure development in the universities of India. Thus, the present paper discusses the role of the INFLIBNET in the growth and development of university libraries in India.

1 INTRODUCTION

Ever since India attained freedom, the role of higher education and the importance of the academic libraries in the growth and development of higher education have been duly recognized. Several initiatives have been taken by the Government of India and its States to support the development of college and university libraries. In fact, library is considered to be a service institution. Therefore, it has the professional obligation to provide the required information support to its clientele. Keeping in view its pivotal role in providing the required

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information support to teachers, students and scholars in college and universities, the University Grants Commission founded in 1951, has been extending financial support for their growth and development. However, in the past two decades, college and university libraries are confronting with so many problems such as paucity of funds, unprecedented growth of literature, escalation of cost of printed material, increase in the number of users and demand for better, faster and efficient information services from the users. These problems has really created a gap between the demand and supply of information. Realising this problem, University Grants Commission initiated the programme called INFLIBNET with an aim to create a network environment at the national level so that the resources of the libraries under network can be shared in a co-operative spirit.

2 INFORMATION AND LIBRARY NETWORK (INFLIBNET)

Information and Library Network (INFLIBNET) is a major programme of the UGC initiated in 1991 with its Headquarters located at Gujarat University Campus, Ahmedabad. The Programme is directed with a mandate to create a nationwide network of university libraries and research centres in India. It is a major programme towards modernization of libraries and information centres in the country using computer and communication technology for the establishment of a mechanism for information transfer and access to support scholarship, learning and academic pursuits. It is a cooperative endeavor in resource development, sharing and utilization on the national level. The ultimate goal is to offer speedy and efficient services to users all over the country through a well articulated and versatile computerized information network, serving as a mechanism for sharing the available resources. While commenting on the network, Professor Yash Pal, the then Chairman, University Grants Commission and the brain behind its establishment opined that "It should be possible through such a system to search for a book no matter where it exists in the country and ask for an inter-library loan- irrespective of whether you belong to a newly set-up university or laboratory and irrespective of your location. Whether you are in an isolated institution in the foot-hills of Himalaysas, middle of a forest, sparsely populated regions of the North-East, western edges of the Rajasthan desert, Island in the sea, or in a large metropolitan city, you should be able to search and get copies of the abstracts of the latest papers published in any major journal through the INFLIBNET facsimile service. Similarly, you should be able to get synopsis of any of the ten thousand Ph.D. thesis written in the country every

year. You should be able to reach and get information from specialized data banks put together by different agencies, including NISSAT, UGC and the Planning Commission. It one makes specific arrangements, it should also be possible to reach foreign data banks from anywhere in the country" [1]. Thus, the major objectives of the INFLIBNET programme are:

1. Computerization of libraries and information centres in the country.
2. To establish a mechanism for information transfer and access to support scholarship and academic work.
3. To facilitate pooling, sharing and optimization of library resources.
4. To organize library services at macro level at affordable cost and maximize benefits.
5. To provide speedy and efficient services to the end users.
6 To create database of projects, specialists and institutions.
7. To provide required training for manpower development to the personnel of the participating libraries.

3 INFLIBNET-UNIVERSITY LIBRARY DEVELOPMENT

3.1. Computerization of University Libraries

As already stated that the INFLIBNET programme was initially launched in order to provide efficient and effective library services through library network. Therefore, the very first step it initiated in this direction was to encourage the participant libraries to go for computerization of their libraries. For this purpose, the Computer Development Committee (CDC) of UGC started by providing funds to universities for procuring computers in their libraries. INFLIBNET has been advising participant libraries in defining computer configuration, helping in selection of software and imparting training to library personnel. INFLIBNET provides a non recurring financial assistance Rs. .5 lakh to a full member institute for procurement of a suitable computer system for its library. As per an estimate, by now, over 142 libraries out of 272 university libraries have already received financial assistance and have installed computer system for automating their library activities. The state wise distribution of funds allocated by the INFLIBNET is shown as under:[2]

Sr. No.	Name of the State	No. of Univ.	No. of Univ. Funded
1.	Andhra Pradesh	21	14
2.	Arunachal Pradesh	01	01
3.	Assam	01	04
4.	Bihar	12	04
5.	Chandigarh	02	01
6.	Chhattisgarh	04	03
7.	Delhi	13	05
8.	Goa	01	01
9.	Gujarat	12	08
10.	Haryana	05	03
11.	Himachal Pradesh	03	01
12.	Jammu & Kashmir	04	02
13.	Jharkhand	06	02
14.	Karnataka	16	02
15.	Kerala	08	04
16.	Madhya Pradesh	15	08
17.	Maharashtra	28	15
18.	Manipur	02	01
19.	Meghalaya	01	01
20.	Mizoram	01	01

21.	Nagaland	01	01
22.	Orisa	08	03
23.	Pondicherry	01	01
24.	Punjab	07	03
25.	Rajasthan	11	08
26.	Sikkim	01	nil
27.	Tamil Nadu	21	13
28.	Tripura	01	01
29.	Uttar Pradesh	26	13
30.	Uttaranchal	06	04
31.	West Bengal	15	08
	Total	**259**	**142**

Likewise, the given below table presents the picture of the year-wise distribution of funds to the participant libraries under INFLIBNET programme:[3]

Sr.No.	Year	No. of Universities funded
1.	1993-1994	11
2.	1994-1995	43
3.	1995-1996	—
4.	1996-1997	15
5.	1997-1998	18

6.	1998-1999	18
7.	1999-2000	18
8.	2000-2001	19
	Total	142

INFLIBNET under automation activities emphasizes on the following activities:

1. Computerisation of in-house operations
2. Creation of databases of entire collection
3. Connecting of the databases to Internet
4. Setting up Web Server, E-mail Server
5. Making On-line Public Access Catalogue available on LAN and Web.

Software development is another important activity of the INFLIBNET. Efforts were made by the INFLIBNET in collaboration with DESIDOC to develop an Integrated Library Management Software to facilitate the computerization of in-house functions of libraries. It was develop in COBOL language to work in DOS/ Unix environment. Now, they have made available a library software called 'SOUL' for computerizing the library operations.

3, 2. Human Resource Development

Trained manpower and updating the skills of existing library staff to promote computer awareness among library professionals is very important for the successful implementation of the INFLIBNET programme. Training programmes are divided into different categories such as:

1.Four week training for Assistant Librarians/Library Assistants etc.
2.Workshop for university librarians/executives
3.Specialised training programmes for persons on the job
4.On-site training in SOUL
5.Caliber, tutorials etc.
INFLIBNET conducts regularly four-week intensive computer training

programmes focusing on practical aspects to prepare the operational staff working in the university libraries. As per an estimate INFLIBNET has already conducted over 20 such like training programme where over 400 library professionals have been trained. The contents of the course is updated with the changing scenario covering the aspects of computer concepts, hardware, software, latest trends, operating systems bibliographic formats, bar-coding, networking etc. In addition, it also conducts training programme at regional level. It has been conducting specialized training programme with collaboration with NASSDOC (now Shyama Prasad Mukherjee Social Science Information Gateway of India) of Indian Council of Social Science Research, All India Radio etc.

4 INFLIBNET AND ITS ANNUAL NATIONAL CONVENTIONS

In order to expose and generate awareness among the professional in library automation, INFLIBNET organizes national convention every year focusing on a relevant theme, in different regions of the country. These conventions provide the librarians to come together and discuss the issues and problems in automation and networking. Till now nine such convention has taken place where as the 10th Caliber 2003 convention is to be scheduled at NIRMA Institute of Management, Ahmedabad. Details are as under:

Theme	Location	Year
Library Automation	INFLIBNET, Ahmedabad	1994
Information Access	University of Hyderabad, Hyderabad	1995
Library Data Base Management	M.S. University, Baroda	1996
IT Application in Academic Libraries in India	Thapar Institute of Engineering and Technology, Patiala	1997
Information Management in Academic and Research Libraries	Utkal University, Bhubaneswar	1998
Academic Libraries in Internet Era	Nagpur University, Nagpur	1999

Information Services in Networked Environment In India	University of Madras, Chennai	2000
Creation and Management of Digital Resources	University of Pune, Pune	2001
Internet Engineering in Libraries	University of Rajasthan, Jaipur	2002

5 SOFTWARE DEVELOPMENT, BIBLIOGRAPHIC STANDARDS AND RETROSPECTIVE CONVERSION

To develop in-house databases for library collection, INFLIBNET initially advised participating libraries to use CDS/ISIS package which was developed by UNESCO and was distributed in India by NISSAT. But later on an Integrated Library Management Software was developed jointly by INFLIBNET and DESIDOC in COBOL language to work in DOS/UNIX environment. This software was provided to fifty libraries and were requested to give their feedback so that another revised version with full of functional capabilities could be developed. This has resulted into the development of a new library software called as 'Software for University Libraries' popularly known as 'SOUL'. It works in Client/Server Architecture mode in Windows environment using MS-SQL server as back end tool. It has five major modules viz. Acquisition, Cataloguing, Circulation, OPAC and Serial Control. It was developed with CCF format but has facility to interfaces for exporting and importing data to and from MARC-21. This is available both in single and multi-user environment costing Rs. 15,000 and 50,000 respectively. As per rough estimate over 30 libraries are using it whereas many more are expected to get it for automation purpose.

To maintain consistency and quality in databases created by the participating libraries, INFLIBNET task force has brought out a 150 page document entitled INFLIBNET Standards and Guidelines for Data Capturing. This document has been provided to all the libraries funded under the programme and a copy is made available online. The other standards recommended for this activity are AACR2 and Library of Congress Subject Headings for assigning subject headings. Recently, Ministry of Human Resource and Development, Government of India has suggested that the libraries participating in

the INFLIBNET programme should adopt MARC – 21 format for database creation so that exchange of data between the participating libraries is easier. Efforts are going on in this direction and also the steps are taken to adhere to the standards prescribed by INFLIBNET.

Retrospective conversion of a library catalogue is a major problem in the automation process. Though, it is the most tedious, time and money consuming work but an imperative task to begin with automation of the libraries. Since the participating libraries are creating databases by following bibliographic standards, the transfer of data from one library to another is effectively possible. INFLIBNET has already got large amount of data and is in the process of converting it into CD-ROM which will be made available to the participant libraries. This will be used by the participant libraries for the purpose of retro-conversion of the library books and other reading materials. This will help them in avoiding duplication of efforts in creating databases for their library collection thereby expecting to save lot of money on account of database creation.

The current status of Databases created by the participant libraries and available with INFLIBNET for resource sharing purpose is given below:[4]

Databases	No. of Records	Contributed by number of Universities/Institutions
Serials/Holdings	8264	69
Current Serials	8997	130
Secondary Serials Catalogue	340	106
Theses	1,37,689	194
Books	6,50,000	48
Research Projects	2961	550
Experts	5715	300
University Information System	28	28

6 INFLIBNET SERVICES

INFLIBNET offers following services:

1. Catalogue Based Service

2. Database Services

3. Document Supply Services

4. Collection Development

5. Communication Based Services

Though Catalogue Based Services, INFLIBNET offers Shared cataloguing of monographs, serials and non-book materials, Online Catalogue Access for location identification and Catalogue production in card, book, magnetic tape/floppy, optical i.e. CD-ROM and COM form. Database Services of INFLIBNET offers retrospective searches, SDI and Current Awareness Services. Its Document Supply Services provides Inter Library Loan request processing and document delivery through Fax and Non-fax. Collection development activities are benefited by the INFLIBNET through assistance in selection and procurement and the Communication Based Services includes Referal services, Electronic mail, Bulletin board, Academic communication etc.

7 INFLIBNET: PROBLEMS IN THE IMPLEMENTATION

Despite of many positive signs observed in INFLIBNET programme, the progress of the work is steady and the results achieved so far are not up to the expected level. An insight in the implementation of the programme is bound to throw light on the reasons for such a slow progress. However, a few problems which are coming in the way of the successful implementation of INFLIBNET are: (i) lack of clear cut policy in the financial assistance, (ii) in-correct identification of nature of expenditure involved in implementation, (iii) transfer of allocated amount from one head to another head,(iv) the role of Librarian is kept aside by the university/institution authorities while passing the amount to library, (v) in-sufficient allocation for certain cases, (vi) procurement of hardware and software by the professionals who do not have adequate knowledge in the field, (vii) No check and monitoring for the requirements and expenditure by competent authorities, (viii) Mismanagement in creation and maintenance of Databases created, and (ix) Non-availability of professionally qualified computer personnel for which UGC has sanctioned the post of 'Information Scientists' but the Universities are not filling up this position on one pretext or the other, and (x) Lack of coordination between the authorities of the recepient University/ Institution and the authorities of INFLIBNET.

8 INFLIBNET: FUTURE PROGRAMMES AND STRATEGY.

The use of INTERNET by the academics is increasing day by day because of its capabilities of offering them the information they need for their research and development activities. The UGC, by providing special grants to all teachers of all the universities for the purpose of buying computers and other information technology tools, has also promoted the possibilities for maximum use of computer and Internet facilities. The INFLIBNET is intended to disseminate Indian information wealth world over by generating appropriate databases through a suitable network linked to Internet. It also intends to work with different data networks operational in India. To provide more and wider accessibility to wealth of information world wide, INFLIBNET is exploring all possibilities to get a VSAT connections to all the university libraries under its programme to held libraries in getting easy and reliable access to information sources within India and from abroad using Internet. INFLIBNET also intends to impart specialized training for LIS teachers so that they are fully exposed and become competent to make use of network facilities. It also intends to organize specialized training programmes on networking, internet use, quality control in designing databases, database management and user education.

9 CONCLUSION

The INFLIBNET is a major national effort to improve information access in academic, research and development institutions and other organizations of national importance. In the emerging Indian information society, INFLIBNET is not just a programme or a system, it is actually a kind of IT movement related to library and information systems in India. The scope of the INFLIBNET activities are very vast and challenging. Therefore, it is imperative that there must be a open support from all corners especially from the university sector with an active participation in order to make it a success. It is, now a well established fact that the libraries in India especially the academic one are facing the crucial problems such as lack of adequate funds and manpower for automation and networking, the role of INFLIBNET to come across these problems is undisputedly recognized and accepted. It is hoped that in future the programme will achieve all goals and objectives successfully.

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SHARING & EXCHANGE OF ELECTRONIC INFORMATION

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ABSTRACT

This paper briefly mentions resource sharing, its needs and objectives and insufficiency of individual resources to meet the information needs of their users. It explains the needs for the objectives of sharing resource among libraries through networks. It enumerates the problems faced by libraries in fulfilling the requirements of the users. The optimum utilization of resources could be achieved through co-operative acquisition among libraries.

1 INTRODUCTION

It is well known to every body that information is power. This power is obtained by having access to information together with the skill to understand and apply the information. Information as a resource has no value until it is processed and utilized. New technologies are developing to maintain utilization of information. For proper utilization of information, computerization and networking of libraries is very essential.

No library in the world alone possesses all the resources of the users. The library and information professionals face challenges due to the rapid growth of publications, shrinking resources and increasing expectations of users. The main aim of resource sharing is to disseminate the availability of materials and services at the minimum expenses. The world of information technology is changing faster

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than most of us can monitor. For libraries and corporate information centers document delivery is not new.. The inter library loan and paper based commercial document delivery system is going on more than 20 years.

Till date the transfer of information has been through letters, books, telephone, radio etc. For rapid transfer of information on a global basis these have been integrated. For this it involves millions of computer linking through telephone and modems. Now-a-days, this linking allows the transfer of data along with sound and visuals.

Today libraries acquire electronic media like CD-ROM's and Multimedia packages. In the coming years the quantity of electronic material is likely to increase substantially. It is not possible for one library to acquire all the databases in electronic form. It is very expensive. Now-a-days sharing and exchange of electronic information is badly needed. Resource sharing can be enhanced through the appropriate application of new information technology.

2 NEED FOR RESOURCE SHARING

In the electronic information age resource sharing is very easier. There is no need for a library to purchase all the journals published. A little investment in computerization and co-operation for sharing and exchange, a library can fulfill a majority of demands of its users. To meet the growing general need, and maximum use of study materials, sharing and exchange of resources are very essential.

Use of computer and communication technology plays a vital role in the sharing and exchange of resources. Therefore it has been felt to have a network among the libraries. Sharing can take place in acquisition, technical processing of materials, inter-library loan etc. The concept of networking arouse due to the information explosition and the advances in information technology by which one can share and exchange of information in a modern way.

Sharing and exchange of electronic information is one of the very important activities of the libraries due to

i)rapid increase in the prices of books and journals year after year
ii)financial and budgetary demands of individual libraries.

The concept of electronic publishing indicates that the satisfaction of the users request through the provision of electronic copies of

copyrighted articles the original. The most popular future of electronic resources delivery services would be (i) comprehensive range of documents available from a single resource, (ii) ability to view information immediately on terminal (iii) ability to order through terminal , and (iv) ability to check the availability and price of document.

3 OBJECTIVES OF RESOURCE SHARING

Resource sharing is a sort of indirect agreement among the participant libraries. The member's libraries spare and exchange their resources when required. The main activities of sharing resources are:

i) to avoid the duplication of costly materials co-operative acquisition is very essential for the libraries.
ii) Availability of materials and services is possible at the minimum expenses.
iii) Extending the resources and services to vast category of users.

Through the networking of libraries, computer system used by the information centers and communication technologies, these above objectives will be achieved.

4 RESOURCE SHARING NETWORK

A library network means as a group of libraries are inter-related through different areas. Now resource sharing among libraries has been accepted as a necessity. Computer and telecommunication technology are playing a vital role in the design and operation of resource sharing systems networks. These are required for working of large systems on national and international levels also.

Resource sharing through library networks helps the member libraries in avoiding duplication of document procurement and in inter-library ending.

5 PROBLEMS

In many developed countries like UK and USA resource sharing activities are in use since a long time, but in developing countries like India it is still in its early stage. Till date in India libraries are functioning without much awareness of resources and the inter-library loan is also quite restricted. In India the deficit in the resources, in adequate library budget and the heavy demands of users, resource sharing is very essential for a library. Resource sharing is an important demand

of a country like India where resources are scattered, unbalanced and inadequate. The present time requires the resources of the libraries for cooperative collection organize and use.

When a library is computerized, it requires regular up gradations of hardware, maintenance and up gradation of software, but it will take time and frustration increase. In the initial stages the library network faced the problem of creating database is in getting inputs from different participating libraries.

6 CONCLUSION

The information needs of an individual will not change. The technology will bring new methods of storage, retrieval, and dissemination of information. In this electronic information age co-operation and co-ordination has become essential..

There is an emphasis towards computerization, database creation, networking and resource sharing but we are now in the beginning stage. We are behind the advanced technology.

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SHARING RESOURCES IN THE ELECTRONIC INFORMATION ENVIRONMENT: ROLE OF INFLIBNET- UGC

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ABSTRACT

University libraries in India are facing with the challenges to meet the user requirements due to various reasons viz. exponential growth in Literature, price escalation, budget restrictions etc with which resource acquisition has been restricted. This situation has paved the way for serious thinking on the capabilities to compensate for reduced budgets. E-subscription is one of the emerging toolkit for libraries to survive in the present circumstances. Information & Library Network Programme established by UGC is directed towards modernization of libraries and coordinate the resource sharing activities among the libraries. 142 university libraries have been provided with funds for establishing computer and communication network among the libraries. With this funding the university libraries are some stage of development towards the automation and networking of libraries. In this paper an attempt has been made to address the trends in resources sharing and various issues involved in E-subscription. University libraries will soon get connected to UGC INFONET with the initiative taken by UGC/INFLIBNET and will have round the clock access to electronic resources including the scholarly publications. Efforts made in this direction are discussed in this paper.

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1 INTRODUCTION

Academic libraries in India have been affected by an uncertain financial environment in which resource buying has been restricted, causing them to look at ways of extending their purchasing capabilities to compensate for reduced budgets. At the same time due to technological developments in electronic publishing many of the scholarly journals are published in electronic form and the publishers offering pricing models for electronic journals. Cooperative purchasing through consortia is the one of the emerging tool kit for libraries to survive in the present circumstances. In the present circumstances only a few libraries can afford to have a wide range of information resources with in their budget. It would not be wiser or cost-effective to duplicate information resources among the libraries in the country. Cooperative purchase option through consortia can provide wide access to information resources over the Internet.

During the last two decades things have drastically changed due to more and more libraries automating their library catalogues, acquiring resources in electronic form, and getting connected to one or the other networks. This has resulted in easy accessing of the resources from the remote nodes adding new dimension to the nature of library services. In a resources constrained environment, sharing of library resources among the libraries and providing services through the resource sharing practices is gaining considerable importance. With the developments and the application of information technology tools the sharing has become much easy. In a nutshell, resource sharing is a method of overcoming the limitations of the individual libraries in respect of their resources by way of co-operation and co-ordination among participant libraries. The consortia approach helps Improving the quality and standard of research in Indian universities by improving the access-base to literature. Forming a consortium of libraries - way of life to maximise resource base.

2 RESOURCE SHARING

Resource sharing concept in the libraries is as old as the librarianship itself. This has been used in different forms in different contexts. Library Cooperation, Inter Library Loan, Consortia, Library Networks, etc are the terms used to mean resource sharing. During the olden days it was called library cooperation, mainly existed in the form of Inter-Library-Loan. After 1960's the term Resource Sharing is widely being used and practiced. Resource sharing in the context of library and information centres, includes all types and forms of resources and services, personnel, equipment, facilities etc.

Libraries have shared their resources for many decades through formal and informal agreements using traditional means. During the last two decades things have drastically changed due to more and more libraries automating their library catalogues, acquiring resources in electronic form, and getting connected to one or the other networks. This has resulted in easy accessing of the resources from the remote nodes adding new dimension to the nature of library services. In a resources constrained environment, sharing of library resources among the libraries and providing services through the resource sharing practices is gaining considerable importance. With the developments and the application of information technology tools the sharing has become much easy. Due to resource crunch in the libraries the library management have no other way out, but to seek cooperation with other libraries to meet the requirements of its clientele. In a nutshell, resource sharing is a method of overcoming the limitations of the individual libraries in respect of their resources by way of co-operation and co-ordination among participant libraries.

The main objectives of Resource sharing can be listed as:

- Facilitate sharing of resources in an efficient, timely and cost effective
- Facilitate the utlization of resources to enhance the readers ability to meet the information requirements
- Facilitate the users the range of services available from the libraries
- Promote cooperative programmes and services of libraries with adequate resources
- Provide communication among the libraries
- Increase the access base for users
- Avoids duplication in resources
- Overall improvement in the library services

3 ELECTRONIC RESOURCES

Electronic resources are revolutionizing academic libraries. Many librarians believe that these resources have changed the principles of selection radically; some believe that they will virtually eliminate selection. Although it is true that the art of selection is undergoing

profound change, the selection of materials is still crucial for libraries. The four basic criteria for selection—quality, library relevancy, aesthetic and technical aspects, and cost—remain the same in the electronic era of information. What they mean and how they are used has changed. But even quality and cost, the two most controversial criteria, carry great importance for the responsible selection of electronic resources.

Encouraging the use of electronic journals is in the long-term interests of vendors and libraries. Publishers and librarians should cooperate in removing barriers that discourage legitimate use. With the advent of the Internet and the ability to simultaneously share virtual resources, cooperative collection development, through consortial arrangements, became popular. The ability of consortia to purchase products at a better price than individual libraries can has made consortia very popular. However, the autonomy of the local library will fade and the roles of librarians will change drastically.

Academic libraries have long formed consortia for the purpose of sharing existing physical resources—principally books and journals held by member libraries. This is done in recognition of the fact that a group of libraries has a combined set of resources that is greater than the resources of any single member. Indeed, studies have indicated that, contrary to what might be assumed, there is great diversity among collections, and even the smallest library contributes something unique.

While the chief reason for academic libraries to form consortia has been to share existing physical resources, a new trend is becoming evident or at least more pronounced. Libraries are forming alliances for the purpose of identifying and addressing common needs arising from developments in information technology, especially the growing importance of the Internet and the World Wide Web. Specifically, it is becoming increasingly possible to offer a variety of electronic resources across the Internet. These resources include abstracting and indexing databases, the full-text of journals, the full-text of reference works, large collections of literary text, and extensive sets of digitized images. The best possible access to these resources requires high-speed workstations with access to a capacious network. Libraries are forming consortia to provide these resources on a suitable network with capable workstations. Moreover, the prevalent pattern appears to be that academic libraries are forming these consortia on a statewide basis.

OCLC has announced that its Electronic Collections Online database now offers over 3,000 journals from 55 publishers. This kind of perpetual electronic access means Electronic Collections Online offers the closest thing out there right now to buying electronic journals, rather than just leasing access. The Electronic Collections Online platform is now gracefully integrated with FirstSearch is an improvement to both services. Launched in June 1997, Electronic Collections Online passed the 1,000-journal mark in October 1998 and the 2,000-journal mark in November 1999. More than 3,200 journals are currently under contract for the service. The publishers that have most recently agreed to make journals available through Electronic Collections Online are Technomic Publishing, the Mineralogical Society of Great Britain and Ireland, and the British Psychological Society. Many FirstSearch libraries subscribe to Electronic Collections Online journals already in their collections at no additional subscription cost through the Print Subscriber Program. For example, 30 publishers are making the electronic versions of more than 1,500 journals available at no additional cost to institutions that subscribe to these titles in print for 2001. Electronic Collections Online provides full-image journal articles (predominantly in Adobe PDF) on a wide variety of subject matter. As part of the OCLC FirstSearch service, the database serves as a source of full text that is linked to citations in over 35 other FirstSearch databases to support widespread access to libraries' electronic journal content. A complete list of all publishers and journals included in the database is available on the OCLC Web site at http://www2.oclc.org/oclc/fseco/publish.htm.

4 SITUATION IN INDIA

- Indian Universities are finding it hard to maintain the subscriptions to even for core journals due to ever increasing cost of the journals subscription and also shrinking budget.
- The average number of subscriptions to international journals by Indian University is even less than 300 journals where as the average number of American universities is more than 10000 Journals.
- It is interesting to know that, due to variation in the subscription to journals in the universities the collective titles subscribed by Indian universities libraries is even more than will 5000 scholarly journals.
- There are two ways of increasing the access base. One can think of fulfilling the access gap from 300 core journals of individual

university to the total number of more than 5000 journals from group of libraries. A workable model for sharing the resources can easily bridge the availability gap.

- Secondly, group of libraries can purchase the scholarly journals on a consortia price at a heavy discount of 90-95%.
- Improving the quality and standard of research in Indian universities and bringing it to a level of global recognition by improving the access-base of literature to them is essential.
- A Workable model for resource sharing can easily bridge the availability gap. Secondly there is a need for increasing the access to scholarly journals, which are not being subscribed by any of these libraries due to budget restrictions.
- Whole world is moving towards electronic publishing and the cost of the electronic publishing is much cheaper than that of the print version
- Number of publishers offer consortia price, if the purchase power is big enough to access their whole range of journals.
- Academic and Research users can now hope to have access to their learned journal articles in electronic form with the consortium arrangement.
- Such a consortium arrangement will give the library and also the users an extended access to provide better service at reduced cost.

INFLIBNET, (Information & Library Network Centre) has been established by UGC is supporting the resource sharing among the libraries to facilitate access to scholarly publications. It is now essential to think of and provide the full text access and document delivery services to the research and academic community with the help of university libraries. 142 universities have been supported with non-recurring and recurring grants helped the libraries for automation and networking and they are at some stage of development in the automation and networking. With the advantage of electronic publication the cost of the journals in electronic form is much cheaper than that of the print version. Academic and Research users can now hope to have access to their learned journal articles in electronic form. Number of publishers offer consortia, if their purchase power is big enough - access to their whole range of journals. Such a

consortium agreement will give the library and also the user an extended access - that is better service at reduce the costs.

- UGC – INFONET with E-subscription initiative will play a major role in the success of electronic access to resources by individual libraries.

5 E-SUBSCRIPTION – THE NEED OF THE DAY

- Until some years ago, University libraries subscribed to a fair number of journals in different disciplines.
- Now most journals have become unaffordable because increase in grants have not kept pace with increasing costs.
- Presently very few periodicals are available even in major University libraries and departments.
- Universities in India are not in position to maintain subscriptions to scholarly journals
- Indian university library on an average subscribes to even less than 300 journals.
- Where as universities in the western countries is more than 10000 Journals
- A huge number of periodicals are now available in databases and can be accessed over the Internet.
- Interestingly there is now an increasing presence of computers in Universities and Colleges.
- Access to the Internet, with reasonable bandwidth, is already available on some campuses.
- UGC has also taken initiative to bring together universities and colleges connected under the UGC- Infonet.
- Consortia initiative provide access to collections within the group of libraries
- E-subscription provide access to journals only in electronic access which is almost 10 percent cost of the print (approx.)
- Forming a consortium of libraries - way of life to maximise resource base

- The aim of Consortia is to achieve what the members of the group cannot achieve individually.
- E-subscription increase cost benefit per subscription to promote the rational use of funds.
- This will ensure the continuous subscription to the periodicals subscribed.
- In the one-point model, a single agency, like INFLIBNET, would subscribe to various societies, publishers or agencies.
- The entire University sector would then have E-access to the periodicals.
- This is different from the Consortium model, in that no hard copy subscriptions would be involved.
- Publishers will be interested because of revenue stream is assured to them, and loss of opportunity is avoided.

6 INITIATIVE FROM UGC/INFLIBNET

Academic libraries in India are facing challenges due to budget cut, reduced staff, devaluation of Indian Rupee against major currencies and escalation in cost of publications. The number of journals subscribed by these libraries, have gone down to very limited collection. Realizing the need for common mechanism for access to scholarly information Prof. Arun Nigavekar, Chairman, UGC set the priority for the academic and research community. Looking at the priority set by the chairman Dr. T A V Murthy, Director INFLIBNET took initiative to call a meeting of learned academicians to discuss the issues involved in e-subscription. The committees and sub-committees have been working towards achieving the set goals. Making professional periodicals literature available over the Internet to the University community would provide a great boost to the research and development work in the Universities, and that the project for E-access must begin and the literature be made available at a rapid pace. It is encourage factor that UGC is making all effort to bring computer networking and Internet access to University and college campuses. The UGC – INFONET would enable applications like E-access to journals, computer aided learning, distance education and E-governance to become a reality. INFLIBNET is the nodal agency involved in providing content over the long term.

7 CRITERIA FOR SELECTION OF UNIVERSITIES AND RESOURCES

7.1 Criteria for selection of universities for e-subscription

The selection of universities for e-subscription will mainly be based on the several factors and some of them are discussed below:

1. Universities funded under UGC/INFLIBNET
2. Number of faculty members students and research scholars working in the university
3. NAAC accreditation
4. Network infrastructure in the universities
5. Substantial research contribution in terms of publications
6. Remotely placed universities

7.2 Criteria for selection/identification of electronic resources

The selection of electronic resources is normally based on the availability of resources in electronic form. The different types of resources are

1. Bibliographical / Abstracting databases viz. Chemical Abstracts, Physics Abstracts, Sociological Abstracts, Mathematical Reviews, Biological Abstracts etc.
2. Full text journals
3. Identification of Society publications
4. Identification of potential publishers / vendors/ aggregators
5. The collection of university libraries as base for selection
6. Based on the impact factor highly cited.

8 E-SUBSCRIPTION - MAJOR ISSUES TO BE ADDRESSED

- Subscription of journals under national site licensing
- Implementation in phased manner
- Major funding from UGC
- INFLIBNET to administer, maintain and monitor the entire process

- Potential resources for e-subscription
- Initially the scheme for three years
- Review after three years
- Not linked to individual university subscription
- Ensure the perpetual access to subscribed resources
- Archive access to back issues by four to five print copies
- Set the deadline 28th February 2003
- UGC-INFONET to books the e-access at each university libraries
- UGC INFONET and E-subscriptions are major two major initiatives and Identification of nodal persons for both the activities in universities.

9 CONCLUSION

Sharing of resource is an age-old concept, which was not seriously practiced by the academic libraries in India. It is high time for the libraries to come together and increase the access base by sharing its resources with other libraries and get mutually benefited. An effort at national level is essential to coordinate such activity to provide access to not only the collection of libraries but also to other resources available in electronic form at a highly discounted price. With the introduction of Internet in libraries it is now possible for each library to actively participate in such programs and get access to resources on their desktop. The ultimate aim of Resource sharing through consortia is to improve overall access to quality resources to the research and academic community.

Electronic periodicals and books give readers searching abilities that were impossible in a print environment. The electronic access to scholarly publications will not only help the researchers to get access to their required information but will also strengthen the library position in the university. Two major initiative UGC/ Infonet and E-subscription from UGC / INFLIBNET will bring radical changes in the university setup and helps in the overall development in the higher education in India.

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WEB BASED RESOURCE SHARING

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ABSTRACT

No library can meet all the demands of its users due to the multidisciplinary research activities, escalating prices, stagnant budgers, increasing publications, users and their multifarious needs. This led the libraries to find out ways and means to overCome these problems. Cooperative acquisitions and resorce sharing are two such developments. This paper discusses web based resorce sharing as well as services.

1 INTRODUCTION

The invention of the printing press in the 15th century was a landmark in the history of scholarly communication. It was possible to produce large number of documents with the help of printing press. Moreover, the libraries, in the real sense of the term, came into existence only after the invention of the printing press. But now with the emergence of information and communication technologies (ICTs), the LI S profession is finding itself into a paradoxical situation. The web, which has no head and tail, is both blessing and curse for the stakeholders. As there is no competition for space in the web, a lot of junk is being made available by the information elite. The non-elite members of the society are being left behind in the emerging information society. As such, the existing gap between the 'info-rich' and the 'info-poor' is widening further at a warp speed. Therefore, there is a strong need that we take cognizance of this phenomena and develop certain policies and strategies to separate web-based junk from the quality information, as well as to bridge the widening

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2 WHAT IS RESOURCE SHARING

We are surrounded by rapid economic, educational, political, cultural, and technological changes. Declining library budgets, growing user expectations, shifting priorities of governments, commercialization of education, consumerism, and digitization of documents are forcing the LI professionals to devise new ways and means to survive and thrive in the networked environments. There is a shift from just-in-case to just-in-time approach for managing access to right information. It is not possible for a stand alone library to meet all the information needs of its end-users. Resource sharing via networking is the only alternative. There is a trend towards library & information networks. LANs, MANs, WANs, Intranets, and Extranets are manifestations of this trend. The Internet is a striking development of our times. It is a vast storehouse of information and a perpetual discourse of human minds is going on it. Moreover it has dramatically changed the whole process of scholarly communication. Conceptual access to tacit knowledge has been improved significantly. The traditional pattern of authorship is also changing. Validation and creditation of intellectual property is becoming more difficult as there is no stability on the Internet. Moreover many people contribute to discussions via virtual conferences, seminars, discussion lists, newsgroups, and bulletin boards. As such the traditional competencies are falling short to manage access to the web-based digital resources. It is very important for the professionals to know:

(a) what information is available;
(b) where it is located; and
(c) how to access it.

2.1 Meaning:

Resources sharing is a way of library cooperation. Cooperaton means, working together with some effort to achieve the objectives i.e. common work for a common goal. The various facets of cooperation are:

i) Grouing of individuals having a common interest.
ii) Action by a group for pursuing certain aims and target.
iii) Setting up of a parmanent organization as an operational unit.

2.2 Definition:

According to Allen Kent "Resource sharing is made of operations whereby functions are shared in common by a number of libraries.

3 NEED OF RESOURCE SHARING

Due to limited fund and limited staff, it is impossible for any library to acquire this unlimited and endless knowledge. The only alternative is resource sharing. The need of resource sharing can be further explained through following points:

- Development of new subjects and subject specialization.
- Increase in reading community and information seeker.
- Demand of pinpointed, exhaustive and expeditious information services.
- The increased access to information and services at existing cost.
- Proliferation of literature in each and every field of knowledge.
- Multiplicity of documents in different subjects, languages and formats.
- Access to existing information and services at less cost.
- Diversity of user group and their information seeker.

3.1 Areas of Resource Sharing

In recent past the sharing was being done in various areas. They are generally:

- inter library loan
- co-operative procurement
- co-operative technical operation
- preparation of Union Catalogue
- Co-operative Storage
- Browsing privilege of co-operative member
- Co-operation in documention
- Exchange of experts.

In modern times the libraries do all these above works, but some modifications have been adopted for better services. They are the networking facilities for quick and better use of latest information.

3.4 Objective of Web Resource sharing

The main objectives of Web based resource sharing are to :

a) improve the sharing of resources among the member libraries;
b) centralize the information processing system; and
c) reduce the communication gap among the libraries.
d) **Improved ILL productivity**: with fewer blind requests, automated creation and tracking of requests, and faster turnaround.
e) **Controlled ILL costs**: For one low transaction charge, you can route each request to as many as five libraries.
f) **Cooperative collection development**: Plan your acquisitions to avoid duplication of other group members' holdings and still ensure a group collection responsive to your users' needs.
g) **Increased use of collections**: with instant local access.
h) A way for all group members to contribute, maintain and access information in the group's database

Thus web resource sharing is very important for bibliographic controlll of the explosion of literature and knowledge. It also avoids duplication in purchase of costly documents. It facilities the adoption of new areas in every field of knowledge and improves the mobility of data. Library web resource sharing is a helpful way to development the flow of information among the special information centres / libraries and other types of libraries.

4 INFRASTRUTURE

A) Hardware

- Web Server (Pentium / Equivalent Processor)
- Minimum speed 450MHz
- Primary & Secondary Cache up to 1 MB
- 64 MB RAM
- Hard Disk capacity 10 GB (depending upon data capacity)
- CD ROM Drive
- Multimedia Kit
- Modem
- Scanner
- Printor

(This special purpose printer has the capacity to scan, print and copy the document and also enables to take color xerox of the document which is used to send the color output of table, charts, maps and other diagrams to the requesting institution / individuals)

B) Softwar

- Operating System UNIX / WINDOWS 2000 / Linux
- Web Browsing tool – Any web browsing software (Popular Internet Explore and Netscape Communicator)
- Network Connectively with latest fibre optic cable
- OCR Software

C) Others:

- Holding and Catalogues
- Separate e-mail ID. (root@inflibnet.ac.in)

5 SCOPE OF RESOURCES SHARING

Though an expanded vision of resource sharing, one can envision the sharing of knowledge and expertise among libraries. To be fully realized, such efforts must involve combining staff on cataloging at the regional or national level , integrating collection development and sharing equipment and faclities.

Prime candidates for sharing are ones that require considerable capital outplay and significant recurring operating costs (e.g. integrated library systems), Resource sharing, however, can and must extend to include the sharing of staff resources, particularly specialized ones, and serials management personal. Resource sharing should also include the sharing of facilities, such as processing areas, storage facilities, bookmobiles, and meeting space.

In short, resource sharing should encompass information, personnel, equipment, facilities and expertise. Part of this sharing of resources can be accomplished without automation support. For resources sharing to be truly effective, however, automation and data communication are essential. Nevertheless, considerable improvement in resources sharing and thus in the cost of operation in libraries can be achieved through stronger cooperation among

The remainder of this paper details the argument that resource sharing in this technology age must be based on data communication networks (i.e. the manger of traditional library automation systems and data communication), rather than on hard-copy materials and manual transmission. No other practical way exists to provide the services clients need and deserve. It is assumed that such services are delivered through data communication networks provided by libraries.

6 RESOURCE SHARING & INFORMATION SERVICE

6.1 Inter Library Loan

The next logical step in resource sharing, after having created various tools to identify the location of the required materials, is to have Inter-Library-Loan procedure introduced, so that the inter lending of different types of documents can take place. The initiative in this direction is being taken up involving libraries to evolve a mutually acceptable ILL procedure to handle the ILL transactions. Development of suitable and flexible softwares is being taken up , so that this activity can be started at the earliest.

7.2 Databases

There are available different types of databases, which are exceedingly useful; for example, Carl Uncover is a database that contains table of contents of over 17000 multidisciplinary journals published since 1988. The uncover database search is free for periodicals.

Besides, the above sources on Internet, it provides access to software achieves, directory of electronic serials, Frequently Asked Questions (FAQ) documents, workshops etc.

Resource sharing is an old concept of library but it became more effective due to advancement of information technology. Since, the procurement of all relevant documents is not feasible and with a view of optimum use of acquired document, resource sharing among various points seems beneficial. It helps in enhancing the efficiency of library services. In a library and information center, resources available to share can includes:

- Books including monographs, technical reports, conference proceedings etc.

- Periodicals publications.
- Manuscripts or rare documents.
- Information / documentation services like abstracting and indexing services.
- Computer based databases on CDs, DVDs, cartage etc.

All these can be shared in any library and information center, through INTERNET; if the documents are available in digital form and in full or their part is put on Internet websites.

6.3 Bibliographical Information Service

INFLIBNET has been subscribing to number of CD-ROM based bibliographical databases, particularly in the social science area without much duplication with other UGC information centres and participant libraries. This service is already provided in offline mode i.e. requests are received by normal mail or e-mail and searches are done at INFLIBNET by the staff and the results are delivered through post or email.

In place of this offline service, INFLIBNET proposes to provide the real time online access to these or any other highly used databases either mounting them at INFLIBNET servers or access them from publisher/aggregator/on-line hosts sites. This will involve proper study of requirements, participation, pricing etc, which is of immediate concern and priority area for INFLIBNET.

6.4 Access to Full text of publications

The existing collection available within our participant libraries is not enough to meet the actual requirements of our academicians and researchers. To supplement this collection and to provide an access to large number of journals, reference sources and full text databases available in electronic form at an economical rate, INFLIBNET intends to serve as facilitator on behalf of its participant libraries by going through consortia purchases and provide an access through its network. This would also involve a careful study of the infrastructure, financial implications, usage etc., which INFLIBNET would like to initiate in due course.

6.5 Electronic Journals

Hundreds of electronic journals are available in the different fields of study, particularly in the library field on the Internet for the benefits of information users; as for example LIBRES (Library and Information Research Electronic Journals), MC (The Journal of Academic Media Librarianship), and Electronic Journal of Communication etc. All these journals also provide information on how to access the back issues and focus on a specific topic.

6.6 Library Catalogue

The Internet gives access to the bibliographic records of millions of books and details on the holdings of an academic and research libraries around the world. One can check the new titles and even order them from a number of universities. The two directories available to locate address of libraries and for descriptions of software are:

Internet – Accessible Library Catalogue and Databases that is also known as St. George Director. And UNT's Accessing online Bibliographic Databases.

Besides these, a number of software likes UBS, LIBTEL, HYTELNET are available on Internet, which can be used to access various library catalogues.

6.7 Document Delivery Services

INFLIBNET has already initiated a pilot project under which six libraries have been identified to serve as document delivery centres using their own resource base. The services of three UGC information centres in this respect will also be utilised. Besides, INFLIBNET will also act as Document Delivery Centre to acquire and deliver the required documents from other sources other than the six centres, and three UGC information centres. To provide this service effectively and efficiently, network facility will be put to optimum use.

In addition to the above four areas, INFLIBNET like play the role of catalyst in promoting cooperative collection development, rationalisation of periodical collection, reciprocal borrowing and promote other viable methods which facilitate maximisation of resources.

6.8 OPAC

The OPACs or Online Public Access Catalogues are playing an important role in information retrieval. These can be broadly divided as (i) OPACs, which are used in a particular library using either a multi-user system or a local area network and (ii) those, which can be accessed by other libraries through emergence of Internet. These are very easily and quickly accessible on the Internet from any part of the world. The availability of these catalogues on web allows any one to see the contents of various library collections at their home. There are some of web OPAC's e.g. Soul Web OPAC, Libsys Web OPAC, Slim Web OPAC and so on.

6.9 Lib-web-cats

Library Web Cats is a directory of libraries worldwide. While the majority of the current listings are in North America, the numbers of libraries represented in other parts of the globe is growing. Each listing includes links to the library's website and online catalog. Other information available includes the geographic location, address, library type, current and previous library automation systems used, and the size of the library's collection.

6.10 OCLC WorldCat

WorldCat is the heart of the OCLC cooperative. It embodies the ideal of library collaboration, providing access to a virtual collection that no single library could ever possess.

WorldCat was introduced in 1971, linking 54 college and university libraries in Ohio. Today, WorldCat contains the merged catalogs of libraries around the world, making it the world's largest and richest database of bibliographic information.

WorldCat houses over 48 million bibliographic records. A typical record in WorldCat contains a physical description of an item and information about its intellectual content. Through strategic partnerships, OCLC adds evaluative content to WorldCat bibliographic records such as tables of contents; cover art, book summaries, and notes about authors.

WorldCat connects librarians, scholars, students, researchers and patrons to 4,000 years of recorded history—from stone tablets to e-books, wax recordings to MP3s.

7 OTHERS SERVICES

7.1 Discussion Groups:

There are thousands of discussion groups available on net for various subjects, which act as forum for discussion and even as a media for exchanging information. The PRL library has subscribed to PAMNET. STS-L, LIBREFL and LISTFROUM for such purposes.

7.2 Discussion Lists:

Hundreds of electronic discussions lists and conference proceedings available over the Internet. They give direct access to scholars in their direct field of interests with an opportunity of assistance in the form of online help.

7.3 Newsgroups:

There are many sites, which give news for various subjects and also bring out electronic newsletters as, Young scientist Network Digest, Yahoo Physics etc. In addition to these, there are thousands of Bulletin Board Services (BBBs) covering various subjects.

8 CONCLUSION

The information in most of our libraries are available in books, journals, research reports and unpublished documents. If this information is in electronic form, it can easily be accessed, retrieved and delivered quickly which is more reliable and cost effective. The great success of the WWW as medium of transfer of documents lies in the freedom of access, wealth of information, simplicity in creation and use and the variety of media it presents. Not only it is useful and simple, but also Web pages look attractive and are in the public domain where anyone can use the information, graphics and data supplied by the pages.

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ACCESSING ELECTRONIC INFORMATION RESOURCES :AN OVERVIEW OF ISSUES

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ABSTRACT

The global networked environment and electronic resources explore seamless opportunities for accessing flow of scholarly information. Efficient implementation of existing services and delivery of information to the remote user at his desktop has become priority for libraries. Electronic Information Resources are available in static physical forms such as CD-ROM's, floppies or in a fluid form like the Internet. Libraries need to adopt a renewed approach for managing and accessing various retrieval tools available. It needs a good understanding and assessment of users needs as well as evaluation of Electronic Information Resources. Traditionally database indexing/ classification and book indexing /classification have been looked upon as being quite distinct. This has been justified in view of the differences prevailing with respect to medium, file size, mode of transmission etc. The borderline however should not be permitted to conceal fundamental commonalities between the two. In this paper an attempt has been made to identify the similarities and differences in accessing methods for Electronic Information Resources and traditional resources. It does not aim to examine the financial issues involved, since there are number of other dimension associated with it.

1 INTRODUCTION

The recent advances in Communication Technology, Networking, use of the Internet and Electronic Products have brought about an evolutionary change profoundly affecting the library's landscape. It

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has affected the total Information Transfer Process. The technology is mainly being used for communication, database searching, bibliographic and whenever available for full text searching. It has also changed the concept of archiving.

The organization of information, its storage, access, preservation and retrieval has become both - simplified as well as complicated. It is believed that Information has become more fragmented, piecemeal and disembodied, resulting into changing its face completely. According to Swan [1], "We are no longer accessing the whole fabric of information, rather bits of data, sound bites and images torn from it".

The new generation of users is also beginning to view the electronically available information as the standard or preferred form. The WWW is capable of linking and responding to any amount of information through open system inferfaces. As the use of electronically available information becomes an integral function of the libraries, we can witness the change in attitudes and roles of librarians evolving to accommodate digital library of the future. However, the question still remains : Are these devices so powerful and effective - that they can fully satisfy the primary purpose of offering the Information services in providing an access to accurate information in shortest possible time?

2 LIBRARIES AND MEDIA

Sutton (2) has presented models which traces the evolution of libraries in to three types-

Type I - " Traditional Library" having definite physical set up and ma jority of its collection consisting of printed resources.

Type II - " Automated Library" which makes serious use of telecom munication with a possibility of unconstrained geographic access.

Type III - " Hybrid Library " which is characterised by incorporation of both digital and print resources with access to remote resources (through the Internet).

Sutton also proposes type IV as the "Digital Library", which according to him is the library of the future. Nevertheless, the erstwhile traditional libraries are now multimedia libraries which provide platforms, software tools and other techniques to support the interactive use of information in combinations. The multimedia systems have whole range of variety in the form of audio, video, still images, motion pictures, moving film strips, microforms, sound recordings, digital audio

technology, CD-ROMS, E-Prints and so on. The WWW incorporates almost all of the technologies (except microforms) for information retrieval. The complexity of web documents in accessing and retrieving the information is more pronounced because of multimedia components. The majority of the search engines support indexing and content based retrieval of web documents for textual information. The 'contextual information' from the web document which contains multimedia component, very often is missed by the search engines. Therefore, it is of vital importance to libraries - whether traditional, hybrid or whatever - to evolve suitable strategies to access potentially rich and electronically available information through multimedia components.

3 ACCESS TO ELECTRONIC INFORMATION

Access to information whether through remote log in or in the traditional environment - is governed by explicit known sources or tacit resources. The knowledge about its very existence, availability, access and retrieval could be collection dependent or collection independent. Secondary and tertiary sources, classification schemes, indexing systems, vocabulary control devices are the tools for exploring nearest possible ways for accessing and retrieving the relevant information in a given field of knowledge. In the traditional set up, physical / geographical distance is one major constraint for access which does not exist in the Internet environment. The hitherto printed information is now available in the digital form. The ways of accessing information and library operations have undergone metamorphic changes. A paradigm shift is observed in the overall information environment which may be highlighted as follows -

Traditional Environment	Electronic Environment
Reading	Browsing
Ordering,billing, invoicing	E - commerce
Writing	Web publishing
Card catalogue cards	OPACS'.
Document delivery	E - prints, attachments, scanned images
Inter library loan	Consortia
Literature search	CD-ROM and the Internet search.
Resource sharing	Networking
Classification	Subject directories, subject gateways

Cataloguing	Metadata
Indexing systems	Search strategies

On line databases, Listserves, Newsgroups, E - journals, websites are the other dominant sources of cyber information.

3.1 Issues observed

Following issues are observed while accessing the electronically processed information-

* End user searching is widely becoming universal owing to the developments associated with the Internet and WWW.
* There is a high degree of overlapping of information.
* Information loss due to disciplinary scatter is incurred by the constraint arising out of single relative location and it fails to retrieve information with multidimensional access points.
* The methods provide access and interaction in such a way that they are more suitable for view based, text related approach.
* Hyperlinking can sometimes yield odd hits which do not match the intent of search.
* Most of the robots employ a software algorithm to perform a ranking of the retrieved pages. Very often the first 25-50 words or lines are searched by the robot search engines, missing out the relevancy.
* Growing number of commercial retrieval systems have incorporated thesauri into their search interfaces. Wide variation is seen in selecting the thesauri terms, due to which the thesaurus does not serve the purpose to the desired extent.
* Hierarchical classification schemes and subject headings are currently underutilized for providing inter-linked searches.

4 DISCUSSION

Designing systematic access to Internet resources is a developing research field. Different approaches are observed in the arrangement of Web portals, subject directories, gateways, search engines and in classifying the resources. The traditional classification schemes and thesaurus based approach is well structured for information retrieval which could be reasonably effective if employed correctly. However, the same cannot be said confidently for electronic environment. In a classification scheme, the relative position of the

document is known immediately, whereas in the Internet environment, it may not be so clear. Geography, travel, history are well defined through class numbers, tables, common subdivisions in a classification scheme but they are not so sharp in the web. For example, in the web environment, under the category of users " Women" - it is not clear whether the linking is for women issues, women studies, gender bias or for the topics which are of interest to women, such as - cookery, fashions, jewellary etc. It is only after linking, viewing one comes to know what it is all about. The range and coverage of resources, their hyperlinking is influenced, to some extent by cultural differences among countries. According to Zins[3], "differences among resources have usually originated from diverse disciplinary, ideological, professional, cultural and commercial considerations. Contradictory assumptions regarding prospective users as well as explicit and hidden interests direct the developers." In a well defined subject matter with the known URL, browsing through the systematically arranged information on the web is definitely useful. It can surely yield fast, quick, accurate results where authenticity of the URL is well established. However, the known classification schemes offer advantage to a searcher who is inexperienced, not a subject specialist and wants to browse through a large collection. They enable the searcher in broadening and / or narrowing the searches and provide context to searches. They provide a cognitive model for the given information domain. The increasing number of virtual libraries available on the Internet and the growing complexity in locating, analyzing and linking information necessitate the librarians to find ways to respond effectively and innovatively to the different landscapes for meeting the user expectations.

5 CONCLUSION

The chaotic nature of the Internet makes it difficult to organize the resources in a manageable structure. Library professionals will need to address the issues of access to information, its organization and retrieval in a more critical manner by evaluating the Internet resources for their validity and authenticity. A major problem confronting the libraries today is how to integrate all the textual, numerical, image based information in a library into a single user friendly system for its access. The precision given by the technology places some restrictions on human interaction. The attempts of Artificial Intelligence, Expert systems, the Structured Query Language (SQL) or standards for accessing and retrieving free text data have limited success as they cannot compete with human thought process which

is capable of working for extremely narrow fields of specialization. Use of "Intelligent Systems" definitely reduces the amount of repetitive, routine data processing which replicate lower level of human thought process. But to achieve highest levels of productive, creative and conceptual retrieval, all the available tools - whether traditional or technology based - should be exploited to the full and in combination of natural and controlled language processing. Changes may be planned in such a way that the traditional ideas, approaches, services, quality, co-operation and universal access to information integrate well with the new technology which bring in an orderliness in the overall handling of the issues. Library professionals should never lose sight of their primary mission and purpose to serve the library patrons in the best possible manner.

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AN OVERVIEW OF NEWS FLOW MANAGEMENT IN MEDIA LIBRARY

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ABSTRACT

Managing media library is a challenge to any individual. With newspapers or magazines being brought out daily, weekly and fortnightly basis, one needs to update information that may be in the form of clippings, reports, photos, etc. With so much of material one also needs to know what is to be stored and what to be discarded. As the flow of information on either side being high one has to constantly update information, classify and index under various heads accordingly for speedy retrieval for the journalists in particular. This paper looks at the organisation and management of information including indexing, classification and overall management of news flow management in media and the role of information professionals be it librarians or web writers and their role for the same.

1 INTRODUCTION

"Information" is being treated like a kind of soup that "content providers" scoop out of pots and dump wholesale into information systems. But it does not work that way. Good information retrieval design requires just as much expertise about information and systems

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of information organization as it does about the technical aspects of systems. (Bates, 1998).

In a newspaper organization, with so much of information flowing from every nook and corner of the globe, organizing content is a Herculean task. Organizing means collection, analysis, research, classification and indexing, archiving and filing for retrieval. In the present digital and online scenario, one needs to archive information in a format that can be easily accessible and stored. This is where one needs to be an expert - be it a librarian or information professional. Therefore, librarians working in a media set up mostly do not go by the traditional classification schemes as they may be helpful in instant retrieval of information that is needed be it an article, report, news clippings or a photograph.

2 OBJECTVIES

- The end-user must have no difficulties in accessing the information that he desires to read.
- The classification and categorizations of the publication should be user-friendly.
- The navigation should be simple and user-friendly.
- A well-organized content in electronic format benefits archival and easy retrieval.
- Helps to accelerated business processes, improved decision support
- Documents can be accessed anytime from anywhere
- Direct integration adds benefit to resource planning systems

3 MEDIA LIBRARIES

Information professionals in media libraries are watching with interest convergence of the development of information, communication and technology (ICT), which has come to their assistance at large. In many news media organizations, librarians have or are helping and playing a central role in developing a system for computer-assisted journalism projects.

This role is primarily to organize the content that has been generated

in-house, primary and secondary sources. In-house content may be in the form of news, reports and analysis, editorials, etc. Primary sources are to subscribe to various news wire services, journals, research reports, databases, magazines and books. The Secondary sources are to be subscribe to various news summeries such as Asian News Digest, Keesing's Record of Word Events, etc. and ofcourse the clippings and photographs.

4 PRINTED REFERENCE SOURCES

Some of the reference sources are

1. Encyclopeadias
2. Dictionaries
3. Year Books
4. Biographical sources
5. News Digest
6. Newspapers
7. News magazines
8. Research reports
9. RBI, CMIE, corporate reports, etc

5 CLIPPINGS

Once the content is sourced and identified, the next step is to classify and index the chosen information. In a media organization one cannot follow a particular system of classification, as it is very difficult. For example, a news item may have to be classified under various heads so that it can be easily retrieved in future.

Example: News items under Waste management will be classified under waste management and also under Corporation.

6 PHOTOGRAPHS

Similarly, large number of photos taking by in-house photo journalists and from other agencies keep coming. In case of Press Trust of India (PTI), United News Agency India (UNI), Reuters, AFP, etc, pictures will be transmitted electronically which needs to be downloaded. The newspaper/ magazine will use these photos and the same along with other pictures need to be stored for future use

and reference. Hence they need to be classified accordingly in their respective categories. Since the volume of pictures are large, the pictures are stored both in physical as well as digital format. But the classification and indexing are different for both the formats. The digital pictures are stored both in the server as well as CDs and therefore a system has been developed where the photos are classified under different heads for easy reference in both forms, manually and electronically.

Some of the major heads for clippings and photos in media libraries are as follows:

Physical Storage	Photo library
Clippings are filed and stored. Some of the major heads are as follows: Subject State Country Political parties Profiles Personalities -Indian -Foreign	Photo libraries too follow similar classifications as that of clipping services. The only addition is in classification of personalities which are done under the photo libraries are: - Film personalities, - Foreign - Political, - Regional

7 MANAGING CLASSIFICATION FOR ON-LINE EDITIONS

Classification is entirely different for the online edition of the newspaper or magazines hosted on the net. On the website, one has to classify news items keeping the browsers in mind as navigation should be simple and easy for retrieval. One can give the following examples

The dinamani.com website which hosts the online edition of Dinamani.com, newspaper has the following classification: breaking news, headlines, Tamil Nadu, Chennai, cinema news (which is further broken into a cinema gossips, bollywood news, new releases, tit bits, etc), other states, offbeat news, international news, supplements, sports, astrology, cartoon, special sections etc have been created. Important news items and articles are chosen, edited, rewritten if needed and hosted on the website under the appropriate categories.

For instance, in certain extraordinary circumstances like Budget, Special occasions like World cup, elections etc., a TOPIC is createdd under a seprate category. For example during assembly elections, a TOPIC is created called ELECTION. The topic is then further divided into states, breaking news; photo galleries, reactions, etc are to be created. Under these categories/ topics, one has to judiciously choose the news and host them under the appropriate category or classification. Therefore, before a classification or topic is created, one has to anticipate the various categories that need to be created so as to help the browsers to access the information easily.

At times, certain categories are added even after the news items have been hosted earlier under some other heads. To give an example, the amount of interest that the Rajnikanth starrer 'BABA' generated was tremendous among the browsers. This resulted in creating a special classification called BABA. Under this category, a few sections were added and all the news stories that were previously hosted were re-hosted under these sections, which resulted in the browsers to access news related to the movie BABA. These are certain innovations that can be done and which is not possible when using a conventional classification schemes.

Under these circumstances, an information professional who uploads the news items changes his role. In some cases, certain articles may be porteded as e-books and certain special supplements may be converted into premium content for which the browser has to pay.

Major headings of online newspapers namely newindpress.com (The New Indian Express) , The Hinduonnet.com (The Hindu), Indiatimes.com (Times Of India), Hindustantimes.com (Hindustan Times).

The New Indian Express	The Hindu	Times of India	Hindustan Times
Print edition	News Update	News	Nation
Top stories			
This is India	News	India	World
Sports	Front Page	World	Business
Business	National		New Economy
Infotech	Regional	-Asia	Editorial
Out of the World	-Southern States	Cities	Columnists
NRIs	Other states	-Ahmedabad	Cartoons
States	International		
Orissa	Opinion	Sports	Signposts
	Business	-Cricket	Weather

Southern News Andhra Pradesh Karnataka Kerala Tamil Nadu **Features** Cinema Lifestyle & People Your day today Health & Science Cartoons Your views Fun Time **Edits & Opinions** First Editorial Second Editorial Main Article Second Article Time Out Columns	Sport Miscellaneous Index Events 2001 Features : Life Magazine Literary Review Metro Plus Busines Open Page Education Entertainment	Entertainment India Business IntlBusiness Infotech Health/Science Photo Gallary Weather TOI Headlines Top Media Headlines	Trade-India

8 NEWSPAPER INDEX

The word "index" is derived from the Latin word meaning ", that which points out." From Latin dictionaries, the word has more complex meanings, for example, "one who informs or discloses" or the "forefinger" or "of things, that which informs. An index is a systematic guide to items contained in or concepts derived from a collection. These items or concepts are represented by entries arranged in a known or stated searchable order, such as alphabetical (author and subject or topic and key word), chronological or numerical.

A newspaper index should not be confused with a book index. Book indexes usually index the content of the publications and typically appear at the back of the book and are alphabetical, giving subject, name and a times even advertisers term in case of magazines.

Newspapers are those which keeps churning news on a daily basis and cover a wide range of information. Harry Friedman's book Newspaper Indexing offers this description of a newspaper index: A newspaper index, because of its extreme usefulness, must be made to fit the time, the place and the occasion. It must be made to suit the needs of its creators and it must meet the demands of every type of user. . . . To be accurate and comprehensive, and, more important, to be objective in a scientific sense, the newspaper index should not

interpret news and opinion according to the beliefs of its creators-it must reflect only what actually exists. In India, Hindu Index is one of the most popular index services, which is provided by the newspaper. Some of the other indexes brought are India Index by Rajasthan University, Data index by PTI, UNI backgrounder by UNI.

In the online edition of newspaper, magazine or any company websites, the index page or the home page showcases all the important categories and sections within the website. As far as the newspapers and magazine are concerned, it acts as a collection of all the major selected stories for the day and supplements including advertisements. In some cases it may also give links to related stories. This page helps the browser to choose his news items of his choice. The index page contains only the broad classifications. Once a particular category is chosen, subsequent classifications within the broad category are displayed.

9 ORGANIZING ELECTRONIC INFORMATION

From an online newspaper perspective, since the volume of content is huge and the flow of information being round the clock, an information professional plays a varied role from that of a librarian to a project manager where he has to plan to choose, test and decide the hardware, server' for storing data, software's for easy access, retrieval and content management.

Once the basic plan is ready, the next step is to organize the content so as to present it in a readable format. This may be in the form of text, document, HTML, PDF, stored in database or a combination of these. Electronic information may be divided into two types, namely streaming content and non-streaming content. Streaming content is that where the multimedia components like real time audio/video, movies, video-conferencing etc are used to present interviews, audio/video features, songs, movie clips etc. These type of content are stored in electronic media namely television, radio etc. The role of the electronic media librarian is much more complicated for he has to maintain a log of the cassettes, note the time of the clipping and later classifies and indexes them to perfection for immediate or future reference and use. The non-streaming format includes text, pictures, graphics, etc presented in the form of static or dynamic pages.

In case of internet as a media, the storage and presentation of the content namely streaming and non-streaming differs as the streaming content has to be stored in a media server like real player, media

player, while the non-streaming content goes to database server. Therefore one has to chose the mode of delivery and create content accordingly.

10 CONCLUSION

Off late, some of the large media houses who are interested into diversified media business like television, radio, print and are slowing moving towards setting up a content management system (CMS) to manage the content stored at different locations and on different servers and medium. The CMS helps one to create and publish content, manage the content more cost-effectively and also helps for better decision-making. It helps the integration and automation of the processes that support efficient and effective delivery of content in required format, be it Internet, CD-ROMs, print outs etc.

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BUSINESS PROCESS REENGINEERING: REVIEW OF LIBRARY SYSTEMS AND TECHNIQUES

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ABSTRACT

In this paper a review of library systems and techniques followed by the selected 13 management libraries of National Capital Region (NCR) Delhi has been done through a survey. On the basis of findings of the survey the various recommendations to further improve the functioning of these libraries have been presented.

1 INTRODUCTION

Library being the storehouse of knowledge needs to perform all its operations like shop floor operations. A management library is supposed to keep a lot of good collection of books, journals, and electronic information resources. The important tasks that a library has to perform for its proper operation and to impart efficient services to its clientele are as follows:

(i) Selection; (ii) Acquisition; (iii) Processing; (iv)Circulation; (v) Reference; (vi) Serials; (vii) Databases; (viii) Presentation of library materials; and (ix) Readers services.

In this paper, library systems and techniques followed by management libraries of NCR have been reviewed. The various cannels of the book procurement such as booksellers and publishers have been reviewed. The problems faced by the librarians have also

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been discussed. Emerging trends in collection development in management libraries have been identified. On the basis of the findings of these reviews, some important recommendations have been presented.

2 SCOPE OF STUDY

Present study is based on a survey as carried out in 13 management libraries of NCR Delhi. The basic objectives of this study are:

(1) To study the present status of library system and techniques followed by the above libraries.
(2) To identify the issues involved in the functioning of various library activities in the institutions.
(3) To identify the areas for further improvements.

3 METHODOLOGY

This study of 13 management libraries in Delhi, Faridabad, Ghaziabad, Gurgaon, and Noida has been conducted through survey based on questionnaires, interviews case studies, and organizational case studies. In-depth literature search on topics related to the research work has been carried out in the libraries in Delhi and around. Internet and CD-ROM databases will be other data sources for the literature search.

4 RECOMMENDATIONS

On the basis of the study of all library systems and techniques being followed in participating libraries and the recommendations are given below:

4.1 Collection Development Policy

As per findings, out of 13 libraries only 7 libraries are having written collection development policy. It means about half of the libraries are working with no collection development policy. The collection development policy is a must for balanced collection development. Therefore, it is recommended that every management library should have written collection development policy.

Still a majority of management libraries have found 'books on approval' as the major source for book procurement. Other important media are book exhibitions, book fairs and user requests.

4.2 Book Selection Tools

The book selection tools followed by the management libraries of NCR range from traditional methods such as publishers' catalogue, book reviews, user requests, to latest tools such as on line selection through Internet. Most of the libraries have found Internet as quickest way for the identification of various reading materials. Therefore, it is recommended that Internet facilities should be made available to all the management libraries.

4.3 Book Selection System

In majority of management libraries of NCR, faculty, Dean and Director, staff and students have been authorised to recommend the books in their area of activities. The librarian's role is of coordinator and recommendatory on the basis of user requirements. The librarian does the preliminary selection. But he is just a forwarding authority. He does not have any financial powers. For all approvals he has to go to the higher authorities. This slows down the book selection process. Some times users requests inspite of being urgent get delayed because of so many channels. Therefore, it is recommended that the librarian should be given some financial powers to make the system more efficient and faster.

4.4 Channels of Book Procurement

Booksellers are having a major role in the book supply to libraries. The entry of publishers and wholesale distributors has given new opportunity to the libraries to get more discount and better services.

Most of the libraries are procuring books through both publishers and booksellers. Some say, 'mostly' and some say 'sometimes' they place their orders directly to the publishers. The advantage of placing the orders with publishers is: (a) higher discounts; (b) better response; and (c) correct price. Reasons given by those who are not placing direct orders to the publishers are: (a) publishers do not supply books directly to the libraries; and b) publishers supply their own titles. On the basis of these findings, it is found that the advantages of placing direct orders to the publishers are more in comparison to disadvantages.

Therefore, it is recommended that management libraries should encourage publishers and wholesale distributors for supply of books directly.

4.5 Criteria for Selection of a Book Supplier

Prompt service, variety of books, quick response, and higher discount are some of the criteria followed by management libraries of NCR in the selection of book suppliers.

4.6 Document Formats

Majority of libraries have opted for printed books as the best acceptable format. Electronic format of the documents have been kept as next best choice of document format. But still there are some libraries that have opted electronic format of documents as first choice. Microform of documents has been kept as last choice. As per the findings, microform of documents, is considered as obsolete. Therefore, it is recommended that due to the large number of benefits of electronic formats of documents the libraries should encourage the procurement of electronic form of documents.

4.7 Choice for Collection

Most important choice for collection development is 'user's recommendations'. Second preference goes to 'course outlines' followed by 'publications from well-known publishers' and 'authors' and 'scholarly publications'. The collection has also been developed on the basis of 'book reviews' published in various newspapers and business magazines/journals.

4.8 Booksellers and Faculty Interactions

Faculties in only 5 management libraries are having direct interactions with the book suppliers. In support of this system, the reasons given are: it saves time of the faculty and gives their requirements directly to the book suppliers. Libraries which are not in favour of direct interaction of faculty with the suppliers support this by saying that this same valuable time of the faculty members and also provides various options to the faculty, as one supplier brings limited titles on a subject. Therefore, it is recommended that booksellers' direct interaction with faculty is not a healthy trend and should be avoided.

4.9 Evaluation of Book Suppliers

It is evident that sometimes book suppliers try to manipulate things. Profit margin is the first point in their agenda. Sometimes they do not

respond to the orders that fetch them less margin or orders that require hard work. Sometimes they commit errors such as excess levy, tampering with price proof, supply of damaged titles, and supply of other titles against the order of different title. The management libraries handle such errors and frauds by blacklisting the supplier, issue warnings, charge fines and deduction of excess amount charged.

Most of the management libraries say that their suppliers are having good knowledge of book trade and they always understand their needs. They mostly supply latest publications.

50 per cent libraries say, that weekly or fortnightly visits are scheduled. But in the researcher's opinion this is very time consuming and these visits should not be scheduled earlier..

To streamline all the above discrepancies, it is recommended that the libraries should work out a common code of practice in the form of an agreement between the suppliers and libraries.

4.10 Discount Structure

Due to the inefficiency of the GOC system, there is huge variation in discount rates amongst different libraries. Some libraries are getting 20 per cent discount on Indian books and others are getting 15 per cent. In the same way, 10 per cent and 15 per cent discounts are received by various libraries on foreign books respectively. There are two GOC rates in practice: ILA GOC rates and FPBSA GOC rates . This has further increased problems for management librarians. Therefore, it is recommended that a single GOC system should be applied or we need to work towards an alternative solution.

4.11 Technical Processing

Most of the libraries are still using the 19th edition of DDC. Only 2 libraries are using the 21st edition. Colon classification and UDC is used in one or two libraries . The librarians face problem because of delay in the updation of the schemes. Therefore, it is recommended that management libraries should use the latest edition of schemes of classification.

8 out of 13 libraries are using AACR-II cataloguing format. Three libraries are still keeping manual catalogue along with the automated systems. Due to the latest technological developments, importance of cataloging and classification has been minimised as a large

number of access points such as keyword search, word from title, etc., are available for information retrieval. But for physical arrangement of books on the shelves, classification is still a very important tool. Therefore, it is recommended that management libraries should use the latest updated classification schedules.

5 SERIALS CONTROL

5.1Subscription system: All libraries are subscribing to journals/ magazines through subscribing agencies. About 8-9 libraries are also subscribing some journals through publishers as well as through subscription agencies. Various advantages of subscription through agencies are – (i) renewal is easy; (ii) record keeping is better; (iii) single order; and (iv) single reminder generation

5.2 Problems in subscriptions: The common problems faced by libraries for subscription through agencies are : (i) no refund for missing issues; (ii) delay in supply; (iii) back issues not supplied; and (iv) frequent exchange rate variations. The situation in this area is so critical that these problems have been observed with all vendors, and even the change in vendors has not made any difference. Therefore, it is recommended that a committee of management librarians should be constituted to investigate and find remedial measures to this problem.

5.3 E-journal subscription: Presently, only 5 out of 13 libraries are subscribing to e-journals. Various advantages of e-journals as mentioned by these libraries are – (i) easy to maintain; (ii) easy to retrieve; (iii) solve the problems of thefts/mutilation; and (iv) network based referencing. The reasons given by the libraries who are not subscribing to e-journals are – (i) initial expenditure is very high; (ii) required journals are not available in electronic format; and (iii) readers' resistance. On the basis of these findings it is recommended that the management libraries of NCR should organise a seminar to discuss all issues involved for subscription to e-journals.

6 CIRCULATION

6.1 Faculty: There is restriction on the number of books issued and period for which the books issued to a faculty member. In most of the management libraries, the maximum number of books is 30, which has been allowed for a maximum period of one semester. There are two libraries having no limit on both the number of books and the period.

6.2 Students: In all libraries 2-6 books are being issued to a student for a maximum period of one week. Large numbers of libraries, i.e., 6 have restricted to maximum number to 2 books to be issued to a student. For an MBA student, 2 books are very less as compared to the course structure. Therefore, it is recommended that limit for the students should be increased upto 5 books at a time.

6.3 Circulation statistics: Average number of books issued per day is very high in all the management libraries of NCR. Except 3 libraries, average statistics in all libraries is more than 100 books per day. The data given by one library seems to be on the higher side. Most of the libraries are generating reminders on monthly basis. The loose issues of the journals are not being issued by most of the libraries.

6.4 Fine system: All libraries are charging 'fines' in the range of Rs. 1 – 5 on late returns by the students. No fine is charged from faculty and staff.

7 LIBRARY MAINTENANCE

7. 1. Shelving: In most of the libraries, the shelving is being done on daily basis.

7.2 . Shelf rectification: In most of the libraries, rectification of the shelves is being done either on a weekly basis or fortnightly. 5 libraries have mentioned that they are doing it on daily basis.

7.3. Cleaning is being done on a daily basis in all libraries.

8 TQM IN LIBRARIES

One management library of NCR out of the 13 libraries surveyed is having ISO 9000 certification. Quality assurance in a library is the need of the hour, therefore, it is recommended that management libraries of NCR should adopt TQM practices in their libraries.

9 RE-ENGINEERING OF LIBRARIES

Re-engineering management application has been applied by one library. The result of re-engineering in this library is very good. Therefore, it is recommended that all management libraries of NCR should study the possibilities of application of Re-engineering management in their libraries.

Appendix 'A'

List of Participating Institutions :

1. All India Management Association (AIMA), New Delhi.
2. Amity Business School, Noida
3. Centre of Management Development (CDM), Modinagar
4. Faculty of Management Studies (FMS), Delhi
5. Institute of Integrated Learning in Management (IILM), New Delhi
6. Indian Institute of Petroleum Management, Gurgaon
7. Institute of Management Studies (IMS), Ghaziabad
8. Institute of Management Technology (IMT), Ghaziabad
9. Institute of Technology and Science (ITS), Ghaziabad
10. International Management Institute (IMI), New Delhi
11. Maharshi Institute of Management (MIM), Noida
12. Management Development Institute (MDI), Gurgaon
13. National Institute of Financial Management (NIFM), Faridabad

39
DEVELOPING CONTENT-BASED BOOK RECOMMENDER SYSTEM (BRS) USING FIRST ORDER KEYWORDS

K Nageswara Rao*
Dr. V G Talwar**

ABSTRACT

With the ever-increasing technological innovations the society has witnessed the publication of thousands and thousands of books. Evaluating the relevance of books in a particular subject is a tedious task for any individual due the explosive growth in number of published books. Though computers, communication and Internet technologies makes it easier to publish and transfer electronic documents, skills of filtering systems are inadequate to identify relevant documents. Three different technologies that address the information overload challenges such as information retrieval, content-based filtering and collaborative filtering were described. To solve the problem of information overload and to suggest relevant information, several recommender systems have been developed and put in place. Basically, the content-based recommender systems consider syntactic and semantic content of the items to determine which items are likely to be of interest to the individual. But, collaborative filtering systems use the opinions of users to predict the value and relevance of an item for other users in the community. This paper discusses the development of content-based book recommender system using first order keywords from the book liked by the user as his profile. The Content-based Book Recommender System (BRS) is a Web-based program developed using Java Servlets as server-side programming language and Oracle as back-end database.

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1 INTRODUCTION

During the early days of invention of printing press, the books being published were limited and the user could select his or her books of interest from the existing collection with ease. With the ever-increasing technological innovations especially in the field of electronic publishing, computers and communications the society has witnessed the publication of thousands and thousands of books. This explosive growth in number of books even in a particular field has overwhelmed the professional people in the subject. Evaluating the relevance of books in a particular subject is a tedious task for any individual. Therefore, an individual cannot hope to evaluate all available books by himself unless the collection is limited or he follows some criterion. A methodology is described in this paper, which was used efficiently by the authors to rank and choose from an overwhelming collection of books in a subject.

Normally, in library setting, Online Public Access Catalog (OPAC) of an individual library facilitates the user to search books on various fields such as title, author, keyword, etc. OPAC will present the results to the user based on the content or string matching on title, author, keyword, etc. However, facilities are also provided to search books having one or more keywords by applying Boolean operators such as AND, OR, and NOT. When one wants to search for books which are closely related and relevant to a particular book, the OPAC was found wanting. One possible solution for such a problem is the implementation of content-based recommender system using keywords or subject descriptors.

In day-to-day life, we see that when an individual is not in a position to choose from the available alternatives in a particular situation, he goes for the opinion/help of others who have successfully resolved such a situation. Here, the criterion followed by the individual to solve his problem is "opinion/help of others". Many different recommender systems were developed to address these problems. From the literature, it is seen that the definition of the term "recommender systems" varies depending on the author. Some researchers use the concepts such as "recommender system", "collaborative filtering", and "social filtering" interchangeably [1,2]. Conversely, other regard "recommender system" as a generic descriptor that represents various recommendation/prediction techniques including collaborative, social, and content based filtering, Bayesian networks and association rules [3]. As the name suggests, the task of the recommender system is to suggest items or products to the customer based on his/her preferences. These systems are often used by E-

commerce websites as marketing tools to increase revenue by presenting products that the customer is likely to buy and to increase customer loyalty [4, 5].

In this work, a content-based book recommender system was developed using first order keywords with reference to a particular book chosen by the user. The currently available technologies to tackle the information overload problem are discussed first followed by the recommender system developed by the authors.

2 TECHNOLOGIES TO ADDRESS THE CHALLENGES OF INFORMATION OVERLOAD

It is a known fact that thousands of books, journal articles, reports, and Web documents are created daily. In such circumstances, people easily become overwhelmed and seek the assistance in identifying the most interesting document as a result of increased number of published documents. Though computers, communication and Internet technologies makes it easier to publish and transfer electronic documents, skills of filtering systems are inadequate to identify relevant documents. There are three different technologies that address information overload challenges such as information retrieval, content-based filtering and collaborative filtering.

2.1 Information Retrieval Systems

Information retrieval systems allow users to form a series of search queries to select items that match a topic of interest to fulfill a particular information need. The search queries, in case of content-based retrieval, are either compared to the content of objects in the database or to metadata in case of bibliographic data based retrieval, which describes objects in the database. Matched results are returned in some form of ranked order based on closeness of the search query. However, responding to a query is purely between the user forming the query and the object or document.

Information retrieval approach is suitable for textual documents whose contents could be indexed and retrieved based on full text, abstract, or metadata (bibliographic details). For non-textual items such as movies, information retrieval systems index genres, keywords, actors, directors, etc. Information retrieval systems are generally optimized to ephemeral interest queries such as looking up for topic in the library [6].

Search engines such as Yahoo, Excite, Northern Light, Google, etc. are the popular information retrieval systems on Internet. The only

mechanism involved in retrieving most relevant items in information retrieval systems is through relevance feedback. Relevance feedback refers to the reformulation of a search query in response to the feedback provided by the user for results of previous version of the query. But what are most important in recommender systems are the preferences of the user. Unfortunately, information retrieval techniques are less valuable in actual recommendation process, since they capture no information about user preferences other than the specific query [7].

2.2 Content-based Filtering Systems

Many of the filtering techniques are borrowed from the field of information retrieval. The common and obvious approach used to find the items we really want, and to get rid of the items we do not want is through content-based filtering. Content-based filtering, however, differs from information retrieval in the manner in which the interests of the user are represented. Instead of using a query in information retrieval, information filtering system tries to model the users long-term interests. Content-based filtering techniques recommend items for the user's consumption based on correlation between the content of the items and the user's preferences. For example, the system may try to correlate the presence of keywords in an article with the user's taste.

Many of the filtering systems have been developed based on user profile or preferences. For example, the Information Lens System [8, 9] allows users to create rules to filter mail messages based on keyword matches in the mail fields. Because there is already some implicit structure in mail messages, such as sender information in a sender field and keywords in a keyword field, these rules take advantage of the structure to perform user specified actions on the messages. Thus, a certain rule may take the form of deleting all messages from a certain person, or labeling messages with certain keywords as urgent. INFOSCOPE, which works in a similar way to the Information Lens has been developed by Stevens and Fisher [10]. It allows user to create matching rules that sort the information into different bins for easier access. The system then uses intelligent agents to analyze and suggest rules to aid in structuring the information to the user. LyricTime [11] compiles a profile of musical preferences and an agent that filters NetNews [12] are the examples of content-based filtering systems. Foltz [13] demonstrated the use of Latent Semantic Indexing for information filtering and evaluated it for filtering Netnews articles based on a model of user preference.

Other systems of interest are the Letizia [14] - user interface agent that assists user browsing the Web. As the user operates a conventional Web browser, the agent tracks the user behavior and attempts to anticipate items of interest by doing concurrent, autonomous exploration of links from user's current position. SysKill & Webert [15] is a software agent that learns the profile of the user, and uses the profile to identify interesting web pages in two ways. First, by having the user rate some of the links from a manually collected 'index page', Syskill & Webert suggests which other links might interest the user. Second, Syskill & Webert constructs a LYCOS [16] query and retrieve pages that might match a user's interest, and then rate these pages. Jennings and Higuchi [17] described a neural network that models the interests of a user in Usenet news environment. The neural network is formed and modified as a result of the articles a user has read or rejected. LIBRA [18] - Learning Intelligent Book Recommending Agent - uses a database of book information extracted from web pages at Amazon.com. Therefore, the system's current content information about titles consists of textual meta-data rather than the actual text of the items themselves. Users provide 1-10 ratings for a selected set of training books and the system learns a profile of the user using a Bayesian learning algorithm and produces a ranked list of most recommended additional titles from the system's catalog.

Information filtering techniques have a central role in recommender systems. These techniques build a profile of user preferences that is particularly valuable when a user encounters new content that has not been rated before. However, content-based filtering has limitations:

- Either the items must be of some machine parsable form (e.g. text), or attributes must have been assigned to the items by hand.
- Content-based filtering techniques have no inherent method for generating serendipitous finds. The systems recommends more of what the user already has seen before with some indication such as liking or not liking.
- Content-based filtering methods cannot filter items based on quality, style or point-of-view. For example, they cannot distinguish between a well written and a badly written article if the two articles happened to use the same terms [19].

Finally, these content-based filtering systems suffer from a cold-start problem meaning that new users should start with nothing in their profile to accurately reflect the user's preferences. Another drawback is that the profile only selects articles similar to the ones the user

has already read, and new areas that might be of interest can be missed completely. If the user tries to explore new content areas by creating new profile, ultimately the user has to face the same cold-start problem [20].

2.3 Collaborative Filtering Systems

Collaborative filtering systems collect user's opinions on a set of objects, using either explicit or implicit ratings, to form like-minded peer groups and then learns from the peer groups to predict a particular user's interest in an item. Instead of finding objects similar to that a visitor liked in the past, as in content-based filtering, collaborative filtering develops recommendations by finding users with similar tastes. Recommendations produced by collaborative filtering are qualified based on the peer group's response and are not restricted to a simple profile matching. Collaborative filtering is most suitable for homogeneous, simple products, such as books, CDs, or Videos.

The main bottleneck with existing collaborative filtering systems is the collection of preferences. To be reliable, the system needs a very large number of people to express their preference about a relatively large number of options. This requires quite a lot of effort from a lot of people. Since the system only becomes useful after a "critical mass" of opinions has been collected, people will not be very motivated to express detailed preferences in the beginning stages, when the system cannot yet help them. One way to avoid this problem is to collect preferences that are implicit in people's actions. For example, people who order books from an Internet bookshop implicitly express their preference for the books they buy over the books they do not buy. Customers who have bought the same book are likely to have similar preference for other books as well. This principle is applied by the Amazon.com, which for each book offers a list of related books that were bought by the same people.

The concept of collaborative filtering originated with the Information Tapestry [21] project at Xerox PARC. Tapestry was the first system to support collaborative filtering in that it allows users to annotate the documents they read. Other Tapestry users can then retrieve documents to read based not only on the content of the documents themselves, but also on what other users have said about them. Tapestry provides free text annotations as well as explicit 'likeit' and 'hateit' annotations so users can pass judgments on the value of the documents, which they read. A similar system for NetNews, GroupLens [22], combines collaboration with user-profiles. In this

system, communities of users rank the articles they read on a numerical scale and the system finds correlations between the ratings different users have given to Netnews articles. Ringo [23] is a social information filtering system, which makes personalized music recommendations. People describe their listening pleasures to the system by rating some music. These ratings constitute the person's profile. This profile changes over time as the user rates more artists. Ringo uses these profiles to generate advices to individual users. Ringo compares user profiles to determine which users have similar taste. Once similar users have been identified, the system can predict how much the user may like an album/artist that has not yet been rated by computing a weighted average of all the ratings given to that album by the other users that have similar taste.

Collaborative filtering facilitates to discover new items of interest, in contrast to content-based filtering, because other like-minded people liked them. It is also easier to provide good recommendations even when the user's interests or preferences are unknown or hidden.

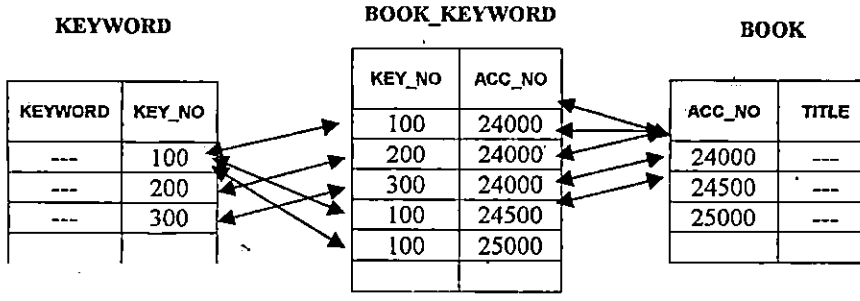
3 BUILDING DATABASE FOR BOOK RECOMMENDER SYSTEM (BRS)

Bibliographic database of library books has been developed keeping in view the growing collection of various documents such as books, conference proceedings, technical reports, encyclopedias, handbooks, dictionaries, directories, etc. The bibliographical details of books have been stored in different tables with relationships from one table to another. Three tables are utilized to fulfill the design considerations of BRS i.e. BOOK, KEYWORD and BOOK_KEYWORD.

The BOOK table consists of Accession_Number, Title fields of the book with Accession_Number as the primary key. The KEYWORD table consists of Key_Number and Keyword to describe the subject content of a particular book with Key_Number as the primary key. The BOOK_KEYWORD table consists of Accesion_Number, Key_Number and AN_KN as the primary key. The BOOK_KEYWORD table is related to BOOK table on Accession_Number and KEYWORD table on Key_Number.

It is not an uncommon in library setting that single book could be assigned with one or more keywords as it describers one or more subjects. As a result, there exist more records with same Accession_Number and different Key_Number in BOOK_KEYWORD table. In addition, there are chances to find more

records with same Key_Number and different Accession_Number because same Keyword would have been assigned to several books. The relationship between three tables is illustrated in the Fig.1



4 DESIGN OF BOOK RECOMMENDER SYSTEM

The starting point of the BRS is the book accession number as user profile or preference. Basically, the reference book may have K_i (where i=1 to n) keywords, which are of primary importance to the selection of other books in the database and are termed as "First Order Keywords". BRS extracts all books' accession numbers A_i (where i=1 to n), which contain any one of the reference book's keywords. In BRS the criterion laid down for brining out the relevance of A_i book to the reference book is as to how many keywords in A book are identical with those in the reference book.

The next step is listing the books with hundred percentage matches of the keywords in the reference book. Care is taken to eliminate the mention of reference book in this list. This is followed by the list of books with progressively less number of keyword matches. This process of listing of the books would continue till the level of single keyword match. The software program has been developed using Java Servlets as server side programming language. The results would be displayed at the users desktop on the Intranet.

5 ANALYSIS OF BRS RESULTS

To analyze and study the results, the book with the title "Designer's Guide to the Internet" bearing the accession number 22024 has been selected. The developed BRS has retrieved total of 288 books that are relevant to the reference book. Identified 2 books with 100% relevance, 27 books with 75% relevance, 78 books with 50% relevance, and 181 books with 25% relevance from the retrieved results. The percentage of relevance has been calculated based on the number of keywords that are common in the retrieved book and in the refer-

ence book. In terms of keywords, there are 2 books having four keywords in common with respect to the reference book; 27 books with 3 keywords in common; 78 books with 2 keywords in common; and finally 181 books with 1 keyword in common.

There are several aspects to be taken into considerations by studying the results to improve the relevance of results while developing the keyword database for individual books. One aspect is to assign maximum number of keywords to an individual book. By doing this, the relevance gap could be reduced and results could be distinguished from one group of results to another. Another aspect is to assign keywords consistently using updated standard technical thesaurus. Care must be taken to avoid assigning broader keywords, which normally dilute the context and increases the retrieval of number of general books instead of specific ones. Finally, common words such as "proceedings", "handbooks", "dictionaries", etc. must be eliminated from the keywords directory or table.

The user interface of the recommender system is shown in Fig.2.

The recommendations by the BRS for the book having accession number 22024 are shown in Fig.3.

Percentage distribution of number of books for four reference books with different accession numbers is shown in Fig.4.

6 FURTHER RESEARCH

In developing the Book Recommender System, only the reference book has been considered as the profile of the user. The BRS may not be much helpful to the user for generating recommendations when the user is unable to select his reference book. Further research by the authors is to help users by recommending highly relevant books based on the combination of search words as the user profile instead of a particular reference book. The results would be expected to include more comprehensive and relevant books for a particular search query as opposed to direct string matching.

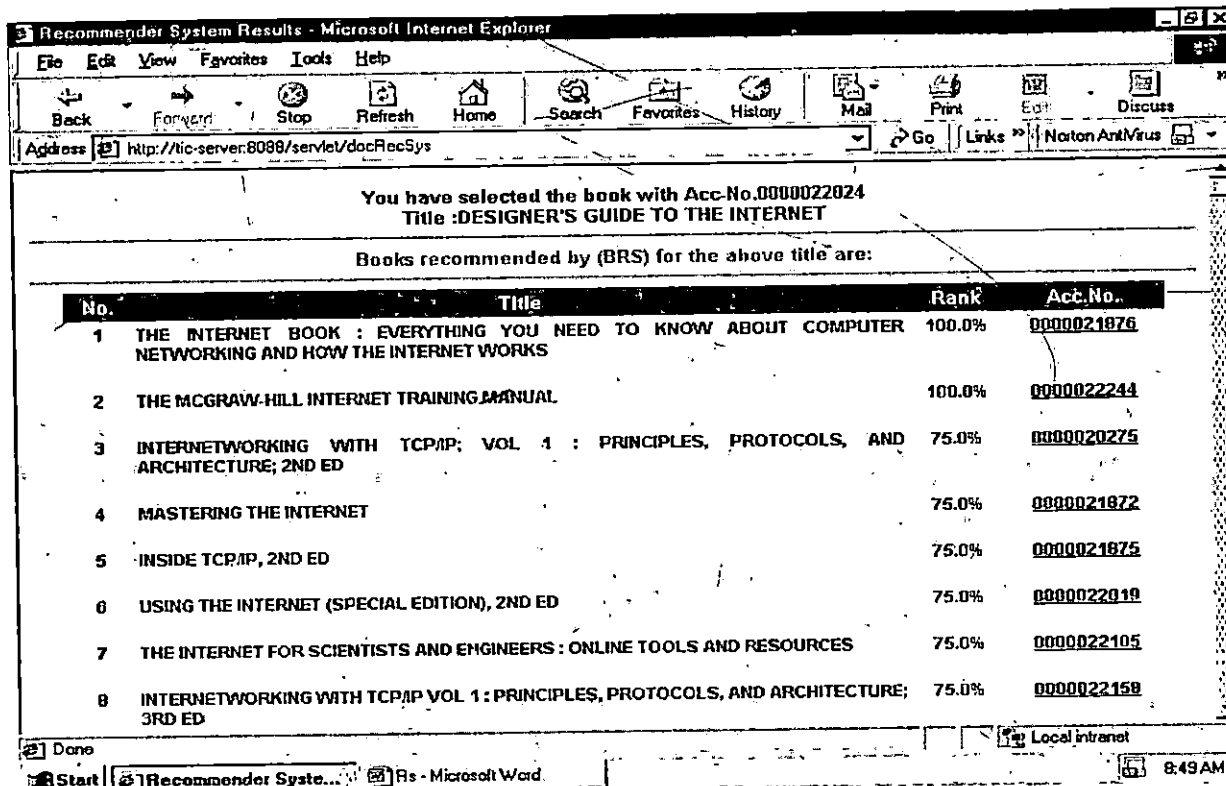

Recommender System Results - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://tic-server:8088/servlet/docRecSys
Go Links Norton AntVirus
You have selected the book with Acc-No.0000022024
Title :DESIGNER'S GUIDE TO THE INTERNET
Books recommended by (BRS) for the above title are:
No. Title Rank Acc.No.
1 THE INTERNET BOOK : EVERYTHING YOU NEED TO KNOW ABOUT COMPUTER NETWORKING AND HOW THE INTERNET WORKS 100.0% 0000021876
2 THE MCGRAW-HILL INTERNET TRAINING MANUAL 100.0% 0000022244
3 INTERNETWORKING WITH TCP/IP; VOL 1 : PRINCIPLES, PROTOCOLS, AND ARCHITECTURE; 2ND ED 75.0% 0000020275
4 MASTERING THE INTERNET 75.0% 0000021872
5 INSIDE TCP/IP, 2ND ED 75.0% 0000021875
6 USING THE INTERNET (SPECIAL EDITION), 2ND ED 75.0% 0000022019
7 THE INTERNET FOR SCIENTISTS AND ENGINEERS : ONLINE TOOLS AND RESOURCES 75.0% 0000022105
8 INTERNETWORKING WITH TCP/IP VOL 1 : PRINCIPLES, PROTOCOLS, AND ARCHITECTURE; 3RD ED 75.0% 0000022159
Done
Local intranet
Start
Recommender Syste...
Rs - Microsoft Word
8:49 AM

Fig. 2

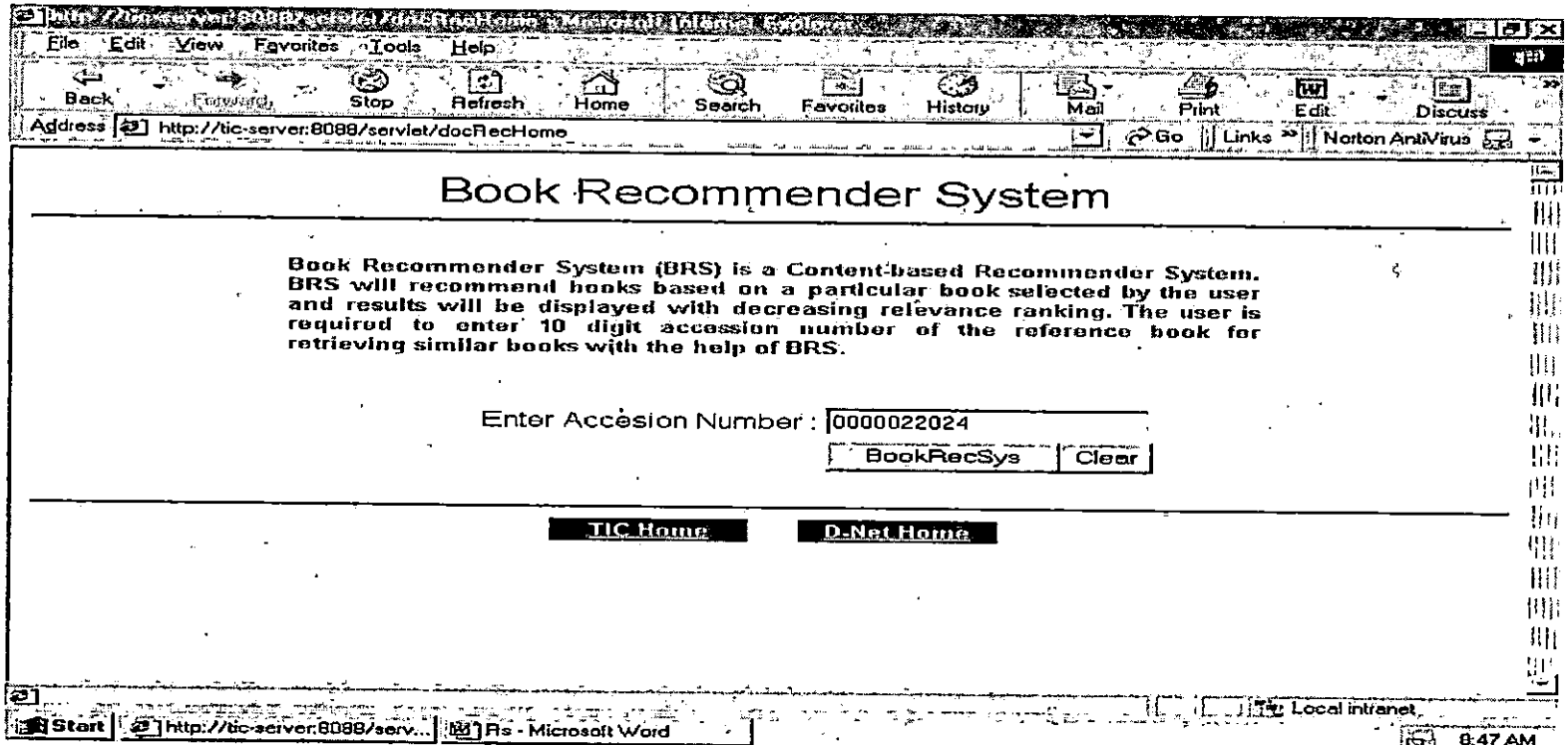
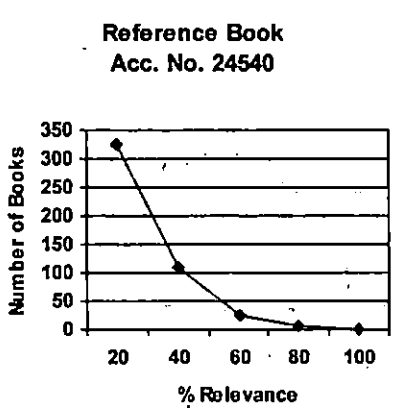
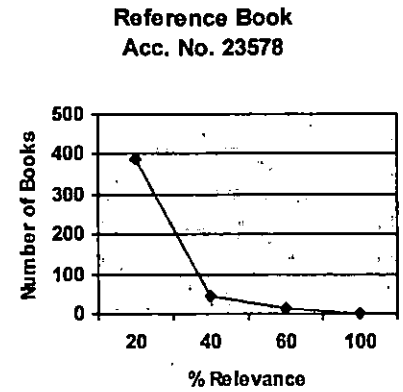
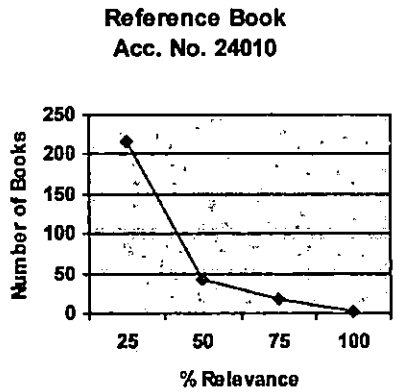

File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://tic-server:8088/servlet/docRecHome
Go Links Norton AntiVirus
Book Recommender System
Book Recommender System (BRS) is a Content-based Recommender System. BRS will recommend books based on a particular book selected by the user and results will be displayed with decreasing relevance ranking. The user is required to enter 10 digit accession number of the reference book for retrieving similar books with the help of BRS.
Enter Accesion Number : 0000022024
BookRecSys Clear
TIC Home D-Net Home
Start http://tic-server:8088/serv... Rs - Microsoft Word
Local intranet
8:47 AM

Fig.3


Reference Book
Acc. No. 24540
Number of Books
350
300
250
200
150
100
50
0
20
40
60
80
100
% Relevance


Reference Book
Acc. No. 23578
Number of Books
500
400
300
200
100
0
20
40
60
100
% Relevance


Reference Book
Acc. No. 24010
Number of Books
250
200
150
100
50
0
25
50
75
100
% Relevance

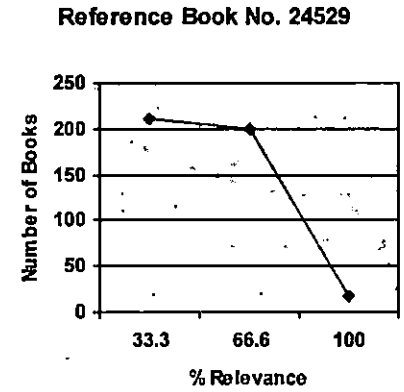

Reference Book No. 24529
Number of Books
250
200
150
100
50
0
33.3
66.6
100
% Relevance

Fig.4

7 CONCLUSION

It is a known fact that explosive growth in number of books published in a particular field has overwhelmed the professional people in the subject. Evaluating the relevance of books in a particular field is a tedious task for any individual. The authors felt that the users information requirements could be met by the development of content-based book recommender system using first order keywords with reference to a favorite book of the user. The book recommender system developed by the authors extracts books of similar nature in the context of subject coverage from the database of books and recommends/suggests with decreasing relevance ranking. By analyzing the results recommended by the system, the authors suggests to adopt updated standard technical thesaurus for assigning keywords to the books that are added to the database. The keywords assigned must be more specific rather than broader ones because the relevance of the results totally depends on how specific are the keywords. The authors also suggests that general words such as "dictionaries", "encyclopedias", "conferences", "reports", etc. may be eliminated from assigning as keywords to individual books. Further research by the authors would result in retrieval and recommendation of books based not on a reference book but on search words or query terms by the user. These results would include comprehensive and relevant books to the search query by the user, as the profile of the individual user would be generated dynamically and rich in subject coverage.

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DIGITAL INFORMATION MANAGEMENT: THE PRESERVATION ISSUES AND STRATEGIES

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ABSTRACT

The electronic revolution has also raised several issues related to preserving of information on long term basis as the electronic storage devices are frequently getting obsolete due to fast changes taking place. There is a constant need for accordingly adapting to new technologies for preserving the resources for future reference. The paper looks into various presrrvation methods for this purpose.

1 INTRODUCTION

Widespread transition of knowledge from print format to electronic format has also given rise to the problem of its preservation in digital form. The problem of preservation is further complicated by the rapid obsolescence of the hardware and software required to interpret and present digital documents. Ensuring continued access to digital information necessarily involves copying or transforming digital documents to run on current media, software, hardware and operating systems. This paper explores the issues surrounding the preservation of digital information and highlights ways to address them.

2 DIGITAL PRESERVATION

"Digital preservation" or "digital archiving" essentially aims at taking

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steps to ensure the longevity of electronic documents. It applies to documents that are either "born digital" and stored on-line (or on CD-ROM, diskettes or other physical carriers) or to the products of analog-to-digital conversion, if long-term access is intended.

3 THE PROBLEM

The fundamental problem of preserving electronic documents or "digital objects" stems from the fact that the the objects unlike non-digital formats are accessible only by using combinations of computer hardware and software. Market competition means that this hardware and software can become obsolete in cycles of less than three years. Ensuring ongoing access, therefore, requires currency with technology changes, and moving digital objects from obsolete to current file formats, storage media, operating systems and so on.

A number of other technical, social and legal issues add to the difficulty of the task. These include

- the increasing complexity of digital objects (incorporating text, images, audio, video in various formats) and their increasing software dependence (e.g., storage in databases);
- the rapidly increasing number of digital objects and proliferation of document standards and formats;
- the lack of planning to incorporate preservation needs in systems and lack of availability of off-the-shelf products supporting preservation needs;
- the lack of consideration of long-term access requirements when creating digital products;
- the absence of widely-accepted standards which will assure access over time;
- copyright/intellectual property rights that may interfere with the ability to preserve digital objects through systematic copying;
- unstable storage media (e.g., diskettes) whose life span is limited;
- a lack of technical expertise in collections managers and preservation experts;

4 PRESERVATION REQUIREMENTS

Preservation measures ensure that a document digital or otherwise

is accessible in a usable form over time. Maintaining the accessibility of digital media, however, is much more complex than with such non-digital media as paper. For example, when a book is preserved in its original format, *all* aspects of the book are preserved. It is practically impossible to extract individual elements (e.g., content without layout) because they are inextricably linked. Even reformatting to paper or microfilm does not completely divorce content from layout as page sequences and physical appearance, for instance, can still be captured. Digital objects, in contrast, are easily decomposed into individual elements, and significantly more effort must be made to preserve them as a "whole." For example, one can retain the content of an electronic document, while losing the layout. Further, one can keep its physical presence (i.e., a file), but fail to preserve its readability.

In the digital world, then, the first task is to identify the multiple aspects of a work that must be preserved. Next, to succeed in the preservation of digital objects, preservation measures must ensure that as many of these aspects as possible persist over time. In preserving a digital object, we aim to:

- **Integrity of Object.** A book is a book, or it exists in a set, but what are the boundaries of a document in a hypertext environment? The boundaries of digital objects are less clear, especially if they are compound objects created by assembling different media or by linking to resources from around a network.

- **Physical Preservation.** The physical presence in this case refers to the computer file, the series of "1"s and "0"s that are the basis of a digital object.

- **Content Preservation.** This aspect refers to maintaining the ability to access the content at its lowest level, such as ASCII text, without the embellishments of font variations and layout features.

- **Presentation Format .** Content is typically rendered in some presentation, format or layout, that includes different font faces and sizes, the use of white space, columns, marginalia, headers, footers, pagination, and so on. In many types of digital documents (e.g., SGML, XML, and some forms of PDF), the layout specifications are separate from the content. To retain the original

look of a document, these layout specifications must also be preserved, especially when they contribute significantly to the understanding and interpretation of the content.

- **Functionality.** Digital objects have a functionality that goes far beyond traditional paper documents. They can contain multimedia components (i.e., text, graphics, audio, and video), exist in hypertext format.

- **Authenticity.** An individual accessing the object must be able to verify that it is the one s/he wants, and that the transformations to keep it accessible have preserved its original form. Thus, activities to guard authenticity include securing digital objects against unauthorized changes and monitoring digital objects through multiple "copying" cycles to ensure that each copy is an acceptable rendition of the originalEsta blishing authoritative depositories would also help achieve this goal.

- **Location and Reference.** Digital objects can be readily altered, copied or moved. An individual must be able to match a citation to a digital object, and to distinguish it from other versions or editions.

- **Provenance.** Provenance is an archival concept that asserts the origin and chain of custody of an object and contributes to defining it as a whole. Imprint statements and bookplates, for example, partly fill this role for formally published items. Establishing an object's origin and history help confirm that the work is authentic and its content is intact.

- **Preserve context.** Digital objects are partly defined by their hardware and software dependencies, their mode of distribution and linkages to other digital objects. Preserving digital objects may mean weaning them from some technical dependencies, changing the mode of distribution, and deactivating links. In these circumstances, preserving context is a particular challenge.[1[

5 PRESERVATION STRATEGIES

Several strategies attempt to address the primary digital preservation problem of technological obsolescence. These include migrating

information through successive generations of technology; using software to emulate the behavior of older machines; preserving original hardware and software to run obsolete programs, and creating hard copies (paper or microform) of digital objects. Each of these strategies meets some, but not all, preservation goals.

5.1 Migration and Transfer

Migration is the primary strategy articulated by most organizations that plan to preserve digital objects. It covers a range of activities to periodically copy, convert or transfer digital information from one generation of technology to subsequent ones. Migration may involve copying digital information from a medium that is becoming obsolete or physically deteriorating to a newer one (e.g., floppy disk to CD-ROM), and/or converting from one format to another (e.g., Microsoft Word to ASCII), and/or moving documents from one platform to another (e.g., VAX to UNIX). Migration certainly preserves the physical presence and the content of a digital object. However, it may not preserve presentation, functionality and context. For example, presentation elements such as bolding and italics may disappear, and the functionality and context provided by links between database entries may be lost because the links break. Successive migrations may eventually result in unacceptable data loss.[2] The focus is on limiting the loss and retaining the content in a usable form. Migration is undeniably an important strategy for preserving digital objects. However, it has yet to be tested and proven as a mechanism for managing complex multimedia objects over the long term.

5.2 Emulation

Emulation refers to creating new software that mimics the operations of older hardware or software in order to reproduce its performance. Thus, not only are physical presence and content preserved, but digital objects could display original features (e.g., layout) and functionality available with the older software. Emulation has recently attracted attention as a potential strategy to assist preservation, recognizing that some electronic material that is highly dependent on particular hardware and software will not lend itself to migration.

Emulation is used to provide "backward compatibility" for video games, and to model how future systems might run. Emulators exist for some obsolete systems, however, emulation for preserving digital objects over the long term has not been widely tested or priced.

5.3 Output to Paper or Microfilm

Outputting a hard copy of a digital file is a "low tech" solution that can result in a well-standardized product with a life expectancy of several hundred years. Certainly, this strategy could fix the object as a whole and preserve content and to some extent layout. However, a decreasing number of publications (flat files, printable formats) lend themselves to such methods. For example, output to paper will lead to great functional loss for hypertext documents, and cannot capture multimedia. Despite these drawbacks, a "hybrid strategy" of creating both microfilm and digital copies is gaining support as a technique for reformatting paper originals. The digital copy enhances access and functionality, and the microform copy acts as an archival surrogate.

5.4 Preservation Technology

Another method for ensuring ongoing access to digital objects would be to simply keep older technology available for use. Although this would preserve content and enable future generations to view digital objects in their native format with original layout and functionality, creating hardware or software "museums" is prohibitive in cost, space and technical support requirements. At best, this method is an interim measure when migration is not possible.

6 CONTROL

To increase the probability that digital objects will be preserved, organizations need to lay appropriate groundwork. One way is to develop and implement the most effective practices in acquiring, describing and managing digital resources.

6.1 Standards

To facilitate preservation, the best practice is to adopt a three-part approach:

1) use current standards to create digital objects;
2) monitor standards as they change;
3) migrate to new standards as they are established.

Most digital preservation guidelines advocate collecting digital objects in standard formats. Unfortunately, while standards are well defined

for text (e.g., ASCII), images (e.g., JPEG, TIFF) and encoding documents (e.g., SGML, HTML), standards have not emerged for some other types of information (e.g., databases). In addition, not only do standards change rapidly, but vendors seeking to increase their market share incorporate "value-added" features to accepted standards. Institutions performing the digital preservation activity can also be subject to standardization.

The International Standards Organization (ISO) has produced a reference model (CCSDS 650.0-W-4.0), for an Open Archival Information System (OAIS) [3]. The model establishes the minimum requirements for a digital archive to ensure long-term preservation of digital information, and provides a framework for describing and comparing archival architecture and operation.

6.2 Developing Digital Preservation Guidelines

Archives and record-keeping bodies in Europe, North America and Australia have taken the lead in developing best practices and functional requirements that address some preservation issues.[4] Common elements include.

- Recognizing the creator's responsibility to preserve his/her work initially;
- Identifying responsibilities of the archive;
- Adopting appropriate selection guidelines (which emphasize standards when a choice of formats exists);
- Securing archived items from intentional or unintentional alteration;
- Providing contextual documentation including a history of creation, transmission and use, and audit trails;
- Describing digital objects completely.

Some libraries have developed similar guidelines. However, a recent survey concluded that most digital preservation guidelines focus on creation, receipt and capture of digital objects, and do not satisfactorily address their long-term preservation.[5]

6.3 Documenting Resources

A recurrent theme in digital preservation guidelines is documentation and description of electronic resources. The need for such deliberate description stems in part from the fact that digital objects do not

carry the visible evidence of creation and use (imprints, bindings, bookplates, marginalia, or Scotch tape) of non-electronic formats. Such clues guide preservation decisions. They also help users to establish that the work is whole and intact, and to understand its provenance and the context in which it was created.

6.3.1 Metadata

A description of a digital object is "data about data," or metadata. Such descriptive data should include the contextual information crucial to the long-term management of electronic information. Metadata elements useful in preservation might include

- Identifiers ;
- Hardware, operating system and software required to access a document;
- Physical details of tangible format publications such as CD-ROM, floppy disks;
- encoding standard and version;
- migration history and its success;
- data to assist determining authenticity;
- rights management information;
- versions and dates.

Conversion projects would employ additional metadata elements such as the capture device, resolution, compression, source material, and producer (of the digital document). Existing metadata schemes (e.g., MARC, Dublin Core) provide for some such information capture, but there is no consensus on which approach will work best for preservation purposes. In MARC, for example, some of the necessary data is captured in notes' fields that may not use sufficiently detailed or consistent language for subsequent search and retrieval.

6.3.2 Unique identifiers

One element of describing a digital object is to assign it a unique and persistent identifier. An identifier is a number, like an ISBN, which is associated with a particular instance of a digital object. Unlike an URL, it is independent of the location of that object. A unique, widely supported identifier for digital objects would help establish the authenticity of the object by confirming to a user that the resource s/

he is accessing is the one cited. It could also help establish the relationship between copies or versions of digital objects, as any modification of the original would result in a modification of its identifier. Some organizations involved in digital preservation are currently using PURLs (Persistent Uniform Resource Locators),URNs (Uniform Resource Names) or modified Digital Object Identifiers. As yet, no single digital identifier has achieved widespread, international acceptance.

6.3.3 Linking Metadata with Content

Metadata can be stored either as an integral part of the document it describes (e.g., embedded in an HTML header) or as part of a separate file of information (e.g., a MARC record). One way of linking metadata and the digital object is to package them together. To this end, the aforementioned Reference Model for an Open Archival Information System (OAIS) proposes an "information package" comprised of "content information" and "preservation descriptive information" [6] . Along similar lines, a working group of the Society of Motion Picture and Television Engineers has developed a Universal Preservation Format (UPF)[7] , a data-file mechanism that uses a container structure to incorporate metadata into digital media objects. Although primarily developed for audio-visual data, the principles underlying the UPF may have wider applicability.

6.4 Establishing Infrastructure

A final way in which libraries are gaining control over the preservation of digital objects is by building preservation requirements into systems development. The Australian National Library, for example, has started a Digital Services Project to develop systems to manage its digital collections and to support cooperative, shared access

[8] The National Library of Canada has incorporated preservation requirements in its Digital Library Infrastructure Project. The next step is to develop the systems.

The next steps remain ill defined. To reduce the uncertainty surrounding digital preservation, we can encourage creators to use practices that will aid long-term preservation, such as creating valid documents in standard document formats and address the question of which preservation strategy will work best by testing migration and emulation and identifying associated costs and tradeoffs in each

case.

7 CONCLUSION

Rapid technological obsolescence combined with relatively short-lived media means that collections must be actively managed. Simply collecting and "shelving" important works, a passive strategy that works to some extent for paper-based publications, is insufficient to ensure digital objects will survive in perpetuity.

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ELECTRONIC INFORMATION SECURITY IN LIBRARIES AND INFORMATION CENTRES

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ABSTRACT

The widespread acceptance of computer networks, explosive growth of Internet, increased reliance on databases and other information technologies has made the security of electronic information a major issue in Libraries and Information Centres. However, Libraries and Information Centres are lagging behind in realizing the need to protect their electronic information resources and services from misuse, damage, theft, sabotage, mistake, etc. This paper will address the issues related to the security of electronic information in Libraries and Information Centres and also will make recommendations for protecting electronic information and information access tools. The paper discusses strategies for information security, security policy, personnel security, physical security, software security, network security, Internet security, information privacy, backup information, data integrity, unauthorized access, etc. This paper also discusses the need for professional assignments for security and security training for library and information science professionals.

1 INTRODUCTION

The proliferation of computers, widespread acceptance of computer networks, explosive growth of Internet, increased reliance on databases and other information technologies has made the security of electronic information a major issue in libraries and information centres. Information Technology has revolutionized the storage, retrieval and dissemination of information. But IT gives a lot of scope

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for misuse and abuse of electronic information.

Information is the most valuable resource of libraries and information centres. This information should be stored in such a way that its integrity and availability is maintained. Nowadays majority of libraries and information centres are computerized and handling electronic information resources and access tools. Computers and other computer-based technologies allow libraries and information centres to store, retrieve and disseminate information more easily and quickly. All sections of an automated library or information centre handle electronic resources. There are risks of loss from unauthorized access, use, modification or destruction of information, which may be caused accidentally or intently. If it is damaged or lost due to misuse, mistake, theft, sabotage, we cannot achieve the very purpose of these resources. Security of electronic resources is more complex than the security of the traditional resources. Computer related infrastructures are very expensive; they may be stolen or may be destroyed or damaged by lightning and other natural threats.

Electronic environment of a library or information centre may include hardware, library management software, computer programs, databases, data and information, etc. Now libraries are web accessible and increasingly handling electronic information. All these electronic information and access tools need to be protected from misuse or damage, but libraries and library professionals are lagging behind in realizing the importance of security measures in libraries. Threats to electronic information may arise from the failures of computer and communication hardware or software and malfunctions, caused by bugs and viruses, overload or other operational or quality problems. Misuse or abuse of electronic information may arise from the unauthorized access for the purpose of mischief, vandalism, sabotage, fraud or theft, etc.

Electronic information of a library or information centre should disclose to authorized users and should store, retrieve and disseminate in authorized manner. Electronic information should be protected from threats to gain its availability, integrity and confidentiality. Electronic information resources, information and communications technology infrastructure should be protected from physical threats. System and application software should be protected from non-physical threats. Computer networks should be protected from unauthorized access, interruption and manipulation. Authorization should be used to control access to electronic information and access tools.

Information security is the techniques, policies and strategies used to protect the availability, confidentiality and integrity of information. Electronic information should be accurate and complete. Security measures should ensure information and communication technology resources are used for the purpose for which they were intended. Security measures should design to ensure the accuracy and integrity of information and provide the library or information centre with the capability to recover and maintain data under all circumstances.

2 SECURITY POLICIES AND PROCEDURES

It is very important to establish well-formulated policies and procedures to protect electronic information and access tools from security threats. Policies and procedures should be formulated to protect the information and computing resources. Policies should cover the use of computing and network resources, marking of sensitive information, movement of computing resources, introduction of personal computing equipment, disposal of sensitive waste and security incident reporting. Enforcement of these policies is essential to their effectiveness.

3 PERSONAL SECURITY

Personal security consists of management constraints, operational procedures, accountability procedures established to provide an acceptable level of protection for electronic resources. Personal security include procedures established to ensure that all personnel who have access to electronic resources have the required authorization and appropriate security clearance. It also includes personnel-oriented techniques for controlling people's behavior to ensure the confidentiality, integrity, and availability of electronic information and resources.

4. PHYSICAL SECURITY

Physical threats to information may come from extreme environmental events or from adverse physical conditions or from purposeful activity. Extreme environmental events include earthquake, fire, flood, lightning, excessive heat, humidity, etc. The electronic environment of a library or information centre may stand up to rough treatment and inexperienced users as well as knowledgeable vandals and thieves. Hardware can be stolen, damaged or destroyed. Peripherals such as mice, keyboards and connecting cables can be moved, stressed and broken. Printer paper and ink cartridges can be overused or damaged.

Many information security threats can be avoided by protecting the information and communication infrastructure. It is a good practice to keep significant electronic resources separate from general access equipment. All electronic media for storing electronic information such as diskettes, CDs, DVDs, tape etc should be kept securely. The library and information centre should be fireproof with fire alarms, smoke detectors, extinguishers etc. Computing infrastructure should not expose to extreme cold or warm temperature and should be kept in an air-conditioned environment. Libraries should have intrusion detectors and guards. Libraries and information centre should use surge suppressors or electronic power filters for all devices in areas of known power fluctuations. Library professionals should clearly understand who to contact if urgent equipment repairs are required and how to contact them.

5 SOFTWARE SECURITY

Software security is very important for the smooth functioning of computer and related technologies. Software security threat includes the unauthorized access for breaking the nonpublic areas of the automated information system and viewing private records, changing files, or erasing records or other data. Unauthorized access also includes introducing viruses to the system or using the system as a base for further unauthorized activities on any other system. Poorly programmed or configured software is always prone to hacking or cracking. Application software is usually very similar and therefore become well known to an intruder. Default locations for key files are often accepted so that an intruder can easily find the locations and tamper with them. The homogeneity of service and programming for different software reduces the time required for a person to find and alter key areas on the system.

The library and information centre should install only authorized and licensed software. Only authorized people should be able to install or modify software, and adequate records should be kept of all changes and additions. Software should have adequate security measures and should protect from computer viruses. Library should be able to get local support from the software company. Library and information centre should be able to access a secure master copy in case the copy in use is corrupted or lost. It can avoid by taking backup copies of major software. The system administrator should backup files before installing new software and before any software upgrades. All software and new files should be regularly checked by reputable anti-virus software. The system administrator should keep a software toolkit for troubleshooting and repair software.

6 NETWORK SECURITY

The increased reliance on computer networks has made security a major issue. Electronic information, infrastructure and access tools should protect from unauthorized access, interruption and manipulation. As libraries are forming library networks and library consortia, it is very important to verify the contents and origin of electronic files and resources. The library networks and consortia should be protected from unauthorized access by various techniques such as encryption, virus protection, remote access regulations, firewalls etc. Sensitive information should be encrypted, authenticated by digital signature, time stamps, sequence numbers and digital certificates.

When a library network or consortia is linked to the Internet, crackers or hackers can access to the library computer system and electronic resources. Libraries and information centres should ensure security parameters setting on devices such as routers, firewalls, proxy servers and network servers to ensure they remain at current settings. Network security can also monitored by automated logging features built into firewalls, router and host systems, providing audit trails of daily activity that are essential.

7 INTERNET SECURITY

Library networks connected with Internet is the greatest risk to the electronic environment of libraries and information centres. Internet is a virtual library, which revolutionized the ways of accessing, organizing, managing, retrieving and dissemination information. Internet provides different types of tools/services/utilities for accessing electronic resources all over the world. Information is disseminated openly over the Internet. Anyone can access the information if it is not protected. Any information accessed, stored, retrieved or disseminated on a web server may be susceptible to compromise if proper security measures are not taken. Information on Internet can alter or modify during transmission. If proper access controls are not maintained data integrity could also be compromised. It is the responsibility of library or information centre to ensure that all data is maintained in its original or intended form.

The Internet can facilitate undesired access to internal systems, unless systems are appropriately designed and controlled. The open architecture of the Internet also makes it easy for system attacks to be launched against system from anywhere in the world. Library Internet systems can even be accessed and then used to launch attacks against other systems. Web servers and internal networks

can secure automatically by using software programs. These software are effective to check unauthorized access to the system.

8 OPAC

The Online Public Access Catalogue of library or information centre should be protected from misuse and abuse. It should only communicate with authorized terminals. OPAC can be used for unauthorized access to the electronic resources of the library. Physical risk of theft or damage of the public terminal, and risk of unauthorized access to resources outside the library are the major security issues associated with OPAC. It is very important to consider any accessible item to be subject to tampering, theft, damage, sabotage or subversion.

9 BACKUP INFORMATION

Backing up electronic information, software and other important electronic documentation is a reliable security technique. An accident or a severe environmental condition may destroy electronic information, software, etc. Errors and omissions may occur in accessing, creating, processing, storing, managing, retrieving, transmitting, and deleting data and information. If the data and information is destroyed, there must be copies of the data and information available that can be restored to the system. So it is very essential that backup copies should be readily available. If files have not been backed up, the library or information centre may incur significant expense in time and money in recreating them. Generally the system administrator is responsible for backups. The backups should also be kept in a secure location physically separate to the one in which the computer system is located. Backup information should have the same level of protection as the active files of this information. It should not be kept near any magnetic fields, extreme heat or cold and should provide adequate protection against fire, flood and other physical hazards. Backups logs should be examined on a daily basis to check that backup has been completed satisfactorily. There should be written procedures outlining all aspects of backup procedures. It is very important in addition to the system administrator one or two other professionals should know how to backup and access backed up information.

10 UNAUTHORIZED ACCESS

Only authorized users should have access to information and communication technology resources. Passwords and usernames are the most common way of authenticating users and monitoring

their access. Passwords and usernames should be used to control access to electronic information resources. Public access workstations should be monitored through passwords. Group usernames and passwords should prevent through user authentication and other measures. Usernames and passwords may be deactivated when they are not required. Library and information centre should have additional security measures for public access machines. It is a good practice on public Internet stations or OPACs to remove, hide or rename dangerous or unnecessary programs. User privileges on public access workstations should be limited.

11 PROTECT AGAINST VIRUSES

Library and information professionals should work in accordance with safe computing practices to minimize the risks associated with computer viruses. A program containing a virus that is introduced into an information system may affect the availability, confidentiality and integrity of that system by overloading the system, altering data or information in the system. Computer system should have up-to-date virus protection software that checks for virus and repair them. If the anti-virus software detects a virus from an incoming file, inform the people who introduced that file so they can ensure it does not happen again.

12 PROFESSIONAL ASSIGNMENTS AND TRAINING

Today most of the libraries are automated, networked and connected to the Internet. Internet is most vulnerable for security threats. All library professionals should be aware of their responsibilities in relation to information security. All major information related procedures should be documented so that important procedures can follow when concerned library professionals are not available. More than one staff member should know important procedures. Library computer system should be assigned a system administrator who is responsible for the maintenance and security of the system. System administrators are responsible for ensuring the integrity, availability and confidentiality of information. System administrators ensure the security of the hardware and software of the system and may manage authentication issues. Maintenance of electronic information is very essential in order to avoid inevitable decay due to interaction with the environment. To be diligent about the security of information systems, library personnel with specific security-related job descriptions are a necessity.

Libraries and information centres should give training to library

professionals in information security. Security awareness and education for library professionals and users are critical to a good information security. Security awareness training is a preventive measure that helps users and library professionals to understand the benefits of security practices. If library professionals do not understand the need for the controls being imposed, they may eventually circumvent them and thereby weaken the security program or render it ineffective. Technical training in the form of emergency fire drills for library personnel can ensure that proper action will be taken to prevent such events from escalating into disasters. Lack of training and follow-up about security and its importance perpetuate ignorance about proper use of information systems. Security related magazines, mailing lists and newsgroups should be subscribed for more information, suggestions and warning about security.

13 CONCLUSION

Electronic environment of libraries and information centres should have adequate information security. Information security is the techniques, policies and strategies used to protect the availability, confidentiality and integrity of electronic information. Information security includes personal security, physical security, software security, network security, Internet security, etc. Libraries and information centres need to have policies, protection measures in order to protect their information and communication technology resources. Library and information centre should also have well-established backup policies. Public terminals like OPAC should be protected from the internal system with adequate security measures. Libraries and information centres should take necessary steps to safeguard their electronic resources and access tools from various threats like damage, misuse, mistake, theft, sabotage, etc. Library professionals must be assigned security related tasks to secure the electronic resources of the library. Due to the explosive growth of Internet with various tools, which provide unprecedented access to electronic information and resources ongoing diligence is required to keep the electronic environment of library and information centre secure.

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INFORMATION MANAGEMENT IN UNIVERSITY LIBRARIES IN ELECTRONIC ENVIRONMENT

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ABSTRACT

Highlights that the containers of information and knowledge in all formats and media are known information resources. Describes that Information management is centred around management of both Information resources and Information technology i.e. managing information handling activities, as well as enabling the effective use of information, whereas knowledge management is focussed on creation, recording and sharing of knowledge. Emphasises the need, importance and objectives of Information Management and presents information as the lifeblood, IT as tool and quality as the objective of library profession. Outlines the various tools, techniques and strategies of Information management and focuses on major processes of IM i.e. application of IT in information collection, storage, retrieval and dissemination in university libraries of Punjab, Haryana, and Chandigarh. Examines the status of computerisation, networking, and resource sharing activities and compares and analysis cost involved on all library activities in nine university libraries. Investigates and presents the effectiveness of all the processes and activities of information management with the help of users survey. Suggests measures and strategies to cope with the desires and expectations of the users (internal as well as external) for the management of information and as per existing electronic environment in special libraries. This paper draws heavily on field survey, observations, interviews and personal experiences.

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1 INTRODUCTION

Information handling activities kept on shifting with technological stage. Mankind witnessed three major revolutions to reach this stage of development. The advent of the information age has led to a flood of information that necessitated to be managed to reduce gaps between generation and utilisation of information. The arrival of entire publication work on Internet is a challenge for library and information scientists. Information management emerged largely as a response to the information society but evolved out of a number of disciplines namely record management, library administration, information science, Information technology, and organisational theory etc.

Information Management (IM) is not only about managing the processes of selection, collection, processing, controlling and dissemination of information but also effective use of information and knowledge stored in primary, secondary and tertiary resources both in print as well as electronic format. IM includes capabilities as well as value addition aspect and opportunities as well as challenges. Knowledge management deals not only information contents but also knowledge present in users' and employees' brain.

In this changed scenario quality has become a very dynamic concept which disturbs all static balances between generators, providers and users of information. Today the command and control regime is over. In order to have dynamic relationship with environment, and to survive and thrive, libraries must remain in a constant state of change with the environment. Only this aspect has led to the development of libraries from the warehouse and depository functions to delivery of information. Special libraries and information centres have already integrated the delivery of external and internal information as a unified transaction from a single workstation. This is the ultimate state of excellence in information services. This quality focus in library and information services resulted in the emergence of a new concept 'Information Management' and Knowledge management.

This paper briefly addresses Library and Information science, technological, and managerial aspects of Information management in the context of university libraries. Also attempts to explain the recent trends in IM and tries to investigate the level and status of IM in university libraries of Punjab, Haryana and Chandigarh. Also suggests measures to manage information and knowledge effectively in the university libraries.

Knowledge revolution is the new revolution in information related areas. Today every organisation needs to know what their knowledge

assets are, and how to manage and make use of these assets to get maximum returns. It serves the users with ample information through tools, technique and methods of KM. In this era of downsizing and financial crunch, efficiency, effectiveness and economy have become the slogans. POSDCORB of Henry Fayol and scientific management of F W Taylor were applied for selection, collection, organisation, dissemination and preservation of documents for posterity. These library administration practices have proved inadequate amidst dramatic and drastic changes in the internal and external environment of the organisations.

Harris (1996) while defining data, information and knowledge said, "Data has no intrinsic meaning. It must be grouped, analysed and interpreted. When data is processed in this manner it becomes information. However, information does not have meaning but have substance and purpose.When information is combined with context and experience it becomes knowledge [1]. Context is an individual's framework for viewing life and experience is previously acquired knowledge. So transfer of all types of knowledge depends upon receiver's context and experience.

From computer science and Artificial Intelligence (AI) perspective data refers to numeric and alphanumeric strings. Information is organised data that is meaningful to the person requiring it and knowledge means understanding, learning, practical experience or skill. Thus information is that which informs by means of a process and implies two parties, whereas knowledge is what is known and requires one party to internalise what has been received through the process of informing. So nothing can be knowledge unless it is internalised within a mind. Everything outside of the mind is information, which is potential knowledge. Knowledge is the full utilisation of information and data along with the people's skills, competencies, ideas, intuitions, commitments and motivations.

2 METHODS

The study includes as its population all the university libraries (except Technical University Library, Jalandhar; Medical University Library, Faridcot; and National Dairy Research Institute, Karnal) in Punjab, Haryana and Chandigarh, namely: Guru Nanak Dev University Library, Amritsar (GNDUL); Punjab Agricultural University Library, Ludhiana (PAUL); Punjabi University Library, Patiala (PULP); Thapar Institute of Engineering and Technology, Patiala (TIETL); Kurukshetra University Library, Kurukshetra (KULK); Maharshi Dayanand

University Library, Rohtak (MDUL); Chaudhary Charan Singh Haryana Agricultural University Library, Hisar (HAUL); Guru Jambeshwar University Library, Hisar (GJUL); and Panjab University Library, Chandigarh (PULC).

Three sets of questionnaires were prepared: 1 Librarians 2.a) Deputy Librarians, and (b) Assistant Librarians, 3.a) Faculty members, and (b) Students (Research Scholars, M.Phil and Postgraduates)

3 APPLICATION OF INFORMATION TECHNOLOGY (IT) IN THE UNIVERSITY LIBRARIES

It is rightly said that information management is nothing but application of information technology (IT) in information handling activities. To cope with the changing needs of information the forms of information resources are also changing at a fast pace that is clearly visible from the long journey from 'Shruti' in Vedic age to the Internet. Library literature also reveals that convergence of print and digital technology is necessary condition for qualitative library services. To that end an attempt is made to measure the level of IT application with regard to forms of reading material, forms of periodicals, hardware and software facilities, initiation of computerisation, status of housekeeping operations, retrieval services, application in library administration and management, size of in-house databases, and access to major networks in the nine university libraries under study in the next pages.

TABLE 1 : FORM OF READING MATERIAL AVAILABLE IN THE LIBRARIES

Description	GNDUL	PAUL	PULP	TIETL	KULK	HAUL	MDUL	GJUL	PULC	Total
Books	279641 (80.4)*	219574 (70.95)	270609 (78.98)	34540 (85.84)	226416 (83.17)	177352 (67.63)	184821 (82.79)	15382 (99.05)	493879 (81.49)	1902214 (78.62)
Journals (backsets)	67947 (19.53)	89419 (28.89)	71564 (20.89)	5663 (14.07)	45670 (16.78)	84504 (32.23)	38120 (17.07)	130 (0.84)	110724 (18.26)	513741 (21.23)
Electronic Products	223 (0.07)	483 (0.16)	436 (0.13)	35 (0.09)	136 (0.05)	377 (0.14)	308 (0.14)	18 (0.11)	1490 (0.25)	3506 (0.15)
Total	347811	309476	342609	40238	272222	262233	223249	15530	606093	2419460

* Percentage are provided in parenthesis

The priorities of the libraries with regard to IT application differ from library to library. Modern libraries are supposed to collect both printed and electronic documents. Table 1 charts the total library collection and its availability in print and electronic formats in all the libraries. It also reflects the forms of printed material available in the different libraries. It shows that 78.62% of the total collection of all the libraries

under study is in the form of books, followed by backsets of Journals (21.23%). Only a limited collection (0.15%) i.e. 3506 is available in non-print forms such as audio, video, microforms and CD-ROM, and remaining 99.85% i.e. 2419460 reading material of all the libraries is in print form. However, it is clear from the table that non-print material is available in all libraries.

TABLE 2 : AVAILABILITY OF DIFFERENT FORMS OF PERIODICALS

Description	GNDUL	PAUL	PULP	TIETL	KULK	HAUL	MDUL	GJUL	PULC	Total
Print	702 (98.87)	484 (98.78)	767 (100)	266 (99.26)	660 (100)	1320 (99.85)	590 (100)	125 (100)	608 (100)	5522 99.68)
Electronic	8 (1.13)	6 (1.22)	-	2 (0.74)	-	2 (0.15)	-	-	-	18 (0.32)
Other	-	-	-	-	-	-	-	-	-	-

* Percentage are provided in parenthesis.

Despite the fact that in recent years the publication of periodicals in electronic media is increasing, the picture is contrary in the university libraries under study.Table2 depicts that 99.68% of the total periodicals of all the university libraries are in print form, while only 0.32% periodicals are in e- form .

TABLE 3 : HARDWARE FACILITIES AVAILABLE IN THE UNIVERSITY LIBRARIES

Description I	GNDUL	PAUL	PULP	TIETL	KULK	HAUL	MDUL	GJUL	PULC
Computer Systems									
i) Main Frame	No	No	No	No	No	No	No	No	No
ii) Mini Computer	No	No	No	No	No	No	No	No	No
iii) Micro	13	16	9	6	7	20	8	6	12
iv) 486	No	4	3	2	6	2	2	1	No
v) 386	1	2	2	No	No	No	No	No	6
vi) 286	5	No	No	No	2	No	1	1	No
vii) Dumb	10	6	5	2	4	5	4	4	6
2.Printers	7	6	2	1	5	2	4	1	7
3. UPS	Yes	Yes	Yes	No	Yes	2	Yes	No	Yes
4. LAN facility	No	No	Yes	Yes	No	No	No	No	Yes
5. Network facility	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6. On-line facility	Yes	No	No	No	No	No	No	No	Yes
7. CD-ROM Drives	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8. CD Net	No	Yes	No	Yes	No	No	No	No	Yes

Computer facilities are of two types: Hardware and Software. Table 3 shows hardware

facilities

TABLE 4 : SOFTWARE FACILITIES

Description	GNDUL	PAUL	PULP	TIETL	KULK	HAUL	MDUL	GJUL	PULC
a)Operating Systems									
I. DOS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ii. UNIX	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
III. Any other	Win95	Win95	Win95	Win95	Win95	Win98	Win98	Win98	Win95
b) Software package									
I. LIBSYS	No	No	Yes	No	No	Yes	No	No	No
II. CDS/ISIS	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
iii. Any other	Locally developed	Yes	Yes	No	No	Libsys	No	No	Techlib+
c) Communication Software									
I. DOS PROCOM	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
II. UUCP	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
III. Any other	Yes	No	No	No	Yes	No	No	No	No
d) LAN Scanner									
I. Netscape	Yes	No	Yes	No	Yes	No	No	Yes	Yes
II. Netware	No	No	No	No	No	No	No	No	No
III. Any other	No	No	No	No	No	Yes	No	No	No

Software helps to bring hardware establishment into activation and real use. The software facilities available in nine libraries are presented in Table 4. It further shows that out of nine libraries only HAUL and PULP have LIBSYS library package and PULC has also got Techlib + for housekeeping operations, whereas PAUL has no package for this purpose. Only PULP has all the three version of LIBSYS.

TABLE 5 : INITIATION OF COMPUTERIZATION WORK.

Description	GNDUL	PAUL	PULP	TIETL	KULK	HAUL	MDUL	GJUL	PULC
Year of initiation	1993	1995	1994	1996	1989-90	1995	1995	1999	1988-89
Staff involved In computerization									
Programmer	1	No	1	No	No	No	No	No	1
Information Scientist	1	No	No	No	1	No	No	No	No
Professional	4 P.A.s	1 Asstt. Libn	No	No	1 Dy. Libn	1Asstt. Libn	1Asstt. Libn	No	No
Data Entry Operator	1	2	2	2 clerk	2	2	1	2	4

Libraries under study initiated computerisation work at different times which is revealed in Table 5. It indicates that PULC initiated the computerisation work in 1988-89, whereas GJUL was the last to join in 1999. While PULC and PULP have one Programmer each, whereas GNDUL has both programmer as well as information scientist in

addition to 4 Professional Assistants and one data entry operator. KULK has also got one information scientist.

TABLE 6: STATUS OF HOUSEKEEPING OPERATIONS IN THE LIBRARIES

Description	GNDUL	PAUL	PULP	TIETL	KULK	HAUL	MDUL	GJUL	PULC
Acquisition	Partial	No	No	Partial	Partial	No	No	No	Partial
Cataloguing	Complete after 1993	No	Partial	Complete	Partial	Partial	Partial	Just stated	After 1997
Circulation	Member-ship records complete	No	No	Partial	No	No	No	No	Partia
Serial Control	Partial complete after 1993	No	No	Partial	Partial	Partial	Partial	No	Partial
Stock taking	Partial	No	No	Partial	No	No	No	No	No

Computer application in nine libraries can be divided into three types of functions: Housekeeping operation, Retrieval services, and Administration/ management.

Table 6 reveals that no university library in Punjab, Haryana and Chandigarh has fully computerised housekeeping operations. With regard to Circulation, GNDUL, TIETL and PULC have made partial efforts, whereas remaining six libraries have not done any thing in this direction.

Out of nine libraries, GNDUL is partially handling Serial Control with effect from 1993, while TIETL, KULK, HAUL, MDUL, and PULC have prepared computerised list of serials, while PAUL, PULP and GJUL have not initiated computerisation of serial control so far.

TABLE 7 : RETRIEVAL SERVICES IN THE UNIVERSITY LIBRARIES

Description	GNDUL	PAUL	PULP	TIETL	KULK	HAUL	MDUL	GJUL	PULC
OPAC	Current books after 1993 and more than 50% of English Language, books	No	No	No	No	No	No	No Books	Current After 1.1.97
Documenta -tion services	Seven databases have been created	No	No	No	No	No	No	No	Yes

Table 7 shows that GNDUL and PULC have started online public access catalogue for books acquired after 1993 and 1997 respectively and other seven libraries have not taken any initiative in this direction.

TABLE 8 : COMPUTER APPLICATIONS IN LIBRARY ADMINISTRATION

Description	GNDUL	PAUL	PULP	TIETL	KULK	HAUL	MDUL	GJUL	PULC
Computers In Library Administration	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Management Information System (MIS)	Budget provisions	No	No	No	No	No	No	No	No

Table 8 displays that all libraries are now using computers for administration, but no library is using computers for Management Information System (MIS).

TABLE 9 : PREPARATION OF IN-HOUSE DATABASES IN THE UNIVERSITY LIBRARIES

Description	GNDUL	PAUL	PULP	TIETL	KULK	HAUL	MDUL	GJUL	PULC
Current Periodicals	Complete Records of Current Journals	No	Biblio-graphical Information	Comp-lete records	Biblio-graphi-cal infor-mation	Biblio-graphi-cal Infor-mation	Biblio-graphi-cal Infor-mation	No	Biblio-graphi-infor-mation
Back Volumes	800 Records after 1993	No	In Progress	Compl-eted after 1996	In Progress	In Progress	In progress	No	In Progress
Theses and Disser-tation	4000	No	In Progress	Comp-leted	Comp-leted	Comp-leted	In Pro-gress	No	6000
Books	175000	Just star-ted	60000	Comp-leted	110000	Just star-ted	16000	Just star-ted	237000

Table 9 denotes the relative position of all the nine libraries with regard to the preparation of in-house databases.

TABLE 10 : NETWORKS TO WHICH THE LIBRARIES HAVE ACCESS

Description	GNDUL	PAUL	PULP	TIETL	KULK	HAUL	MDUL	GJUL	PULC
National Level									
I. INFLIBNET	No	No	No	No	No	No	No	No	Yes
II. ERNET	No	No	No	No	Yes	No	Yes	No	No
III.NICNET	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes
iv. I-NET	No	No	No	No	No	No	No	No	No
v. INDONET	No	No	No	No	No	No	No	No	No
vi. GISTNIC	No	No	No	No	No	No	No	No	Yes

International Level									
i. INTERNET	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ii. DIALOG	No	No	No	No	No	No	No	No	No
iii. JANET	No	No	No	No	No	No	No	No	No
iv.ChemicalAbstracts	No	No	No	No	No	No	No	No	No
v. Physical Abstracts	No	No	No	No	No	No	No	No	No
vi.BIOSIS	No	No	No	No	No	No	No	No	No

Library automation has three phases: computerisation of house keeping operations, networking and resource sharing. Table 10 provides the names of Networks at the national and international level to which the libraries have access and connectivity.

TABLE 11 : SERVICES OFFERED AT THE UNIVERSITY LIBRARIES.

Description	GNDUL	PAUL	PULP	TIETL	KULK	HAUL	MDUL	GJUL	PULC
Manual Services									
i. Reference	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ii. Lending	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
iii. Orientation of Users	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
iv. CAS/SDI	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
v. Translation	No	No	No	No	No	No	No	No	No
vi. Press Clipping	No	No	No	No	No	Yes	Yes	No	No
Mechanized Services									
i. Photocopying	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ii. Microfilming	Yes	No	Yes	No	No	No	No	No	No
iii. Microfilm Reader	Yes	No	No	No	No	No	Yes	No	No
iv. Audio-Video Service	No	No	No	No	No	No	Yes	No	No
Computerized Services									
i. Lending	No	No	No	No	No	No	No	No	Yes
ii. CAS/SDI	Yes	No	No	No	No	No	No	No	Yes
iii. Automated Translating	No	No	No	No	No	No	No	No	No
iv. Multimedia	Yes	No	No	No	No	No	No	No	Yes
v. E-Mail	Yes	No	Yes	No	Yes	Yes	Yes	No	Yes
vi. Teleconfer-encing	No	No	No	No	No	No	No	No	No
vii Hypertext/ Hypermedia	Yes	No	No	No	No	No	No	No	Yes
viii.Online Search	Yes	No	Yes	No	No	No	No	No	Yes
xii. CD-ROM Search	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
xiii.Tech. Communication (Desk Top Publishing systems)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

In addition to acquisition and organisation of reading material, the university libraries are the service organisations which bring users and ideas together irrespective of geographical limitations. Table 11 provides the services offered through manual, mechanised and computerised means at the university libraries of Punjab, Haryana and Chandigarh.

It is clear from the table that no library is providing automated translating, teleconferencing and desktop publishing service. Internet and also provided on line public access to library records created by the respective libraries. It is significant to note that all the libraries have started computerised services in one way or the other.

Table 12 highlights the accessibility and usability of respective libraries with the help of statistics.

Doing more with less and for optimum utilization of all the resources, librarians need to delete unnecessary, expensive and non value adding processes and have to limit the expenditure where law of diminishing returns has already started. Amidst business like approaches cost effectiveness and efficiency have become the slogan of the day in educational institutions. Now libraries are expected to mobilize their resources and have no alternative but to charge for the services.

It is to be noted that no university library is maintaining uniform cost statistics. For efficient and effective acquisition, organisation and dissemination of information, cost analysis is the need of the hour. An attempt has been made to investigate the unit costs so as to differentiate which university library is effective and efficient in overall administration and management.

Table 13 shows that the unit cost of each book acquired by purchase is lowest (i.e.Rs.237.75) in PULP and highest (i.e.Rs1803.55) in HAUL, while processing cost of each book is lowest (i.e.Rs.29.65) in TIETL and highest (i.e. Rs.732.67) in PAUL.

Total library expenditure per user is highest (i.e.Rs.4543.27) in PAUL and lowest (i.e..Rs. 1960.84) in KULK. The stationary cost per book is highest (i.e. Rs5.20) in PULC and lowest (i.e. Rs 4.10) in TIETL. The overhead cost per book is highest (i.e. Rs26.19) in PAUL and lowest (i.e. Rs 3.15) in GJUL.

TABLE 12 : ACCESS AND USE STATISTICS OF NINE UNIVERSITY LIBRARIES

Description|Libs	GNDUL	PAUL	PULP	TIETL	KULK	HAUL	MDUL	GJUL	PULC
Timings On working days	9 a.m.- 8 p.m.	8-9 pm	8-8.15 pm	9-8 pm	9-8 pm	7-8 pm (S) 8.30-9 (pm-(W)	9-8 pm 9-12 night exam	9.30-pm exam	9-10 pm, rear Hall 24 hours 9-10 pm
On Sundays and Holidays	9 a.m.- 5 pm	8-5 pm	8-8.15 pm	9-5 pm	9-5 pm	7-1.30 pm (S) 9-4 pm (W)	9-5 pm	9.30-10.00 pm 9.30-5 pm	

Total working hours	3744	4077	3573	3544	3956	4224	4164	3980	4320
Total Books issued in a year	27130	72000	29379	27845	41579	121885	34800	18720	124000
Total Books consulted in a year	128000	162000	137500	52692	89200	536060	14000	55690	101000
Total visitors of the library	108000	170600	98000	42730	91200	169144	107600	43730	252000
Reference queries	9000	18250	11500	8200	10760	25400	12600	72000	95760
Total Zerox copies	32600	98600	97672	37560	72890	184000	170000	67560	280760
Book exhibition	5	5	5	3	4	6	8	4	9
Active Collection	65476	54560	61569	9889	51464	33680	45600	5480	120360
Research output	903	4865	1011	951	560	5767	567	198	1642
ILL	42	34	41	14	39	38	30	15	45

Source : Circulation Counter of respective university libraries

4 ACCESSIBILITY, USABILITY AND AVAILABILITY (FIRST THREE LAWS AND LIBRARIES)

Except Guru Jambheshwar, all the other universities have their permanent library buildings. All the university libraries except Kurukshetra University Library are following Dewey Decimal Classification schemes for books and periodicals and Classified Catalogue Code for cataloguing. The catalogues of the libraries are being maintained in two parts (1) alphabetical part in single sequence and (2) classified part. After 1997 all the university libraries have started using library of congress subject headings and AACR II for cataloguing purposes. Except PULP and KULK, all the libraries have started generation of catalogue cards through computers for the new books and have created separate sequence for computer generated catalogue cards.

As per use statistics HAUL is the most used library. But as per observation, interaction with users, alumni, focus groups, staff, and librarians, PULC is the most used library amongst all. In general the interlibrary loan arrangement of books is reciprocal. All the nine libraries lend out documents to participating libraries on demand. There is no formal collaboration among these nine libraries of the region.

TABLE 13 : UNIT COSTS IN UNIVERSITY LIBRARIES[3]

Name of University Library	GNDUL	PAUL	PULP	TIETL	KULK	HAUL	MDUL	GJUL	PULC
Unit cost by purchase	333.41	406.68	237.75	354.10	415.76	1803.85	284.33	1250	284.75
Salary of Acquisition And Technical staff per Book	303.11	701.48	198.68	21.75	273.72	312.68	289.54	378.99	311.28
Stationary cost per book	4.40	5.00	4.92	4.10	4.30	4.90	4.20	4.50	5.20
Over head cost per book e.g. Rental value, Electricity, telephone, AC, Water, Furniture, Maintenance etc.	4.70	26.19	4.74	3.80	4.60	6.50	4.40	3.15	6.11
Processing cost per book	312.21	732.67	208.32	29.65	282.62	324.08	298.14	386.64	322.59
Average total cost of a book acquired by purchase (unit cost + processing cost)	615.62	1139.35	446.07	383.75	698.38	2128.65	582.42	1636.64	607.34
Staff Salary cost per user	2536.99	2909.99	3567.69	953.75	1085.36	1317.80	846.86	978.26	980.44
Salary cost per Added book	1538.65	6360.30	1394..35	165. 00	1435.33	2254.09	1044.11	1170.85	1012.25
Salary cost per book in library	34.50	35.30	33..35	32.80	23.72	31.32	19.49	86.92	14.10
Library expenditure per user	4281.26	4543.27	5866.79	3453.03	1960.84	3132.91	2084.22	2735.50	2269.52

4.1 Acquisition Policies

No standardized and well-defined acquisition policy based on University's interest profile, production of literature, publication costs, unit cost, users demands and availability of budget is there in the university libraries. Most of the books are selected on the basis of following order of priority (1) Exhibitions/approvals, (2) Publishers catalogues/Trade bibliographies, (3) Reviews and subject literature, and (4) User requests and requisitions. Moreover 90% of the books are selected in the last quarter of the financial year.

4.2 Physical Organisation of Library Collection

The entire holdings of all the nine libraries have been divided into five collection: Reference collection, text book collection, general book collection, closed collection, and periodical collection. The physical organisation of all the publication in all of these collections is by call number. Loose issue of current journals are displayed by broad subjects.

4.3 Stock Maintenance and Verification

No university library has regular system of stock verification. Except PULC no library has a well defined weeding out policy for pruning the collection.

5 SUGGESTIONS

The library and information scientists cannot be silent spectators to this dismal picture of the university libraries. Development and management of libraries in this cyber age and in the context of global village needs altogether a distinct, integrated and proactive approach from that of traditional, conventional and passive one. A step-by- step approach needs to be addressed further for desired level of Information Management.

- Identification of information needs by studying subjects, users, organisation and regular scan of information environment of the universities.
- Formulation of information resources development policies on the basis of identification of information needs and environment, so as to map the needs accordingly at comprehensive level, research level, study level, basic level, and minimum level.
- Selection and acquisition of information resources as per

information resources development policy. It also includes Internet resources.

- After acquisition of information resources from different and diverse sources it requires information analysis, processing, consolidation, storage and organization of all the resources.
- After this process a suitable information infrastructure is to be developed in the university libraries in line with the information resources development policy.
- After storage and organisation of information resources it is essential to manage information resources for optimum use through evaluation, weeding and pruning, conservation and preservation.
- On the basis of feedback, information resource policy and capabilities of the university libraries it is essential to determine quality and effectiveness in the library services.
- Ensuring staff empowerment with knowledge, skills, dignity and attitudes (12).
- Cost benefit analysis at service level, operation level and macro level is essential to speak the business language.
- Redefining vision, mission goals, objectives, customer and reinventing librarianship through (PDCA) and Review of methods, techniques, processes and standards accordingly.
- Reallocation of budget for modernisation and networking.
- Regional library network of Punjab, Haryana, Himachal Pradesh and Chandigarh (PHHCLIBNET) on Star topology for regional cooperation and networking (13).
- Information resources in all formats will ensure rigorous convergence of digital culture with print culture to avail the benefits of both.
- Standardised Information infrastructure needs to be developed as an important tool for IM and KM in university libraries because arrival of entire publication works on Internet is a challenge for library and information.scientists. To overcome this problem, INFLIBNET (UGC) has taken initiatives during the last few years

for the modernisation and networking of academic and research libraries. Currently INFLIBNET is developing eight bibliographic and non-bibliographic database i.e. current serials, serial holdings, secondary serials, theses, books, projects, experts and university information systems. It has also developed special search engines to access these databases over Internet through many access points. University libraries can enhance their information resources through Internet access.

- Moreover, Internet provides contents of books and periodicals and current articles through Contents direct Science direct and Uncover. University libraries can access these Internet Resources and can ensure data warehousing and data mining through Internet and Intranet by digitising the information and can also provide e-mail service, CAS, Bibliographic service, cataloguing service, newsletter service and other IT based services, communication based and media based services.

6 CONCLUSION

IT has shifted the role of a library from a storehouse to gateway and reduced the whole world into a 'global village'. University libraries should rationalize their information resource management activities in line with global level otherwise it will be very difficult to meet the current and future information requirements of their users. Despite major player of information sector university libraries are largely busy in library administration. A long and tedious path via library management, documentation, information resource management, information management, and knowledge management is all set for smooth and safe journey in the new millennium. The culture of doing more with less for the king has to be cultivated and nurtured simply by speaking few words in praise of the task master by the so called top man with full commitments, in all sincerity and spirits of a true role model. Human resources of the university libraries are willing and potent enough to act in line with the new agenda to manage not only information resources but also global information and knowledge in the initial stage of the new millennium. Tools and techniques such as IT, identification of information needs, formulation of IRM policies, employees training, organisational learning, bench marking, TQM and reengineering may help the university libraries to become commercially viable, socially desirable and economically active systems in the near future.

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29
INTERNET FORUM IT'S A WWW LIBRARY

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ABSTRACT

This paper discuss that Internet basically is a www library and allowing to work as an online access information tool. How seamless integrated environment can be created and retrieving electronic/digital resource? The client/server infrastructure is necessary for distributing technology, and how client can access e-resources, use e-services available on www library. At the end we give a brief details of information sources available on web.

1 INTRODUCTION

Every decade the aspects of information management are changing and interdisciplinary ideas are emerging. Here for the LIS's professionals, the Internet is nothing, just an Online Information/ database Accessible Tool, which facilitates to users/clients to access the w-library globally, round the clock from their remote centers. WWW is now a global library, it is a union database of the Universe, where almost millions of databases on different subjects are available. It is completely in the form of digital i.e. text, audio, visual, image etc. WWW is the library of Web database, which is maintained in different files (sites). It is not easy task to get your matched information from the w-library, to get efficient information from it, user must know search tools and strategies. We discuss about these under the following themes.

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2 INFRASTRUCTURE OF WWW LIBRARY

The infrastructure of w-library is based on distributed network technology or client/server technology. The distributed information system is a collection of web sites/libraries, which is to be connected via a communication network in which multiple databases/servers contain its own database and end-users/clients can access e-resources at any where in the network at the same time. In this case every site having its own databases and accessing rights and provides user name and password to users/clients to access w-library from its server database. It uses distributed query processing, means if client is in India and databases is located at different places. The query involved is to send the request and receive messages. Distributed database accessibility is faster because multiple site processing is parallel and it's own small database. Most of the w-libraries are using ***Distributed Information Processing Protocol (DIPP)*** it is used to publish digital/electronic information on distributed integrated environment. This protocol supports to application program interface (API) and also used sending and receiving messages, saving files.

3 SEARCHING OF WWW LIBRARY

Mmillions of pages information are available on the web, it is very hard to search the relevant information from the w-library. To retrieve relevant, consistent and useful information within a pleasant time, the user should know about the **tools and strategy** of surfing e-resources or information through web.

3.1 Tools: Basically tools are computer programs, which enable a users/clients to retrieve information/e-resources from the web site. They are the means to capture the information from the particular database i.e. a Web site. Each web site comprises its own information server and each Web site has different database. So to search right information from the right Database we uses basically four types of tools as follows,

3.2 . Subject Search (Index Search): If you want to search general information on a particular topic/subject then use this search, because it is a hierarchical search based on parent/child concept, that means, starts with a general subject heading and provide hyperlink to more specific sub-headings. It is easy to use. Indexing is so time consuming and limited. Thus, directory databases are small and their updating

is not frequent.

3.3. Keyword Search (Search Engine): It is used to retrieve specific information and provides, a list of references or hits is known as Keyword Search. In that case the database is larger and more current, instead of directory search tool. Due to its broader coverage and complexity, it will require more explanation rather than index search.

3.4 Subject with Keyword Search (Index with Search Engine): The combination of both the subject and keyword search methods is called Subject with Keyword Search. The subject and keyword search is also known as *coordinated Search*. This search tool reaches you to more near to your query and gives you the best output. It is not very useful for the complicated searches, some search tools uses keyword search and subject searches separately are said to be non-coordinated.

3.5 Meta Search Tool (Multi-Engine): In such a search tool, lots of search engines are used in a parallel way to retrieve e-resources/ information as a result. Search is basically based on keywords with some operators or natural language. It is not more useful tool for the complicated searches.

A quick view over the useful Search Tools

Index Search	Keyword Search	Meta Search
Yahoo! Google,	Hotbot	Metacrawler
Encyclopedia of Britannica	Infoseek, Excite Northern Light	Mamma Dogpile

3.6 Strategy:

It is the more compact and organized instructions for composing a query in search tools. A logically presented query gives the maximum output. For this purpose we use some Operators and each search tool uses its strategy (operators), but almost all Search Tools use some common operators, they are as follows:

A. Boolean Operators: also called logical operators are used when we want to test more than one condition and make decisions. The following four logical operators are,

AND: It retrieves e-resources in which both of the keywords are present. **OR**: It retrieves e-resources in which at least one keyword is present.
NOT: It excludes any document having that keyword.
NEAR: It locates the document near to that Keyword.

B. Phrases: In such a search Keywords are covered with double inverted comma. Sometimes they are supposed to be single keyword/ term. It acts more often as NEAR Boolean operator. **E.g. "Internet for librarians"**

6. Plus / Minus; when using these strategy never leave any space among them otherwise responses may not be satisfy your query.

- **(+)** It is used before the keywords, which searches only that documents who are having that keyword and it is more like to AND operator.
- **(-)** It is used before the keywords, which extract that keyword from the documents it is more like to NOT operator.
  E.g. +library +services –science

5. Truncation: It is called wild card and Asterisk (*) is used for the search purpose. It is more like to dictionary search. It discloses all the documents near to that of alphabetic sequence in the keyword. E.g. Lib* then it may be disclose lib, library, libraries, librarian, etc.

4 TOOLS OF WWW LIBRARY

The database available on w-library are very vast and it is not easy to retrieve needful information from them. For a new user it is difficult and typical task, to come out of this problem. Before using the w-library, he user should know which tool is used for which search. Some of are as follows:

4.1 Google

Home Page Address http://www.google.com/
Search Method: keyword Search
Database: Very large.
Operators: Plus/Minus, Quote Marks
Features: return only pages that match all the terms in the query and also where the terms are in close proximity. It's very sophisticated database and easy-to-use.

4.2 Yahoo!

Home Page Address: http://www.yahoo.com/
Search Methods: Subject with coordinated keyword.
Database: 1 million subject sites.
Operators: Boolean, Plus/Minus, Quote Marks, Wild card, and Case sensitive
Features: In the case of keyword searches, it will return only sites that contain all search words. If there is no exact match then automatically referred to Google.

4.3 HotBot

Home Page Address: http://www.hotbot.com
Search Method: keyword with subject, and provides an extensive list of Popular Sites under three categories.
Database: Full text search
Operators: Boolean, Plus/Minus, Quote Marks, Stemming, Case sensitive
Features: Provides pull-down menus and buttons for refining and focusing search.

4.4 nfoseek

Home Page Address: http://www.infoseek.com/
Search Method: Keyword with subject search.Database: Full text, 50 million Web pages.
Operators: Plus/Minus, Quote Marks, Stemming, Case sensitive

Features: Provides an extensive list of Popular Sites accessible from the Home Page. It is one of the fastest and most accurate search tools on the w-library.

4.5 LookSmart

Home Page Address: http://www.looksmart.com
Search Method: Subject and also provides a keyword search using its own database.
Database:Verylarge
Operators: Not necessary.

Features: Its very easy to use on magazine format and automatically extends its search through use of AltaVista if needed.

4.6 Mamma

Home Page Address: http://www.mamma.com/
Search Method: Meta search.
Database: That of search engines employed
Operators: Boolean, Plus/Minus, Quote Marks, Case sensitive
Features: It's a large listing of magazines and newspaper, which will gives various subject headings. It searches 7 search engines with parallel.

4.7 AltaVista

Home Page Address: http://www.altavista.digital.com/
Search Method: Keyword with subject.
Database: Full text.
Operators: Boolean, Plus/Minus, Quote Marks, Wild card, and Case sensitive
Features: Provides ways of specific search. One of the largest databases and most effective search systems.

4.8 Britannica

Home Page Address: http://www.ebig.com/
Search Method: Subject with keyword.
Database: Britannica.
Operators: Boolean, Quote Marks, Case sensitive
Features: It's easy to use in magazine format and provides a full, high quality description of its subjects. It covers science, arts, history and geography.

4.9 Northern Light

Home Page Address: http://www.northernlight.com/
Search Method: Subject with auxiliary keyword.
Database: Largest and frequently updated.
Operators: Boolean, Plus/Minus and Quote Marks
Features: Provides a subject list over 1800 journals, reviews, books, magazines and news wires. These documents are not accessible to other search engine.

Services of WWW Library

It's Information Server provides a lot of e-services, some useful are

4.10 Electronic Discussion Forum: It is just a open online discussion bench, where anyone can put their e-query for discussion and the e-query is forwarded by the agency to each and every member of that forum automatically. The queerer can discuss about his/her query on line.E.g. I.I.Sc. Bangolore is continuing their "List-Forum" program for the LIS professionals.

4.11 Bulletin Board Services: It is online Current Awareness Service, which interacts user about the latest and forthcoming products, services to the users.
E.g. http://www.timesofindia.com

4.12 Electronic Mail Facilities: It is a technique for communicating message with other user/client electronically. User has their email address, may be web-based mail or pop mail account on the internet/ intranet. User/client can create web based mail account while pop mail is to be created by administrator. Person can communicate, one to many and vice-versa and gets their mail (text, image, audio, video etc.) in real time, which stops time, paper & some other panic tasks. It is one of most popular on-line service because of being free. Eg. http://www.mail.yahoo.com, http://www.excitemail.com, http:// rediffmail.com etc.

4.13 Electronic Reference and Information Services: It is most useful online service, in which user can get information directly or referred to the other database via hyperlink, where the information is. So it also works as an online referral Centre.Eg. Dialog Service, STN Service etc.

4.14 Electronic Cash/Payment System: It is the best service for the E-commerce and E-business by which user can make their business, trade and shopping on-line. E.g. credit card, e banking.

4.15 Chat Forum: It is a full duplex process means one-to-one, one-to-many, and many-to-one, user/client can communicate each other's, at the same time from different places. This is very useful service for the researchers. They can move to chat room and discuss about their problems to the specialist at the real time. Lots of agencies providing this facility absolutely free. Video conferencing is the revolution in this field. Eg. Yahoo, Hotmail, Rediff, etc.

4.16 Full Text of E-Resources: It is some extraordinary service of w-library, in the field of e-resources (Journals, books, etc.). The online accessibility of them not only a part of them but also full text too. A number of users can access information/e-resources at the same time, which affects the user by time, and to organization by the Fund. E.g. The Elsiver provides this service http://www.sciencedirect .com

Information Sources on WWW Library

It's a vast web library, so user should know the addresses. Here are some important w-library addresses, through which users/clients can access relevant e-resources.

Computers

http://computer.org
http://www.ibm.net
http://www.att.com
http://www.compaq.com

Databases

http://www.dialog.com

Encyclopaedias

http://www.elibrary.com
http://www.eb.com

REFERENCES

1 http://www.reference.com
2 http://www.infotoday.com
3 http://www.india.org
4 http://www.library.com
5 http://www.whowhere.com
6 http://www.whitaker.com
7 http://www.asia-inc.com/who
8 http://www.onlineinc.com
9 http://www.loc.gov
10 http://www.lib.umich.edu
11 http://thorplus.lib.purdue.edu/vlibrary/
12 http://dlt.gsfc.nasa.gov

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KNOWLEDGE MANAGEMENT FOR BUSINESS

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ABSTRACT

With the advent of new technologies, such as data mining, intranets, video conferencing, and web casting, several technology vendors are offering such solutions as panaceas for the business challenges of the knowledge era. Knowledge Management is starting to gain recognition in various business organizations as a requirement for customer responsiveness, innovation, and more efficient knowledge workers. The new world of business imposes the need for variety and complexity of interpretations of information outputs generated by computer systems. Such variety is necessary for deciphering the multiple worldviews of the uncertain and unpredictable future. Knowledge Management focuses on ways of sharing and storing knowledge, as a means of improving speed and efficiency of the system and provides the timely multifold information. It continues to demand the attention, time, and energy needed to develop a successful and profitable business. However, the Knowledge Management process is highly complex, involving many stages and addressing many different needs. For this reason, no vendor currently provides a complete, comprehensive suite of products. The best knowledge management plan can only be implemented with a meld of different products, including software, and services. As KM shifts the emphasis from single-handed information to the formal and informal processes that use the information, new KM practices are more focused toward changing an organization's climate, as companies seek to find ways to identify the types of knowledge they have and what they need to prosper and grow.

In this perspective, the objective of business strategy is not to indulge in long-term planning of the future. Rather, the emphasis is on

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understanding the various future world views-using techniques, such as scenario- planning. The main objective of this paper is to explain the value of knowledge management in a business organization and further it provides some innovative suggestions for developing effective business strategies through knowledge management system.

1.INTRODUCTION

Today most of the business organizations have realized that there is much more to knowledge transfer than in the past. They have seen their competitors leap ahead by using technology and sound knowledge transfer principles to create dynamic collaborative environments. Such environments delivers knowledge strategically-when and where it is needed and to the people who need it. Today's marketplace is full of Vendors and Consultants ready to sell the Knowledge Management solution. While there are many worthwhile ideas and technologies, it is clear that Knowledge Management is not a system or technology, but rather a culture and environment, enabled by technology, people and processes.

With continuously emerging work roles, the unlocking of an enterprise's information to members at every level has become essential to ensure that each has the knowledge, skills and authority to be productive. These new work roles demand that every individual have access to the correct data and knowledge in order to make their own effective business decisions. With the rise of organizations seeking ways to manage their knowledge has come the desire to share strategies with peers.

Every discussion on Knowledge Management (KM) activities or philosophy establishes a definition of what constitutes Knowledge and how it should be managed. Knowledge Management initiatives have many different objectives. It is safe to assume that most, if not all, include a goal of enhancing the individual's ability to positively influence the processes that an organization utilizes to create value. After all, if an organization does not create value, it will not grow and prosper. Additionally, this value must be achievable at a cost to allow for a reasonable profit. In other words, what the organization deems as valuable must be perceived as valuable by the marketplace. So not only is there a goal associated with the individual knowledge worker, there is an additional goal associated with understanding the client and marketplace.

The word knowledge can be defined as an understanding that is acquired through personal experience or the study of factual information. Knowledge Management is a concept in which an enterprise gathers, organizes, shares, and analyzes the knowledge of individuals and groups across the organization in ways that directly affect performance. It is about helping people communicate and share information. Knowledge Management envisions getting the right information, in the right context, to the right person, at the right time, for the right business purpose.

Knowledge is collected from all existing sources including people, systems, databases, file cabinets and desktops. All knowledge of value is stored and categorized as data in an organized repository. This knowledge can be immediately conveyed to those people and systems that need it, whether it's through an enterprise portal, collaboration tool, or knowledge transfer process. The right knowledge will go to the right person or system at the right time. Current knowledge can be retrieved from the system's archives at any time in the future. As knowledge becomes obsolete or expires, that knowledge can automatically be removed from the system.

2 KNOWLEDGE MANAGEMENT STRATEGIES

With the emergence of more and more technologies attempting to manage an organization's knowledge, a consolidation of strategies for deploying Knowledge Management applications is beginning to develop. These strategies transverse the spectrum of "This is the way we do business" to "Each individual is responsible for knowledge creation & management".

Following are considered as some of the key strategies for deploying Knowledge Management initiatives :

2.1 Knowledge Management as a Business Strategy – This strategy views knowledge as a key marketplace differentiator, or more specifically, as a product. Companies that pursue this strategy believe that KM is a core competency and critical to the health of the business as a whole. The KM strategy is tightly aligned and integrated with the company's global business strategies.

2.2 Transfer of Knowledge and Best Practices – This strategy is the most widespread, focusing on systematic approaches to knowledge reuse and transfer of best practices. It also focuses on moving knowledge to where it will be used to improve operations or

be included in products and services. The strategy aims to design systems and practices to obtain, organize, restructure, warehouse or memorize, reward, repackage for deployment and distribute knowledge.

2.3 Customer-Focused Knowledge – This strategy is focused on capturing knowledge about customers, developing and transferring this knowledge as well as understanding customer's needs and preferences.

2.4 Personal Responsibility for Knowledge – Companies that view this strategy as important believe that individuals should manage their own knowledge environments. For this strategy to succeed critical information and knowledge must be available in easily accessible and reliable knowledge based repositories. Critical success factors for this strategy are identifying content owners and implementing disciplined processes to ensure that the repositories are current and reliable.

2.5 Intellectual Asset Management – This strategy views items such as patents, copyrights, trade secrets and trademarks as information assets. If managed properly, these assets can provide not only short term returns, but also they can energize the future success of the organization. For obvious reasons, not many organizations are in a position to implement this strategy.

2.6 Innovation and Knowledge Creation – This strategy emphasizes innovation and the creation of new knowledge, through both basic and applied research and development.

In summary, having a strategy underlining a significant initiative of any kind is not revolutionary. Categorizing these efforts should be looked upon as no more than an evolutionary process in the goal to improve, cultivate, and grow the organization (i.e. maximize value). The important point to note is that designing and implementing an initiative grounded in KM is no different than developing and deploying any other program. One must have a sound strategy that should be relevant and supportive for the business.

3 DRIVING FORCES FOR KNOWLEDGE MANAGEMENT IN BUSINESS

3.1. Technologies-As mentioned previously, no single technology fills the criteria required of a KM system. The following technologies can play an important role in developing effective Knowledge

Management strategies :

3.1.1. Internet and Intranets – *ideal environments for finding, distributing and sharing information.*
3.1.2. Document Management – *repositories of important corporate information, valuable tool for document creation, processing and review.*
3.1.3. Workflow/GroupWare – *facilitates the exchange of information. Helps turn tacit into explicit information.*
3.1.5. Imaging – *captures the hardcopy explicit information of an organization electronically.*
3.1.6. Information Retrieval Systems – *integrated search engines that facilitate locating information.*
3.1.7. Electronic Publishing Systems – *facilitates delivery of information in a consistent format regardless of its source, author or location.*
3.1.8. Push Technologies and Agents – *automates the transfer of information to end-users.*
3.1.9. Data Warehouses and Data Mining Tools – *facilitates decisions based on complex sets of data and relationships.*

3.2. Metrics-The most meaningful metric of KM initiatives is whether the organization is "creating more value". This is obviously a difficult thing to measure and this paper will not profess to have the answers necessary for establishing this metric. However, as with any paradigm shift, tools must be implemented that allow managers to manage and verify usage, locate performance bottlenecks and measure the improvement of organizational knowledge transfer.

3.3. Approaches - Search engines, corporate Intranets and other such technologies are generally used to solve the problems associated with KM initiatives. But implementing a KM system is not a project with a beginning and an end. Most of the business organization are unable to measure KM initiatives with traditional project management techniques alone.

One approach that is achievable today is a "document-centric" view. These documents contain information and knowledge which can be very useful for the business organization. This "document-centric" approach consists of focusing on existing documents, assessing their value quotient to the organization, and applying the proper filters to them (to ensure their correct placement in a repository). After this analysis, a subset of documents that contain knowledge, or that may be used to create knowledge, are identified.

Once this repository is created, the value to the organization is two-fold. First, a middle level management can use this for tactical initiative and to develop the strategic policies for the betterment of the business. Second, business will receive proper support from the end-user community.

The paper summarize the key points to the document-centric approach as :

- Focus on information/knowledge currently in an explicit form (i.e. documents)
- Identify what type of information/knowledge is of value to a large part of the organization
- Invest in the time to guarantee the information/knowledge will contain value (i.e. filters)
- Identify the main consumers of the information/knowledge, their retrieval methods and preferences and how the information/ knowledge contained in these documents is used by them
- Code and classify the information/knowledge so retrieval is easy, relationships are manifested, and strategic value is obtainable
- Spend adequate time on understanding what metrics the main consumers of the information will use to measure the value of the system

4 MAJOR ELEMENTS OF KM FOR SUCCESS

Further this paper highlights some key elements which can be considered the most important and valuable for the success of the business organizations :

4.1. Data and information- Data and information should be managed before knowledge. Since knowledge is an outgrowth of data and information, it is necessary to ensure that instruments and processes first address these two primary elements. The effective methodology could be , to define an enterprise document taxonomy. The enterprise taxonomy can be used to prepare meaningful access and retrieval schema. It can also assists in determining appropriate filters as well as document relationships and any requirements for inter-departmental sharing and transferring of data and information. The investment of time and resources up front to determine a meaningful enterprise indexing schema pays enormous dividends in an

organization's ability to roll-out a consistent and effective long term strategy.

4.2 Identification and recognition of Content Owners -Content owners must be identified and recognized. Ownership is a very important aspect to delivering the initial repository as well as maintaining it over time. The term "ownership" does not refer to typical administrative duties, such as those associated with systems administration and security. The term does, however, refer to the replacing and rejuvenation of data, information, and knowledge. It is during the latter stages of the initiative that ownership, as well as organizational recognition and support of content owners, is most important. It is during these later stages that the credibility and integrity of the content is the most important consideration in whether the organization will trust, and believe in, the content that is available. Additionally, most organizations assign the ownership to a person rather than a "role" or "functional group". The assigning of content ownership solely to an individual is doomed to failure due to many environment variables. Three of the more common of these are politics, re-organizations and downsizing.

4.3. Technology and process-Technology is important but understanding the process is more important. Assuming that a robust technology will be sufficient in sustaining the initiatives underlying a KM deployment is a mistake. More often than not, processes do not exist in the current business model to support the work required to create the initial repository as well as keep it viable (i.e. adding to and replacing content). We have observed that most of the business organization works vigorously to deploy new technology but forget to design new processes to support it.

4.4. Identification of a problem set or opportunity-Identify a problem set or opportunity from the big picture. Entertaining implementing a KM initiative without a focused scope will significantly reduce our ability to deliver anything of substance. The vast amount of information in the business organization will quickly overwhelm our ability to prepare a plan and execute timely. The paper suggest that the organization should focus on specific applications and needs. By doing this, a project scope can be created, monitored and measured. Although every area of the business should ultimately be addressed, one should remember that KM initiatives are evolutionary in nature.

4.5. Standards & Models-Define standards, develop models that depicts where data, information & knowledge are available. This paper refers to this process as creating a "Knowledge Map". A Knowledge Map grows from a solid document taxonomy. This is a crucial step, as it will allow us to implement locally while maintaining a strategic perspective. If this step is done with the proper focus, it will provide the basis for a powerful tool that can be used to map the arterial system used by the organization to create knowledge.

4.6. Identification of filters and criteria for repository population
Most the people thinks of information and knowledge in terms of documents and databases. We should also considers these in terms of people and roles. A KM initiative should include a way of identifying people based on skills and knowledge area. If something like this already exists in the organization attempt to bring it under the KM umbrella. It is fairly difficult to share and transfer if we don't know whom we should be sharing and transferring with. If all of the data and information in the organization is put into the repositories, these repositories will be of no value to the end-users. Significant thought, and in some cases resources, must be applied to guarantee that the information accessible is of a manageable lot and is of value. Many initiatives have failed due to the content becoming meaningless and unmanageable. Proper processes and filters must be applied to the input side of the equation.

5 CONCLUSION

Although most initiatives labeled as Knowledge Management contain familiar elements, Knowledge Management's focus on the enterprise and organizational learning make it more than a new consulting language or 'catch-phrase'. Additionally since the definition of knowledge has as many meanings as there are organizational objectives and vision statements, finding a common ground and sure-fire strategy for implementation is difficult. The paper emphasize that whatever the strategy is, it must support most, if not all, then some of like : capturing, sharing, transferring, learning, leveraging, and replacing. Understanding these actions, their relationship to the organization's data and information flows, and the relationship of these flows to the organization's value chain is crucial to establishing a solid foundation for KM initiatives. If there is a business philosophy that resembles Knowledge Management, it is Total Quality Management (TQM). KM and TQM share a similar focus on continuous improvement and empowering individuals to improve

business processes. In both cases, it is necessary to create a cultural environment that encourages employees to support these initiatives. It is also important to establish metrics to monitor the progress and success of the program. TQM's goal is to help organizations "do the right thing right the first time", KM's immediate goal is to identify what knowledge is, establish processes to capture, code, and replace it, and provide easy to use single point of access interfaces to exploit it.

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RECLAMATION OF INFORMATION IN COMPUTER BASED COMMUNICTION SYSTEM

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ABSTRACT

(The rapid advancement of computer networks generated the concept of Computer Mediated Communication (CMC) that is a new subject of study. The scholars feel the obligation of study through this Communication Mediated Communication with a view to get a transformed, authentic, instant and transparent information for exploring their research. In the present technologies using various means of communication such as CD-ROM, Database, and Digital Scanner etc. can be espoused for congregating of data in electronic form. This paper throws light on the various aspects of retrieval of information in various electronic structures, techniques including model of information retrieval)

1 INTRODUCTION

In the present state of Information technology, telecommunication technology and computer technology propagate a polar role in searching and retrieval information. The wide adoption of computer networks has been one of the most authoritative developments in technological revolution. The rapid advancement of computer networks generated the concept of Computer Mediated Communication (CMC) that is a new subject of study. The scholars feel the obligation of study through this Communication Mediated Communication with a view to get a transformed, authentic, instant and transparent information for exploring their research. Transmission of information from one computer to another through networks is the

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most integrated function of the computer. The swift application among the worldwide scholars places it at the forefront of new information technology, as on-line transmission of information is the most effectual tool that has been extensively accepted by the scholarly person at large. In the electronic, the abecedarian concern relates to the processing of information handling that is blended with information generation, collection, storage, processing, and dissemination including its utilization by the right reader in right time and the feedback. The information stored in various magnetic form through electronic form such as CD-ROM, Digital Scanner, LAN, WAN, Ariel Photography, Motion Picture and above all Web Browser could reach to the users' PC in a very transformed and crystal form. The triumph of data in electronic form from an assortment of electronic resources in the ambit of communication technologies establishes the real hub for information retrieval. The electronic resources are altogether diverse than that of traditional library resources. Electronic information is delivered in new and rapidly changing formats.

2 RETRIEVAL OF DATA IN ELECTRONIC STRUCTURE

In the present technologies the following means of communication can be espoused for congregating of data in electronic form. The acquisition of electronic data crosses the traditional boundary of library organizational structure. The principal categories of information sources useful in modern information systems are text, video, and voice. The electronic data, which is the need of the hour, can be achieved through (http://www.luton.ac.uk/Convergence):

2.1 CD-ROM;
2.2 Database;
2.3 Digital Scanner
2.4 LAN;
2.5 Ariel Photography;
2.6 Motion Video;
2.7 Internet;
2.8 Web Browser;
2.9 Multimedia.

2.1.CD-ROM

The CD-ROM (Compact Disk- Read only Memory), the most befitting electronic media is an optical medium of preference for millions of organisation leading to the generation of Optical Information Storage System (OISS) through CDs at par with e-publishing for its storage

of good quantity of data. This is viable due to its stability, gemstone presentation and affordability. CD-ROM plays a pivotal role in transfer of information including its storage of data in the Libraries and Information Centers. Further, the information stored in it facilitates reliable, authentic, quality of information and easy accessibility. CD-ROM due to its high storage capacity of 600MB to 700MB found a rapid commercial acceptance as an alternative to the floppy disk that has a storage capacity of 1.44MB. With the emerging of new technology, CD-ROM has now been replaced with CD-RW and then to DVD technology to handle the proliferation of ever-larger multimedia files such as, audio, graphic, video etc. including computer games, educational software, and electronic encyclopedias. The digital storage technologies make it economical for some to obtain for personal possession those collections equivalent to the holdings of entire libraries and archives. Alternately, access to information resources on electronic networks permits the accumulation of highly individualized personal or corporate collections in analog or digital form or a combination of both. (Encyclopedia CD-2001). The CD-ROM is being used for recording of textual, audio and visual data. One CD-ROM can store approximately 300000 A4 size pages/ 450 high density Floppy Disks (Kapila, 1997,p.1).

2.2 DATABASE

With the emergence of digital technology, Database performs the real hub of information retrieval. The Database is also known as Electronic Database as it is operated through electronically. The Database is a culmination of data elements that are integrated across many applications and are consistently available to wide users without any geographical boundary. Databases are structured to facilitate the storage, retrieval, modification and deletion of data in conjunction with various data processing operations (Encyclopedia CD- 2001). Databases are stored on magnetic disk, tape, and optical disk, Compact Disk along with other secondary storage devices. A database consists of a file or a set of files. The information in these files may be broken down into records, each of which consists of one or more fields. Fields are the basic units of data storage, and each field typically contains information pertaining to one aspect or attribute of the entity described by the database. Using keywords and various sorting commands, users can rapidly search, rearrange, group, and select the fields in many records to retrieve or create reports on particular aggregates of data. The computer, scans the database in a corresponding sequence and provides the source materials in which the character as required by the user.

Database management system is the key factor to support and control the overlapping and relational data file. The structure of the database in a structured form is the Data Model, which is a collection of conceptual tools for describing data, its relationships, data semantics. The databases models can be grouped as under:

2.2.1 Flat Database Model;

2.2.2 Hierarchical Database Model;
2.2.3 Relational Database model;
2.2.4 Network Database Model;
2.2.5 Object based Logical Model;
2.2.5.1 Entity Relationship Model;
2.2.5.2 Object Oriented Database Model;
2.2.1 Flat Database Model:

The records that are arranged according to a simple list of entries are classified as Flat Database Model. The records recorded in personal computer are basically flat in structure.

2.2.2 Hierarchical Database Model:

In Hierarchical Database Model, the records are organized in treelike structure with each level of records branching off into a set of smaller categories.

2.2.3 Relational Database Model:

Relation Database Model has multidimensional tables each representing in rows and columns a specific entity-type or relation to the master table. Relational databases are used where associations among files or records cannot be expressed by links; a simple flat list becomes one row of a table, or "relation," and multiple relations can be mathematically associated to yield desired information (Encyclopedia Britannica CD- 2001).

2.2.4 Network Database Model:

Network Database Model create multiple linkages between sets by placing links to a one set of records with other records and is capable of using tremendously irrespective of users for their use in versatile ways. Network Database search and services have stupendously grown around the world.

2.2.5 Object Based Logical Model:

This model is used at the logical and view levels that provide flexibility in structuring the data and allow data constraints to be specified explicitly (Pattnaik; 2001;p.268)

2.2.5.1 Entity Relationship Model:

This model is a culmination of basic objects known as entities and information representing the relationships among these objects. The entities may be an object, person, abstract, concept or event. The relationship is established in a corresponding value with the entities. Storage, retrieval and processing operations are made in a Data item that carries an identification value, such as name.

2.2.5.2 Object-Oriented Database Model:

Object-Oriented Database Model comprises the objects curbing values stored in instance variables. An object also carries bodies of code that is known as methods, which operate on the object. Objects bears the same types of value and the methods are grouped in to classes that may be viewed as a type of definition for subject. Object-Oriented Databases store and manipulate complex data structures known as objects, which are organized into hierarchical classes that inherit properties from classes higher in the chain. Due to large scale of information management application, this model has become widely accepted model.

2.3 Digital Scanner:

Scanner is another electronic source of information retrieval device that contain a fluorescent or incandescent light bulb that illuminates the target or image to be scanned using a Charge-Coupled Device (CCD). Image scanners converts analog signal to digital value and the information are transmitted to a computer.

2.4 LAN:

Local Area Network (LAN) is another signpost expansion in the electronic horizon that came into existence in the early 1970's.as a way for computers to communicate and share data and or information from one to other computer in a close circuit. A typical LAN consist a number of workstations, various shared peripheral devices such as servers, and various shared peripheral devices such

as laser printers. An Ethernet connection is used to construct LANs.

2.5 Ariel Photography:

Arial Photography is another input gadget of information in visual form. It is a method of recording the image of an object by the action of light or related radiation on a sensitive metal. Photography has become the essential element amidst the technologies to act as a means of transfer of visual communication and expression (Encyclopedia Britannica CD-2001)

2.6 MOTION VIDEO:

It is another sensible appliance of transfer of information along with real life situation prevailing in a particular area in visual form through on-line that can be appraised either through TV or a personal computer. Hence, this has now become an indispensable apparatus for obtaining instantaneous data and retrieval of information.

2.7 INTERNET

Internet, through the World Wide Web technology entertains the user communities to retrieve hyper media information and leaves a wide scope to choice the intended information from a large universe of documents. It extends the capability to link with FTP (File Transfer Protocol) sites, Gopher servers. Here, the Hypertext documents are formatted according to Hypertext Markup Language (HTML) which itself is based on the Standard Generalized Markup language (SGML). The HTML documents contain text, font specification and other mating instruction. The other technologies available are Uniform Resource Locators (URLs), Mosaic and Netscape (Pattnaik; 2001;p.173). This network connects many computer networks and is based on a common addressing system and communications protocol called TCP/IP (Transmission Control Protocol/Internet Protocol).

2.8 WEB BROWER

The information source on the Web is different to that of the information located in the library. Distributed information gathering systems perform the task of finding out the existence of relevant piece of information from the web. Information gathering systems are called Web Crawlers that are developed for locating and gathering information from the web. The Web Crawlers recursively follow hypertext links present in known documents to find other documents.

The documents with the help of hypertext links are retrieved and information is added to a combined index. Web crawlers have the significant advantage, as no central authority is required for registering documents. Hence, it is very easy for users to create new documents and to have users locate the documents through the indexing of data on the Web (Patnaik; 2001;p.173).

2.9 MULTIMEDIA

Multimedia is a computer-controlled culmination of texts, images, graphics, audios, and animation. It has proved to be a positive tool for video conferencing, electronic publishing, e-commerce, geographical information system, digital library etc.

3 INFORMATION RETRIEVAL TECHNIQUES

The development of communication technology and computer technology has precipitated a number of advanced models of information retrieval techniques that have been employed in various fields of research and development. The augmentation of computerized information retrieval system established new hope and interest in the field. The retrieval techniques may be broadly categorized in to two headings such as (IGNOU; 1995;P.10).

3.1 Exact Matching Technique;
3.2 Partial Matching Techniqu;.,
3.1 Exact Matching Techniqu;:

This technique is a widely accepted phenomenon that is implemented through Boolean, Full text or String searching methods. The primary advantage with this technique is that, it is easy to understand and use as it is available on most systems. The disadvantages with this are that, it losses the opportunity of ge ting many relevant texts which match the query. It further neither rank the documents nor takes care of the relative concepts either within the query or within the text.

3.2 Partial Matching Technique;

Here, the information can be retrieved employing various sub techniques such as, individual, network, cluster, probabilistic etc. According to the requirement the relevant techniques are to be adopted for retrieval of information.

4 MODELS OF INFORMATION RETRIEVAL;

Tools and techniques are the important facets Information retrieval that is vexed with different models such as,

4.1 Data Retrieval Model;
4.2 Information Retrieval Model; and
4.3 Knowledge Retrieval Model.

4.1 Data Retrieval Model:

Data can be taken an unprocessed information or preliminary phase of information. In this model, the data, which is an unbiased fact, can be used to form information. E.g., to find out the population of a state, the relevant census system is to be scanned which is a data retrieval system. Thus, data retrieval model is based on organizational structure reflecting various properties of the organisation.

4.2 INFORMATION RETRIEVAL MODEL:

Combination of data in a relational structure constitutes the concept of information. Information retrieval is a more multifaceted model that has got a multi- dimensional relationship.

4.3 KNOWLEDGE RETRIEVAL MODEL:

The integration of assorted types of information amounts to knowledge. Knowledge is the assimilation of information. This model imbibes versatile information in order to facilitate decision-making and problem solving. It is a sophisticated model of information processing.

5 CONCLUSION:

The exponential growth of computer networks during 1990s portends radical changes in systems and techniques of information storage and retrieval. In Computer Mediated Communication system, processing of electronic information and its handling ensued with information generation, collection, storage, and dissemination including its utilization by the right reader in right time and the feedback. The information stored in various magnetic forms through electronic form such as CD-ROM, Digital Scanner, LAN, WAN, Ariel Photography, Motion Picture and above all Web Browser could reach to the users' PC in a very transformed and crystal form. Information Retrieval is a process of selecting information through various means

such as, Database, Web browsing, Internet etc. Skilled information retrieval in the print library requires some knowledge of the Catalogue, Classification schemes, Indexing and Abstracting services, Citation indexes etc. With the advent of Internet and WWW publishing, it has become increasingly critical that users and librarians alike be able to distinguish between verified and unverified sources of information (Lancaster & Sandore; 1997;p.29). The proliferation of CD-ROM databases with various search interfaces has necessitated the creation of numerous point-of-use guides that a searcher can use as a reminder of the basics of how to format a search.

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RESOURCE AND KNOWLEDGE DISCOVERY FROM WWW USING WEB MINING LANGUAGE

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ABSTRACT

There is a massive increase of information available on the internet. There are many information retrieval techniques in the cyber world. This profusion of resources on the World Wide Web gave rise to considerable interest in the research community. Traditional information retrieval techniques have been applied to the document collection on the internet, and a myriad of search engines and tools have been proposed and implemented. However, the effectiveness of these tools is not satisfactory. None of them is capable of discovering knowledge from the internet. Data mining can be distinguished from other retrieval techniques in that it makes choices and calculations for the searcher and then categories information based on those choice. It accomplishes this by identifying data relevant to meet user's information needs, and the organizing documents by topic, source , relationship with other document should be searched. I propose a declarative query language, web mining language that would be allow resource discovery on the internet with interactive and progressively refined inquiries. The language also consents to the documents and the structure of the hyperspace.

1 INTRODUCATION

A massive aggregation of documents is now stored on the internet. The World Wide Web is holding a colossal collection of resources , from structured records, images and programs to semi-structured files and free text documents. The availability of information is not questionable. I am actually overwhelmed by this excess of

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information. For many decades, information retrieval from document repositories has drawn much attention in the research community. Many techniques have been proposed and implemented in successful and less prevailing applications. With the advent of the WWW , the appearance of a panoply of services and accumulation of a colossal aggregate of resources, information retrieval techniques have been adapted to the internet, bringing

Forth indexing model and search engines. How ever the effectiveness of this tool is not satisfactory and is even irritating. The annoying result of current search engines technologies have invited searchers to tackle new challenges. Better indexing approach , specialized information gathering agents, filtering and clustering methods, etc have since been proposed . A new research trend in the field of information retrieval from the WWW is web querying and the design of query languages for semi structures data. The approach for query structured and semi structured documents involves the constructions of tailored wrappers that map document features into instances in internal data models .The introduction of new types documents usually necessitates the construction of new custom made wrapper to handle them. Due to the semi structured nature of web pages written in HTML , the migration of semi structured data query languages to the WWW domain is evident. W3QL,WebLog and WebSQL and WebOQL are all intended for information gathering from the WWW . While WebLog and WebOQL aim at restucturing web documents using datalog like rules or graph tree representation, WebSQL and Web3QL are languages for finding relevant document retrieved by several search engines in parallel. How ever , non of this approaches takes advantages of the structures of the global information network as a whole. More over , non of these languages performs data mining from the Web . A language likes WebSQL is built on top of already existing search engines which lack precision and recall. W3QS , the system using W3QL , also uses existing search engines. A Web document structuring language like WebOQL or WebLOGis capable of retrieving information from on-line news sites like CNN ,tourist guides or conference lists ,but is limited to a subset of the web definedin the quires. Their powerful expressions ,however, can extract interesting and useful information from with in a given set of web pages. I intend to use this power to build our system's data model.I propose a web query language ,WebML that permits resource discovery as well as knowledge discovery from a sub set of the internet or the internet as a Whole. WebMl is an SQL-like declarative language for web mining. I have introduced new primitives that I believe make the language simple enough for casual users. These

primitives allow powerful interactive querying with an OLAP (OnLine Anlytical Processing) like interaction (ie ,drill-down, roll-up, slice ,dice ,etc.).The language takes advantages of a Multi-Layered DataBase (MLDB) model[5,12] in which each layer is obtained by successive transformations and generalizations on lower layers, the first layer being the primitive data from the Internet. The higher strata are stored in relational tables and take advantage of the relational database technology. Their construction is based on a propagation algorithm and assumes the presence or availability of descriptive meta data, either provided by document authors or extracted by tools like WebLog and WebOQL.

2 MULTI-LAYERED DATABASE MODEL

1. The philosophy ,behind the construction of MLDB is information abstraction, which assumes that most users may not like to read the details of large pieces of information but may like to scan the general description of the information. Our motivation is not web page restructuring , like the WebLog and WebOQL, but rather web page content and Web Page interrelation abstraction. A multiple layered database(MLDB) consists of three majors components

   - A database schema, which contains the meta information about the layered databases structured
   - A set of concept hierarchies.
   - A set of generalized data base relations at the non primitive layers of the MLDB and files in the primitive global information base.

The first component , a database schema, outlines the overall databases structured of the MLDB. Its stores general information such as structures, types ,ranges ,and data statistic about the relation at different layers, their relationship ,and their associated attributes as well as the location where the layers reside. More over, it describe which higher layer relation is generalized from which lower layer relation and how the generalization is performed .There fore, it presents a route map for data and metadata browsing.

The second component , a set of concept hierarchies, provides a set of predefined concept hierarchies which assist the system to generalize lower layer information to higher layer ones and map queries to appropriate concept layers for processing. These hierarchies are also use for query less browsing of resources like

drill down and roll up operations.

The third component consist of the information based at the primitive information level and the generalized database relations at the non primitive layers.

The third component is by definition dynamic . The schema defined in the first component of the MLDB model can also be enriched with new fields, and new route maps can be defined after the system has been initially conceived. The updates are incremental and are propagated , in the case of the schema update ,from lower to higher ones. New concept hierarchies can be defined as well , or updated. While updates to current concept hierarchies imply incremental updates in layered structure , new concept hierarchies may suggest the definition of a new set of layers or an analogue MLDB. Because of the diversity of the information stored in the global information base, it is difficult, and even not realistic , to create relation database structures for the primitive layer information base. How ever, it is possible to create relational structures to store reasonable structured information generalized from primitive layer information. For example. Based on the accessing patterns and accessing frequency of the information base , layer1 is organized into dozens of database relations, such as document, person , organization , software , map , library-catalog , commercial-data , geographic-data , scientific-data etc. The relationship among these relations can also be constructed either explicitly by creating relationship relations as in an entity-relationship model, such as person-organization. Or implicitly by adding the linkages in the tuples of each entity relation during the formation the layer1, such as adding URLs (Uniform Resource Locator). An incremental updating of the schema , such as adding new attributes as layer1 , may imply incremental updating and propagating the lower layer information to higher ones in the multi layered database , which may also require incremental updates of the layer building software.

3 MLDB STRUCTURE

The goal for the construction of the MLDB is to transform and/or generalize the unstructured data of the primitive layer at each site into relatively structured data, manageable and retrievable by the data base technology.

Specialized tools , similar to essence are executed locally on information provider sites to extract pertinent data from documents. WebLog and WebOQL like query languages can also be exploited to

gather the needed information from within documents. This information is stored in the first layer and is generalized in higher levels. The layer1 is distributed and resides locally on each information provider site. It is only the higher levels that are gathered in a centralized location and mirrored for better performance. Extracting information from structured bibtext files or post script papers is fairly smooth. However, most web pages don't easily convey the needed information. The extensible Markup Language (XML) developed by the World Wide Web Consortium (W3C) will help this direction. Many web publishing tools are adopting XML and will help promote widespread improved structured web documents. The Dublin Metadata workshop has stressed the importance of metadata in network documents to facilitate resource discovery. Already extension to the HTML specifications include some tags allowing the description of key words and content summary inside the HTML documents. Because of their use by search engines in their ranking of documents, more web document authors are now willing to manually add these description in their web pages.

To simplify our discussion, we assume that the layer1 database contains only two extended relations, document and person. Other relations can be constructed and generalized similarly.

1) Documents(file_addr, authors, title, publication, pub_date, abstract, language, table_of_contents, category_description, key_words, index, URLs, multimedia_attached, num_pages, ...)

2) Person(first_name, last_name, position, phone, e-mail, office_address, education, research_interests, publications,....)

We take the document relation as an example. Each tuple in the relation is an abstraction of one document from the information base. The relation in layer1 are substantially smaller than the primitive layer from the information base, but are still rich enough to preserve most of the interesting pieces of general information for a diverse community of users to browse and query. The two layer1 relations, document and person, are further generalized into layer2 data base. The resulting relation are usually smaller with less attributes and records. Least popular fields from layer1 are dropped, while the remaining fields are inherited by the layer2 relations. Relation are split according to different classification schemes, while tuples are merged relying on successive subsumptions according to the concept hierarchies used. General concept hierarchies are provided explicitly by domain experts. Other hierarchies are built automatically and stored implicitly in the database.

4 WEB MINING LANGUAGE

Similar to other extended-relational database systems, a MLDB system treats the requests for information browsing and resource discovery like relational queries. However, since concepts in a MLDB are generalized at different layers ,search conditions in a query may not match exactly the concept level of the currently inquired or available layer of the database. For example, to find documents related to a particular topic, such as "attribute-oriented induction" a query may put this as a search key. However, the current layer may only contain terms corresponding to a higher concept level such as "induction techniques", or "data mining methods". In this case ,it is unlikely to find in the current layer an exact match with provided search key, but is likely to find a more general concept that absorbs the search key. On the other hand , a search key in a query may be at a more general concept level than those at the current layer. For example , a search key "sports", though conceptually covers the term "baseball", dose not match it in the database. Therefore a key-oriented search in an MLDB leads us to introduce several additional relational operations to extend the semantics of traditional selection and join. Four relationships , coverage, subsumption, synonymy and approximation. These operators have their correspondent language primitive in WebML defined respectively as covers , covered by like and close to.

<WebMl>=<mine Header. from relation_list

[related-to name_list][in location_list]

where where_clause

<Mine Header>::=

{{ Select| list }{attributes_name_list| *}

|<DESCRIBE HEADER>|<CLASSIFY HEADER>}

<DESCRIBE HEADER>::= mine description

in-relevance-to {attribes_name_list| * }

<CLASSIFY HEADER > ::= mine classification

according-to attributes_name_list

in-relevance-to {attributes_name_list| *}

The Top level WebML query syntax is presented in table-1 . At the position for the key word select in SQL , an alternative key word list can be used when the search is to browse the summaries at a high

layer , mine description can be used when the search is to discover and describe the general characteristic of the data , mine classification is used to find classifications of Web object according to sum attributes , whereas select remains to be a key word indicating to find more detail information Two optional phrases "related to name_list and " in location list", are introduced in WebML for quickly locating the related subject fields and/or geographical regions . There semantically equivalent to some phrases in the where-clause , such as " key word covered by field_names" and /or " location covered by geo_area" etc . But there inclusion not only makes the query more readable, but also help the systems locate the corresponding high layer relation if there exists one. The phrase " according to attributes_ name_list in relevance to attributes_name_list" is only used for classification with more classifications. It indicates the attributes upon which to classify Web objects. The where clause is similar to that SQL except that new operators may be used. While this query language is simple , user do not have to learn it and white queries. A Java based or HTML based user interface can easily be developed on top of Web ML to avoid heavy instruction queries, and to provide a means for interaction based on field filling and buttom clicking .

5 EXAMPLES OF WEBML

Example 1

To inquire about Indian Universities productive in publishing online popular documents related to artificial intelligence since 1996, a WebML query presented as follows :

select ***affiliation*** *from* ***document*** *in* ***India***

where ***affiliation*** *belong- to* ***" University"*** *and*

one of ***keywords*** *covered-by* ***" artificial intelligence"***

and ***publication_year > 1996 and count 10***

and ***access_frequency*** *belong-to* ***" high***

In this query, " productive" is measured as those containing more than 10 published papers on the internet since 1996 related to artificial intelligence, which is either be obtained based on the result of an initial browsing of the document table, or justify by some interactive active queries. The term " high " is a generalization of the numeric value of access_frequency along its concepts hierarchy.

Example 2

To classify according to update time and popularity the documents published on line in sites in the Indian and commercial internet domain after 1997 and about information retrieval from the internet , a WebML query can be presented as follows :

nine classification

according to **timestamp, access_frequency**

in relevance to

from **document** in **India, commercial**

where one **of keywords** covered by **" information retrieval "**

and one of **keywords** like **" internet"**

and **publication_year > 1997**

The fresh nine classification request a classification free from the system . The query first collects the relevant set of data from the MLDB relations , executes a data classification algorithm to classify documents according to their access frequency and their last modification data, then present each class and its associated characteristics in a tree.

Example 3

Suppose the query is to describe the general characteristic in relevance to authors , affiliation , publication etc for those documents which are popular on the internet and are on " data mining" . A knowledge discovery query to answer this request , characterized by the keyword " describe" as follows :

nine description

in-relevance-to **authors, affiliation, publication , pub_date**

from **document** related-to **Computer Science**

where one of **keyword** like **" data mining "**

and **access_frequency = "high"**

The discovery query will be first executed as a retrieval to collect from cs_document the data which are relevant to "authors. affiliation, publication, pub_date" and satisfy the where-clause . Then the attribute oriented induction is performed on the collected data , which generalized "publication " into groups , such as major AI journals ,

major database confirms and conference and generalizes publication date to year , etc. The generalized results are collected in a data cube and can be interactively manipulated by the user using OLAP operations.

6 CONCLUSION

The MLDB and WebML allow us to apprehend and solve the resource discovery issues by presenting lists of relevant documents to users, but also allowing the users to progressively and interactively browse detailed information leading to a targeted set of pertinent documents. WebML queries are treated like information probes, being mapped to a relatively high concept layer and answered in a hierarchical manner. Moreover , the knowledge discovery power of WebML is unique. It helps find interesting high level information about the global information base. It provides users with a high level view of database , statistical information relevant to the answer set and the other associative and summary information. More over , the MLDB model takes advantage of web page restructuring query languages and available networked agents to retrieve pertinent descriptors from web documents.

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RFID TAGS: WINDS OF CHANGE IN LIBRARIES

C.Mallikarjuna*

ABSTRACT

This article Present study of the RFID Tags structure and usefulness to library environment, when compare with barcode labels discussed in this context. And also it describes various advantages and disadvantages and comparison with the preceding technologies like barcode technology. The use of a Radio frequency Identification (RFID), which allows library users to borrow books using self-checkout machines. The technology appears to increase the number the speed and accuracy of discharging books. RFID was also used in sorting the high number of returned books. RFID self-checkout machines are providing much easier for the public to use. Books are placed on a pad in front of the machine, which records the loan using radio waves to read data form a microchip. In the spine at the point of return, the advantage of speed and on accuracy is even more visible. In busy weekends it is very useful. One more important thing is to control the theft of books; Electromagnetic sensors guard library exits, so that only checked-out books leave the building. If a book isn't signed out properly, a hidden RFID tag will trigger the sensors and an alarm will sound to alert library staff from possible theft.

1 INTRODUCTION

Barcodes, those ubiquitous black and white stripes found on almost every packaged product, have revolutionized shopping since they first appeared in the UK 25 years ago. The packet of Wrigley's chewing gum that was the first American product to be bar-coded

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and scanned. This type of barcodes we cant see in the near future. Because in this place a new technology taking place.

Recent years have seen a tremendous increase in the use of electronic components in almost every item that we use in our daily lives. In libraries also this phenomena effecting today's fast moving world, existing systems for checking items in and out of libraries increasingly seem slow, labour intensive, inflexible and prone to inaccuracy. In contrast, RFID based systems improve convenience and flexibility for both the users and the library. Quicker and easier to operate, these systems enable improved inventory control; minimize losses via internal misplacement and theft; reduce manual work for library staff; and deliver better read rates and accuracy than traditional manual handling.

In library scanning bar codes is as tedious a daily task as dealing with check-in, check-out, Renewal, lost or overdue library books. Now, a wafer-thin, microchip-based tag the size of a postage stamp could ease their workloads. Library staff can affix materials with security tags that contain microchips and an antenna that transmits information to a wireless reader using radio frequency identification (RFID) technology. RFID is sometimes referred to as dedicated short-range communication (DSRC). The technology could one day become as ubiquitous as the bar code. Unlike bar codes, which need to be scanned manually and read individually, radio ID tags do not require line-of-sight for reading. Multiple tags can be read simultaneously, through packaging or book covers. With radio ID tags, library staff can automate check-in, check-outs and returns. Patrons can speed through self-checkout without any assistance. Take, for example, the several libraries in the United States that now allow consumers to check out books without the aid of a library staff. RF tags monitor when the book was checked out, and where it is.

2 WHAT IS RADIO FREQUENCY IDENTIFICATION?

Radio Frequency Identification (RFID), like barcode, magnetic stripe, voice data entry and other automatic identification technologies, is an information acquisition technology. RFID consists of a sensing device, which transmits a radio frequency signal to a specially designed RFID tag, which responds with another radio message. Because it makes use of radio waves, there is no need for "line of sight" reading of information, which is one of the limitations associated with barcode systems. It means RFID tags can be embedded in packaging or, in some cases, in the goods themselves.

Information from an RFID system – the "data capture" element of an IT system – is passed to management information systems that are used, for instance, to manage stock and provide details of who is having particular item. Apart from its automatic identification and data capture capabilities, RFID can also provide the electronic article surveillance (EAS) function – a case of a single technology taking the place of two.

A tiny chip connected to an **antenna** – typically a few centimeters square in total – sends information when requested to a **reader**. By means of **anticollision** techniques, many **tags** can be read practically simultaneously, representing an enormous time-saving over barcode reading, which requires operators to find the right position for the reading of each barcode individually.
An RFID tag can work just like a barcode – in other words, it can hold a unique **article number**, which works like an "**Accession No.**", calling the information relating to that number from a separate database. But because it can contain a relatively large amount of digital data, the RFID tag can hold source information itself, as opposed to a mere "**look-up**" number, thus making it infinitely more useful for library circulation and other library routines and many other applications.

RFID technology uses very small radio circuits embedded in a label. The label also contains a memory chip, which stores data, e.g. a library accession number or parcel ID etc. The circuit needs no power of its own - it is powered when it comes in range of a reader - which sends out enough radio energy to the circuit for it to then send back the contents of its memory. The concept of RFID (**R**adio **F**requency **ID**entification) can be simplified to that of an electronic barcode. First emerging in the 1980s,

RF Tags generally fall into three broad categories

1.Inductive RF Tags
2. Back Scatter
3.Two-Way

2.1 Inductive RF Tags

Inductive tags are energized by passing through an energizing field generated by the interrogator. The tag resonates at the frequency of the field causing a disruption of the field. These tags have minimal information storage capabilities. Inductive tags include Electronic Article Surveillance (EAS) which cost less then $.01 to true RFID

tags which cost as much as $8.00. Typical read ranges are less than 10 feet.

Typical Applications for Inductive Tags are -

Electronic Article Surveillance (EAS)
Antitheft systems
Access control systems
Personal identifications systems
Wild life management
Pet identification
Product identification
Vehicle Access & Security

2. 2 Back Scatter

Back Scatter tags may be either passive (no battery) or active (battery powered). They reflect a small portion of the RF energy of the interrogator. The reflected signal is modulated or encoded with information stored in the tag. Back scatter tags cost between $5 and $40 per tag. Passive back scatter tags convert a portion of the RF energy from the Tag reader/Interrogator to power the transponder. The tag generates a data stream comprised of a clock signal and the data stored in the tag.

Back scatter tags are capable of being programmed with varying amounts of information. Some tags may be reprogrammed by a reader; others have the ability to store additional data from readers to their internal memory.

Typical Applications for Back scatter Tags are -

Toll Collection
Traffic Management Systems
Inter modal Container Management
Asset Tracking
Rail Car Identification
Rail Control Systems

2. 3 Two-way

Two-way tags are active tags which incorporate a miniature transmitter and/or receiver. The tag may be polled or transmit freely.

Data may be read only or programmed by the interrogator. These are the most expensive type tag with typical costs between $75 to $190.

Typical Applications for Two-way Tags are -

Toll Collection
Traffic Management Systems
Inter modal Container Management
Mfg. Process Control
Waste Management
High Value Asset Control

1.4 Anatomy of RFID:



An RFID system comprises three components:

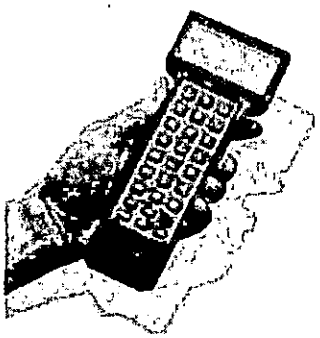
1) Tag
2) Reader
3) Antenna.

3 RFID TAG

The tag is paper thin, flexible and approximately 2"x 2" in size which allows it to be placed inconspicuously on the inside cover of each book in a library's collection. It consists of an etched antenna and a tiny chip which stores vital bibliographic data including a unique ID number to identify each item. This contrasts with a barcode label, which does not store any information, but merely points to a database.

4 RFID READER

These components are available in various shapes and sizes to suit respective applications within the library, and are often integrated into one enclosure for that specific purpose (ie patron self check-out machines, inventory readers).



The reader powers the antenna to generate an RF field. When a tag passes through this RF field, the information stored on the chip is decoded by the reader, and sent to the PC or central server which in turn, communicates to the Library Information System.

RFID improves library workflow, staff productivity and customer service with these attributes. However, the ability to conduct inventory counts without removing a single book from the shelf, is what really separates RFID from preceding technologies such as barcodes

4,1 What are the true benefits of RFID?

- **RFID in recent years has been** the claim that it is generally more expensive than barcode systems. It's true that an individual tag is more expensive than an individual barcode.

- **Flexibility of data on the tag**: Tags are reusable and have very long lives, so in a library circulation and stock –verification, there would be no need to re-label the books, saving on manpower and other costs associated with label production and fixing.
- **Multiple tag read/write**: Multiple tags (up to 100 or more) can be read practically simultaneously. Using Intellident's latest breakthrough technology, with the MultiScanner.
- **Tracking people, items, and equipment in real-time:** An RFID system can track and trace the Books and other library material,
- **Greater accuracy:** RFID has been proven to be more

efficient than barcode systems in terms of read failure rates, even though the speed of read is many times faster.

- RFID is also less prone to human errors.
- **The tag can stand a harsh environment:** RFID tags are durable even in dust, moisture, extreme temperature, snow, and rain. They can be used in many systems in open space, and users do not need to insert a card, reducing contact damage from friction or environment.
- **No line of sight requirement:**
- RFID signals can pass through non-metallic materials such as glass, fabric, and timber
- **Elimination of re-labeling costs and effort**
- **Substantial productivity gains**
- **Long read range.**
- **Portable database.**

4.2 What are the benefits for library?:

- More efficient lend/return job
- Reduced time for book searching
- Reduced time for inventory
- Library access-control, using an unattended gate

- **Fast item location :** Another function made possible with RFID systems is fast and easy location of books. This can be achieved either by placing antennas on shelves to define their contents, or with a handheld proximity reader, and enables quick inventorying and the location of misplaced items - which can be a serious problem with an average of 200-300 thousand books per library.

- **Flexible return options:** RFID systems allow 'mailboxes' to be located at convenient public places. These have access to a library's database so can register returned items automatically, update the library inventory and log the customer account. If several libraries are connected to the same system, this enables sophisticated inter-library item allocation schemes to be implemented.

- **Fast circulation transactions:** In big libraries circulation

maintenance is very big problem, in that time it is very helpful for fast transactions.

5 RFID BENEFITS VS. BARCODE

In order to function properly, a barcode reader must have clean, clear optics, the label must be clean and free of abrasion, and the reader and label must be properly oriented with respect to each other. RFID technology enables tag reading from a greater distance, even in harsh environments. In addition, the information imprinted on a barcode is fixed and cannot be changed. Active Wave RFID tags, on the other hand, have electronic memory similar to what is in your computer or digital camera to store information about the inventory or equipment. This information can be dynamically updated.

6 RFID- CIRCULATION

RFID technology helps us meet a lot of challenges related to circulation, security and inventory management. This technology we used to deliver better service and improve our efficiency in providing services, we also found in checkpoint using a light weight, hand held reader called an " Inventory wand", the library staff can pass the device over a shelf of books and immediate transfer each item's data to the circulation system for immediate inventory, identification of misplaced books through regular inventory. In addition, the staff is looking forward to specific item searches that can be performed. Misplaced books can be automatically identified. When inventories are done regularly. In addition, specific item searches can be performed by entering the desire ID into the inventory wand and then passing the wand over the shelf until the item is located. Once the wand 'sees' the item the system sounds an audioble alarm to indicates its location.

[* | In-line.WMF It is potentially overwhelming to evaluate competitive offerings of a new technology; hence the following guide lists some of the characteristics to be considered

6.1 Security Feature

The same RFID tag used to manage inventory can also be used to protect it from theft. Current offerings provide the choice between a purely RFID solution, or RFID with an EM (electro-magnetic) add-on

for theft. Electromagnetic sensors guard library exits, so that only checked-out books leave the building. If a book isn't checked-out properly, a hidden RFID tag will trigger the sensors and an alarm will sound to alert security to a possible theft.

6.2 Tag memory capacity

More memory is not necessarily better than less - it often correlates with price, and data transmission speed. As a first step, consider what information you need to program into each tag, and then discuss with vendors.

6.3 Tag functionality

6.4 Read/Write vs. Read Only

Some vendors offer tags which can only be "written to" once. That is, once the tag is programmed, the information stored in the tag's memory cannot be changed. Alternatively, information stored in the memory of read/write tags can be updated as re Anti-collision
All RFID vendors in the library market offer a product with anti-collision (the ability to read several tags simultaneously). However, the speed at which this can be performed, and the total number of tags that can be read, will vary. This relates specifically to inventory management with a hand-held reader, and check-in processes.

As mentioned above, RFID can be used to prevent theft in the library. This approach varies from vendor to vendor – the security mechanism may be integrated into the chip itself, or security gates may be linked to a separate server which interrogates the database to conclude whether an alarm needs to be triggered.

6.5 Cost

At the moment these ID tags are too expensive to use on the books

Expect to pay from US$0.85 to over US$1 per tag. The price of hardware (per unit) varies extensively from different suppliers. However, the infrastructure requirement also varies. But cost and lack of standards have prevented many libraries from adopting RFID technology. RFID tags cost upwards of 50 cents, whereas bar code tags cost about 2 cents.

6.6 Standards · The emerging standard for library RFID solutions is to employ a frequency of 13.56MHz. However, no formal standards are currently in place.

7 THE BOTTLENECKS IN RFID APPLICATION

I) Lack of Standards –Today there has been standardization set for the implementation of RFID,though some efforts are underway. These are tow areas that require attention when discussing RFID standardization. They are the allocation of the radio spectrum and the standardization of RFID communication systems. Standardization of the RF spectrum allocation is a difficult task to accomplish, as each country owns and controls it's own radio spectrum, tha means of communication for RFID systems. As the radio frequency use changes constantly, each of these countries individually has to consider the allocation of the spectrum based on their particular needs. Simultaneously, the manufactures of RFID systems have also avoided creating a standard, as they each rush to develop competing products. As RFID implies infrastructures and networks, it is crucial to the future of RFID that the issue of standardizations is considered carefully. In the past few years there has been a renewed effort to explore and come to an agreement of RFID standards. the lack of an industry standard. Microchipping of companion animals in the US is an example of one of the industry failures due to.

Many proprietary protocols.
Few international standards.

II) **Cost**
In order of adoption of RFID to become ubiquitous, the cost needs to be low enough that it is a viable solution for both small and large businesses. This means both reduction in the hardware and costs , as well as (again) the standardization of systems, eliminating duplicate efforts, conflicting systems, and evenutually more constly development. Currently, the auto ID group is working to make the technology cost efficient through researching both hardware and system integration to promise a grete return on investment for libraries interested in RFID technology. RFID Tag costs vary greatly, from less than $1 to $190 or more each.

III) No one technology works for all applications

IV) Infrastructure cost is a major concern -

Theare are of course bottlenecks in the development, implementation and acceptance of RFID as is the case with any immature technology. These bottlenecks include stanardization,cost and privacy/ethical issues.

8 VENDORS OF RFID

A number of vendors, such as Texas Instruments, Checkpoint Systems, 3M Library Systems and Tagsys, have introduced RFID technology to the library-security market.

"Cost may be a factor for many libraries,"

9 INDIAN SCENARIO

In India application of RFID technology in very preliminary stage, in libraries also it is very new concept.

10 CONCLUSION

In the Near future, new emerging technology that comes with RFID and Internet connectivity. The involvement of large corporations and key players indicates that there is fast growth will be there in RFID application & research.

There are number of obstacles in the development, implementation and acceptance of RFID as is the case with any immature technology application of RFID technology in libraries are not standardized, though some efforts and projects underway. Developments in RFID technology continue to yield larger memory capacities, wider reading ranges, and faster processing. It is highly unlikely that the technology will ultimately replace barcode — even with the inevitable reduction in raw materials coupled with economies of scale, the integrated circuit in an RF tag will never be as cost-effective as a barcode label. However, RFID will continue to grow in its established niches where barcode or other optical technologies are not effective, such as in the chemical container industry and live stock industry.

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SEARCH ENGINES: TOOLS OF INFORMATION RETRIEVAL FROM THE WORLD WIDE WEB

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Dr. Rochna Srivastava**

ABSTRACT

*Starts with impacts of Internet and World Wide Web in the information services. Highlights the effectiveness of WWW in making the information accessible at a fast and deep level. Gives a detailed account of search engines, their functions involved in providing the information to users. Explains how the searching is done. Features of WWW are given in detail. Problems on the part of users, accessibility of search engines and not differentiating ads from results, on the part of search engines are also discussed. Concludes with the information on a technique "**Photonic Data Service**" along with the updating efforts of search engines.*

1 INTRODUCTION

Information has become a pervasive necessity in every phenomena of life. So many terms defining the present age such as "information age", "global information village", and "global information economy" have been heard, which reflect the presence of information in each field of society and services. Vast developments are taking place in the present time and it is the information, which is required everywhere. But nobody can ignore the fast spread of information, and the speed of spread. This spread of information depends upon the dissemination by various sources that become major resource for the information.

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Now Internet has influenced the provision of library and information services the world over by providing the information easily and fast accessible.

2 SEARCHING ON WORLD WIDE WEB

World Wide Web is an information service on Internet. It totally reshaped the Internet. Many a times it is felt that information can be accessed on Internet more easily that the conventional sources. As the user has to point out the information on the Internet with the help of hyperlink, he becomes connected with the information lying on another page.

It uses images, audio and video for providing information in an effective and interesting manner. One can navigate WWW with innovative style as it provide sight and sound facility [1]. While searching the information, the emphasis is on the textual information, as other media cannot be applied on large scale. The users define their search in terms of words and it is searched.

3 SEARCH ENGINES

A search engine indexes a portion of web documents as a full text database. The function of a search engine is an as locator of information available on the Internet via the World Wide Web. It contains references to thousands of web documents. It provides an interface between a user and the related database. To provide information to users is composed of two parts; available information with data and method of indexing of information. The user interface by asking his query. The response of the search engine comes in the form of "result", listing addresses of matching and relevant resources. For giving the matching results, it runs the query terms (known as search string) against databases. Many a popular search engines are Yahoo, Alta Vista, AOL Search, AskJeeves, Direct Hit, Google, Hot Bot, Excite, Lycos, and MSN Search.

Though different search engines accomplish their task through different methods but some common ways of providing information to users can be explained as Under:

1. Searching information on the basis of important and defined keywords.
2. Indexing of keywords and related URLs (Uniform Resource

Locators).

3. Making available the keywords or pages to users.

Earlier search engines used to index some thousands of web pages and documents and served 1-2000 queries but in today' scenario any popular search engine indexes billions of web pages and satisfies millions of queries. Some search engines use web-spiders which list out used terms used in web pages. This process is known as web crawling. These "spiders" read hundreds of pages in a second [2].

4 FEATURES OF SEARCH ENGINES

Search engines provide a vast amount of matched resources in the form of result, as they list out after sending the search string but many a special features are reflected in this simple function of search engines.

The features are as following:

4.1. Search by media: we can search on the web by defining the media category along with the text. The categories are image, audio and video [3]. In this way one can search not only the textual information but also graphical and sound related information.

4.2 . Language: we can search information in the desired language. The search engines show results in the given language, depends upon the availability of web pages or resources in that language. It means it lists out those (all) resources that are present in the specified language. Google has a high popularity among the Chinese as it provides Chinese language facility.

4.3. Advanced search: It also gives the facility of advanced search in which more specific and matching databases and resources are searched. This feature is found in almost all the web search engines. Advanced search gives features like include all of the words, include this exact phrase, include at least one of these words, exclude these words, Search on the Web and Search engine's Directory listings. More options include *Language*: only show pages in, *Country:* only show pages from, *Date:* only show pages updated in the past 3,6 or 12 months, *Keyword Locations:* show pages where the keyword is in title, text, URL or link, *Domain:* only show pages from the site or domain e.g., yahoo.com, .org, .gov., *Search by URL:* find web page

similar to and find web pages that link to, *Categories:* defining the subject area and *Display:* number of matches per page after the first result page [4].

4.4 Refined Search: Some search engines provide this feature. Through refined search, the focus is laid on a related topic. Some sets of terms are provided for further operation in which the most suitable set is selected and clicked for search. The search-topic becomes more specific here and it provides the search of all the related topics.

For example, in Alta Vista for an query of "encryption software" [5]-
Refine your search with AltaVista Prisma Click Help
Focus your search or click >> to replace your search.

Cd Encryption	>> Encryption Technology	>> Security Software	>> Blowfish >>
Coded Software	>> Fast Software	>> Computer Security	>> Crypto >>
Encryption Products	>> File Encryption	>> Free Trial	>> Downloads>>

4. 5. Sponsored Matches: Sponsored matches are those matches that are paid listings [6] provided by Overture Services, Inc. Sponsor Matches are based upon relevance to the specific search terms used in the query. For example, if one search for "Digital Camera," one will find Sponsor Matches for web sites that provide information on digital cameras and/or sell digital cameras. In addition to Sponsor Matches, one can find categories and web sites related to the topic of "digital cameras. "For example Yahoo! Search results display Sponsor Matches apart from Inside Yahoo!, Directory Category Matches, and Web Matches [7].

4.6. Information about the available matches: Some search engines also inform about the number. of available matches with defined terms. If someone searches about "encryption software" in Alta vista, then the expression comes as following:
The number of words that match your search terms: encryption 4825635-• software 136377980

4.7. Information about another search engines: Many a search engines inform about other search engines from which the user can search his query or can continue his searching. Like Lycos provides links to other search engines as HotBot, AltaVista, Overture, Web Directory, Alltheweb and AskJeeves.

4.8. Weightage for making search result useful: Some search engines provide weightage to words and terms on the respective page as providing weigtage in ascending order from the starting sentences, subtitle link, Meta tag to title. Different methods are used for this purpose by different search engines. This is the reason behind the different listing and order of URLs for the same search query on different search engines.

4.9. Information about common and general requirements as: Shopping, Lifestyles, Web Development: $8.95 Domain Names, Business Hosting,, $5.95 Web Hosting, Business like "Find a Business", "Find Merchant Acct, "Business Printing, Gaming: Poker, Sportsbook, top online casinos, multiplayer, Special Offers like Free Domain Name, Cheap Long Distance and Personal Finance are different section on which on can search information.

4.10. Link with additional intensive and narrow information: Some search engines provide link to related match with a description of in-depth intensity of listed result. For example in Lycos, a result for the string of "encryption software" [8]:
.*A result:* ScramDisk - Free Disk **Encryption Software** - ScramDisk is a free hard drive **encryption** program that runs under Windows 95 & amp; 98 and provides a number of 'high security' ciphers including 3DES, Blowfish and IDEA. The source code for the project- Computers > Security> Products and Tools > Cryptography. harddisk Encryption

4.11. Sources of Documents: Also list the sources from which the query related documents (books, journals etc.) could be got. They provide search by keyword, author and title.

4.12. Entering into the news world: Some search engines are considering the news services also important like other information services. The popular Internet search engine Google has launched a new site for searching news from 4,000 English language sources [9]. It will be accessible through a tab on the Google start page and will put real time news from different web sites around the world. The news service is called Google News. The news will be categorized under world, business, entertainment, technology and sports. Sources for news are The New York Times, BBC, CNN, Reuters, The Associated Press, FOX News, TIME.com, USA Today, The Washington Post, Asahi Shimbun, the Daily Telegraph (London), the

Times of London and the Hindustan times [10].

4.13. Extension of search: One can extend his search in the local information resources as it is given in separate section on search engine.

4.14. Express Inclusion: One can get his web site's pages into the search engine's search results.

4.15. News on specified query: News on the specified query is also provided.

5 PROBLEMS ON THE PART OF SEARCH ENGINES

Though search engines are popular for quick results yet users do not find results which can be proved relevant for their query. Long search string also provides difficulty. The search engine give equal emphasis on each term given in the string so it lists out sites related with each term. The length of the query becomes cumbersome for the user. It takes a lot time in choosing relevant sites.

Some times search engines get blocked and they don't open for service. In the first half of September, Google was inaccessible in China. After the recovery of access to Google, another search engine AltaVista was blocked. Adding to the confusion of Chinese users, Google began being automatically transferred to a varied and apparently random series of Chinese-based search engines- a move to the Chinese sites denied all knowledge of [11].

Search engine help in finding information within seconds but presently most of the leading web sites appear to be taking their time meeting a federal request for more transparency with monetary aspects of search results. In late June, the federal trade commission said that some important search engines don't reveal enough about the financial aspects of increased treatment of preferred advertisers. The search engines were asked for building "clear and conspicuous" distinctions between fee-based results and those produced by objective formulas. Except Google, many a search engines like AOL, Alltheweb, Askjeeves, AltaVista, Looksmart, Lycos, MSN, Hotbot, Netscape, overture, and yahoo were not meeting all the criteria laid out by regulators. The FTC recommended that paid results must be shown in separate areas on the page, labeled "sponsored links" or sponsored search listings". The search engines are paid by web sites for digging their content deeper by frequent visits under paid

inclusion programs. According to Danny Sullivan, an industry analyst for Searchenginewach.com search engines can be "punished" if they don't make changes on their own .[12]

6 CONCLUSION

Many a new techniques are being developed for faster speed of sending data. Two Chicago computer scientists have developed a novel technique that can send gigabyte amount of data 500 times more than the speed of any standard protocol used for sending data. The technique has been named as Photonic Data Services. The application can be used for data mining, a research technique used for managing extremely large volumes of information. The technique would enhance performance and management of information transmission on national, international and global networks [13]. Search engines regularly review the contents on web sites to keep their information database fresh by sending out automated spiders that crawl mush of the Internet every few weeks. In this way we are able to find our required information at a fast and fresh level. So the world wide web functions as a viable alternative to the print medium and it allows maximum reach countering some of the barriers of print by saving time and money incurred in production and distribution [14].

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SOFT COPY CONVERSION OF SCIENTIFIC REPORTS: AN EDGE OVER HARD COPIES

Keya Basu*

ABSTRACT

The need of modern information society has changed the library from traditional type to automated and electronic one. To retrieve the right information at right time by right user in electronic library is more advantageous than traditional one. The present paper shares the experience of converting 6000 scientific reports from paper to electronic documents for a centralised , web-enabled database.

1 INTRODUCTION

With the coming of internet, electronic documents etc. changes that have been taking place in the backroom of libraries suddenly become much more apparent to everyone. As personal computers and telecommunication facilities have become widespread, the idea of 'electronic libraries' become less implausible in our country.

We use Electronic Library to describe the situation where documents are stored in an electronic form, rather than on paper. The most obvious source of electronic documents is new publications issued in electronic form. But what of the older documents on paper that occupy so many spaces of library shelves? What of the retrospective conversion of the texts of older paper documents? Though the idea might seem unrealistic when there is a severe budgetary constraint, libraries of Geological Survey of India have taken a major and systematic effort at the retrospective conversion of old reports from paper documents to electronic documents.

Since its inception in 1851, Geological Survey of India has been a

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pioneering institution to generate, record and disseminate information on earth sciences. During the last 150 years of service, GSI has gathered huge geological information especially on various mineral occurrences in different parts of the country and also on geological mapping. Besides a large number of books, journals and departmental publications, there are about 9,500 unpublished departmental progress reports in the Eastern Regional library alone. Geologists in their course of work create a large quantity of information that is documented in the form of unpublished reports. These reports are one of the most important and authentic sources of primary geological data which are frequently needed.

2 PRESENT SYSTEM

At present reports can be accessed through conventional card catalogue which are arranged author, subject and area wise. There is also a computerised bibliographic database. The conventional system of accession registers are also maintained of all such reports. All most all the unpublished reports are indexed in the computerised bibliographic database with key words for easy accessibility. The reports can be searched easily through this database.

However, this computerised database serves only a limited purpose since only information about author, title, sometimes abstracts, etc. can be retrieved. The hard copies of the reports are provided according to the requests/requirements of the scientists as and when asked for. This system also inherits the drawbacks/demerits of paper documents. Unlike electronic documents, paper ducuments are localised. Only one person can consult a report at a time whereas several people can use same electronic document at a time in different places. The paper documents, at the same time, suffer from its own limitations of wear and tear due to the physical handling, particularly owing to the environmental hazards as well as the ageing. The maps and diagrams are fading rapidly.

3 FUTURE PLAN

To make these reports web-enabled and also for better storage and retrieval of these data, GSI has decided to convert these reports to digital format. The first phase of conversion project, which is known as 'Soft Copy Conversion of Unpublished Reports' has started in this year. The quantum of job initially identified was about 6000 reports containing text pages, photographs both colour and black & white, drawings, maps of sizes A_4 to A_0 etc.

4 JOB DESCRIPTION

The job was planned to be executed through following stages :-

a) Selection of report

A team of experts of GSI first identified the reports which are to be digitised. Then the reports were identified according to their type of investigation e.g. mapping, mineral investigation, engineering geology, etc. and separate lists were prepared for each type. Lists of the reports contained name of the author, title, date of work, type of investigation and also the accession number. At this stage computerised database was utilised. Total no. of text pages and no. of maps, plates, etc. and their sizes also worked out.

b) Scanning

Reports are being scanned on a flat bed machine since large number of reports are very old and there is every possibility of getting them damaged while passing through the ADF (Automatic Document Feeder).

i) Document numbering

Now the selected reports are sent to the scan section. Before starting the scanning job each report has been provided with an unique number (here the accession number of the report are being used). Documents within the report i.e. each text page, table, map, photographs etc. are numbered sequentially.

ii) Scanning resolution

Resolution refers to the number of pixels that are used to describe a single image. Resolution affects the level of details that can be depicted by the image file. At preset scanning resolution of this project is 300 dpi (dot per inch) on an average depending on the matter.

iii) Compression

Scanned images require a good amount of memory storage. In order to economise on storage space, images are sometimes stored in a compressed form. In this project compression is being done depending on the size of the file/ folder. Cleaning job is also done at this stage. Now scanned text pages and scanned A4 to A0 size maps are stored in hard disk.

iv) OCR (Optical Character Recognition)

As these reports have commercial value and our aim is text searchable web database, next step is OCRing. OCR Software is used for conversion of scanned text to machine-readable text, that can be searched or indexed. A policy decision is taken not to make any correction for the words not understood by the OCR software but retain the same in the image output because large number of reports were produced by conventional typing machine with a very small font size. The decision is taken due to the fact that this had effect only on the search as these 'Unrecognised' words will be exclude from the final index but were available on a view.

v) PDF (Portable Data Format) conversion

The OCRed output is then converted to PDF file, sometimes through in-built technology of the OCR software or sometimes by separate software for PDF conversion. Interlinking of text pages, maps/plates are done within the PDF file by Book Marking.

vi) Checking

Before storing in the CD, checking at every stage is being done by a team which consists of persons having background of geology, computer science and library systems. Checking was done at

a) Document identification stage

b) Post scanning stage;

c) OCR checking and PDF conversion stage;

d) Metadata creation and indexing stage.

vii) CD cutting

Scanned and checked items are then transferred to CDs with backup in duplicate.

5 METADATA CREATION

The next step is creation of metadata on the reports for indexing. For easy searching and retrieval of reports different parameters viz. author, title, commodity, scientific keywords, geographical keywords are used.

6 CONCLUSION

Though it is too early to comments on its advantages and disadvantages. However, one can visualise that by this conversion from paper to electronic document the old reports will be easily searchable and accessible by different person at different places at the same time. It will enable resource sharing among different GSI libraries all over the country i.e. database containing scientific information on earth science and index can be accessed through LAN, WAN etc. It will save the intellectual resources of this department which have immense potential for further research and economic benefit for the country as a whole in addition to its archival value also. Finally there will be a better bibliographic control of each report. Documents stored electronically are very flexible. They are easy to revise, rearrange, reformat and combine with other documents. Through out the process, data security has been ensured with utmost care for which some compromise had to be made with the speed of the work.

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SUBJECT GATE WAYS TO LIBRARY AND INFORMATION SCIENCE ON THE NET: AN EXPERIENCE

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ABSTRACT

Digital libraries are very simple method for access to information. The current article discusses the initiative taken by the ISIBC library to design the digital library to enhance the user access. This electronic information, gateway, has been enthusiastically received by library users. This study reports on the implementation of a digital library initiative in Indian Statistical Institute library. The digital library aims to deliver information resources campus-wide and make these resources via a single point, any time and anywhere. This article summarizes gateway and some examples of the electronic library impacts.

1 INTRODUCTION

With the advent of Internet, and more specifically the World Wide Web, libraries have undergone a revolution in the way that they operate and provide information services to users. At Indian Statistical Institute Bangalore Centre Library, has operated a networked electronic library recently. Library gateway is a computer system that enables students, faculty, staff and extension personnel to find information without any difficulties. Gateway users make selections from an easy to use menu that features descriptions of each of the resources in digital library gateway resources. Library gateway can be used to promote the library and its services; to provide current information about the library for library users, to provide access to online and CD-ROM

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based reference sources such as databases and catalogue created by the library; to assist library users to explore the Internet.

2 DIGITAL LIBRARY

Digital library is (1) a service; (2) a architecture; (3) a set of information resource, databases of texts, numbers, graphics, sound video, etc; and (4) a set of tools and capabilities to locate, retrieve, and utilize the information resource available. The users are students, teachers, research scholars, librarians and all other institutions". (Borgman 2000)

Digital library is a collection of information which is both digitized and organized (Fox , et. all 1995). Digital libraries are organizations that provide the resources, including the specialized staff, to select structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities". (Greeenstein 2000)

The electronic library service is the electronic documents and databases the library decides to make available in its collections, plus the library OPAC and home pages. The electronic library is a part of wider networked environment, which offers access to a wide rang of materials internal management information about institutions and its working environment.

3 SUBJECT GATEWAYS

The design and implementation of local portal will be the responsibility of individual institutions. Local portals will allow tailored access to a selection of data sets of importance t a particular institution, plus integration with other locally licensed data sets and local products, including local OPAC. Subject gateways are already familiar features of the world information landscape, and fulfil a useful role in directing internet users to quality information. Gateway information are electronic journals, data sets, e-books; educational institutions, home pages. The establishing of the gateways as a process of identification, filtering, description, classification, and indexing before they added to a data base which is freely available via the world wide web. The most essential element of a subject gateway is a catalogue, or directory of internet sources. Subject gateways are online services and sites that prove searchable and browsable catalogues of internet

based resources. Subject gateways are typically focuses on a related set of academic subject areas. The subject gateway should therefore encourage the exploitation of publishers material, and will simplify material. Integrated in to these subject portals will be the existing and developing subject gateways, which will continue to provide free access to quality web resources. The existing subject gate ways are successful information retrieval tools, and are greatly assisting learners, teachers and others is providing access to reliable, high quality and useful networked resources. As one of the practical applications, Internet as a source of information is included in this web site of library and information science as a gateway. These sources are online and often linked up with other relevant and related sites for more information on the same area.

4 DESIGN OF HOME PAGE

ISI library gateway is a step in an evolutionary process. The database pages establishes links with mainly to sites which have produced e-journals, reference sources etc., The WWW search engines page offers access to mainly sites and documents related to library and information science. Popular browsers like Netwscape and internet explorer enables them convenient linking to many of these search tools through a click search button on the browsers screen. The following important search engines are used for creating this web sites. These are googles.com; northern light.com; yahoo.com; Alta vista.com. This web sites is developed by using Front Page Editor.

Library subscribes 270 periodicals both national and international in various fields like statistics, Mathematics, Economics, quality management, library and information science. Back issues of these periodicals are available in bound form for reference. The database gives details like volume, issue number available in the library. It gives access to books and journal collections. The library is the interface to electronic data providing access. Navigational aids and resources are provided in the form of 'hot linked' web pages.

5 DATABASES AND E- JOURNALS

This option allows the user to browse which an alphabetically listing of titles for e-journals in the ISI BC library collections. These included;(1) Free electronic journals in LIS; (2) E- books; (3)Full text of subscribed ISI journals ; (4) table of contents and references to LIS;(5) Information about library software;(6) Library publishers;(7) Important digital library websites ;(8)Library and Information

schools;(9) list of National Libraries;(10) List of Librarians;(11)Library professional Associations;(12) Librarians Yellow page. In order to ensure that the electronic library continues to thrive as users become more numerous and sophisticated, library have begun to design new gateway employing new techniques. The interface will incorporate graphics in to command and help functions. It will provide access to a wide range of resources, displaying text and numeric data, bit-mapped pictures and diagrams from journals and books, and images from graphics programs.

6 ONLINE RESOURCES

Information resources on the internet are all stored as computer files of IP address. Each file has a file name and a path name, which defines the directory and sub directories in which it is stored. Immediacy, accuracy and currency of information are the most important factors in fulfilling users information needs. Thus, the aim of this sub –menu is to provide information about the library collections. It focuses on the print and electronic resources that are acquired by Indian Statistical Institute Bangalore Centre library. We have included directories of Internet resources in each search of the resources guides, and have aimed to single out ones that complement each other and which are recognized authentication. (1) Link to electronic journals (2) link to local area network (3) link to union catalogue

Maintenance and expansion of the gateway system are led by a staff member of ISI Library. Most daily gateway work has been mainstreamed in to library operations. Notable examples of the electronic library impacts can be seen in collection development, presentation, technical service, and information services.

7 PROBLEMS WITH DESIGNING GATEWAY

This article explains many issues in the design of gateway various stages in the process of development They are (1) Selection and evaluation of information (2) Currency of information (3) Identification of user needs (4) Copy right/IPR (5) Monitoring updateness .

8 CONCLUSION

The results show that the development of local, national and international networking and computer technologies in libraries, and evolution of integrated library system have great influence on the job duties, requirements of skills in the technology. It also highlights the

fact that gateway development and maintenance are ongoing activities for which resources and personnel are needed on a continuing basis. It is a process that can assist librarians to plan appropriately for the creation and management of a library gateway that will further the aims and objectives of the library and information center and assist in meeting the needs of users.

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CREATION OF BIBLIOGRAPHIC DATABASE AND USE OF ONLINE CATALOGUE IN CHMK LIBRARY: A CASE STUDY

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ABSTRACT

Describes the procedure of conversion of card catalogue into computer readable bibliographic database in CHMK Library. Reviews the problems in converting card catalogue into computer readable bibliographic database. Examines the use and limitation of online catalogues. Gives certain suggestions to improve the efficiency of online catalogue.

1 INTRODUCTION

Creation of a machine-readable catalogue of in house collections is a major problem in library automation. In large libraries this involves the problem of retrospective conversion of card catalogue into machine-readable form. A computer readable bibliographic database should follow international standard for data entry. This is essential for compatibility, which will lead to networking and enable the exchange of databases. Therefore the data entry should be done according to Anglo-American cataloguing rules, 2nd ed. (AACR2), which follows the International Standard for Bibliographic Description (ISBD). In the Indian context, most of the libraries, which started before 1980 have followed Classified Catalogue Code (CCC) for the preparation of their card catalogue. Therefore retrospective conversion of

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register for adding details related to imprint (place, publisher and year) and collation (physical description). Similar checking will be required for verifying and rectifying any other error or inaccuracy seen in the main entry card. Care should be taken not to repeat the data entry more than once for copies of the same document, instead of adding the accession number/copy number.

At present CDS/ISIS and LIBSYS are the most widely used software which will enable to produce catalogue entries in machine-readable form. However it is desirable to use a software, which will enable to produce catalogue entries in regional languages using non-roman scripts in the Indian context.

2 C.H. MOHAMMED KOYA LIBRARY

C.H. Mohammed Koya Library (CHMK Library) is the central library of the University of Calicut. At present it has a collection of about 88,000 documents consisting of books, bound back volumes of journals, theses and dissertations, maps, magnetic tapes and microforms. The library is kept open from 8 a.m. to 8 p.m. on weekdays and from 8 a.m. to 2 p.m. on Sundays. It serves teachers, students, research scholars and non-teaching staff of the Departments. The membership is open to teachers and students of affiliated colleges and other graduates also on payment of an annual subscription.

The library collection is classified according to Dewey Decimal Classification (DDC) and catalogued according to CCC. The card catalogue has a classified part and an alphabetical part consisting of author - title - series added entries and class index entries. The library collection consists of books in English, Malayalam, Hindi and Arabic.

3 RETROSPECTIVE CONVERSION OF BIBLIOGRAPHIC DATABASE

CHMK Library acquired computers in April 1996 utilizing a grant of Rs. 10 Lakh provided by the Govt. of Kerala under the State plan fund and set up a computerization. Since the library had not acquired LIBSYS, initially CDS/ISIS was chosen as the software for database creation. Later on when LIBSYS was acquired in 1998, it was converted to LIBSYS program. It was decided to collect information from the main entry card of the classified catalogue.

2.1 CREATION OF DATABASE

Database creation was done using CDS/ISIS software (Microversion 3.07). The help of Mr. N. Narayanan Kutty, a library professional from Vikram Sarabhai Space Centre (VSSC), Trivandrum and an alumnus of DLIS, Calicut University was sought, who has good exposure to this package. He provided the required Field Definition Table (FDT), Field Selection Table (FST), data entry work sheets and display formats for the creation of the database.

2.2 DATA ENTRY

Data entry was done in the LAN environment using separate directories. Six nodes were available for the purpose. Three professional staff members were assigned this work. In addition MLISc students of the department of Library and Information Science were also assigned data entry work for books belonging to DDC class numbers 500 to 650. This was done with a view to help them gaining practical knowledge and training in CDS/ISIS package. Even though catalogue entries were earlier done according to classified catalogue code, as a practice of local variation the publication details (place of publication, name of publisher and year of publication) were added in the main entry cards, except for some very old books. This practice helped in getting the imprint without additional work. The students completed the work on two computer systems on a time sharing basis. On screen editing and correction of entries were done as a daily basis. In this method, one person reads out the information from the main entry card and the other person verifies and corrects the records on the screen. During the data entry if the information found on some main entry card is found insufficient or confusing such main entry cards are sent to the technical Section for verifying with the accession register or with the document itself. After verification the corrected main entry card is returned to the Computer Section for data entry.

2.3 COMPLETION OF DATA ENTRY

The data entry was completed in three phases. In the first phase the bibliographic database of English books in the stack room collection was created. In the second phase, data entry was restricted to the text books, dissertations and other reference books in the reference section. In the third phase bibliographic database was created for books in Malayalam, Hindi and Arabic. Since CHMK Library does not have a software program which can produce database in non-roman

characters the bibliographic details of books in Malayalam, Hindi and Arabic had to be transliterated.

3 USE OF LIBSYS

The CHMK Library acquired LIBSYS software in 1988. The database created according to CDS/ISIS was converted to LIBSYS software program.

3.1 DATABASE CREATION OF CURRENT DOCUMENTS

Data feeding for creation of database of current accession is done from the Acquisition Section. The staff of the Acquisition section enter data related to authors, title, other title information, collaborators, edition place, publisher, year of publication, series and details of volume numbers and pagination.

When the staff of the Technical Section receives the copy of the new document from Acquisition Section, they verify the data entered in the computer related to the document having a particular accession number. Corrections are made if required. Class number, Subject heading (Keyword) and content notes are added. Content note is given on the basis of the chapter headings seen on the contents pages. In case the chapter headings exceed the available space, it is condensed to titles of sections, parts or volumes only.

The card catalogue entries of books in English for the supplementary card catalogue are obtained as printouts of the data entered and it is done by the computer section. For books in Malayalam, Hindi and Arabic, catalogue entries are hand written on cards, not reproduced from the data entered.

4 SEARCHING THROUGH THE ONLINE CATALOGUE

LIBSYS has the following options:

(i) It permits search by the name of author, title, class number, subject term, place of publication and name of publisher.
(ii) It permits search by any key word in titles.
(iii) It permits search by combination of keywords (Boolean search).
(iv) It gives full details of any particular entry.
(v) It enables the user to know the status of a particular volume, i.e., whether issued or available on the shelf.

4.1 ADVANTANGE OF THE ONLINE CATALOGUE

(i) It is easy to operate with some simple commands.
(ii) It displays a large number of entries from author, title, indexes, classified part etc. in a single frame and browsing forward or backward is possible with clicking of the mouse. Therefore it takes much less time compared to manual catalogue.

4.2 USE OF ONLINE CATALOGUE

The survey conducted by a student of the MLISc course as part of her dissertation work has proved that the students of various departments of the University find the online catalogue easy to use compared to the card catalogue.

From the personal observation of the author also it was seen that the student members are very actively using the online catalogue but the card catalogue is never used. The staff of the Maintenance Section also says that when there was only card catalogue the students used to take help of the staff for locating books from the catalogue. However, now most of the students are able to locate the required books from the online catalogue by themselves.

5 LIMITATIONS OF THE OPAC

Now the entries of books in Malayalam, Hindi and Arabic are transliterated into roman script in the OPAC. Use of a software which can produce entries in non-roman scripts is desirable because reading the transliterated entries on the screen is difficult.

At present even though the information related to series is included in the database there is no provision in the software to search by series. This is a limitation of the database. Names of some series are easily remembered by readers. Therefore provision for search by series is necessary.

AACR2 permits entry under the names of joint authors up to three whereas the database has restricted it to authors as in CCC. Conformity to AACR2 format will call for the inclusion of the names of three authors. At least for current documents, names of not more than three authors should be entered.

In the case of some old books the publication details are not available. Even though pagination is given for recently acquired documents,

details of illustration and size are not given for which there is provisions in the AACR2 format. Even though there is provision for subject search, subject headings are given only for those books for which such subject terms are printed on the verso of the title page as part of the Cataloguing In Publication program (CIP).

Use of a standard tool like LC List of the subject Headings or Search list of subject headings to assign subject headings is desirable.

At present only two terminals are given for the use of public. Often students are seen waiting or four or five persons are seen sharing a terminal as a group. Therefore more number of terminals should be provided.

6 CARD CATALOGUE AS A SUPPLEMENTARY TOOL

Card catalogue is updated and still maintained as a supplementary tool. For the recent acquisitions card entries are obtained as computer print outs. Those who are unable to use the computer can use the card catalogue. In the case of current failure, card catalogue can be used as a supplementary tool. However since the University has a generator, the question of current failure seldom arises.

7 CONCLUSION

It is seen that the Public Access Catalogue (OPAC) in the CHMK Library is used well by students and other members. However the efficiency and effectiveness of the online catalogue can be increased if some of the suggestions given in section 5 of this paper are implemented.

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ELECTRONIC PUBLISHING: CHALLENGES AND OPPORTUNITIES

Asha Rani*
Late Shri S.P. Gupta**

1 INTRODUCTION

The exponential growth in the volume of published information, difficulties in retrieving information from libraries due to scatter and seepage of information, the need to control and provide access to ever increasing volume of information at a faster pace, increase in the cost of raw materials and manpower used in publishing leading to rising costs of books and journals, delay caused in dissemination of information in print media are some of the problems of information in the traditional print-publishing system.

2 PUBLISHING

The publishing of information in the form of books, journals technical reports, conference proceedings, reference books, indexing and abstracting journals, maps, drawings, standard specifications and codes of practice, patents, translations etc, encompasses a number of activities including:

- Collection of manuscript from authors,
- Evaluation of the contents (Refereeing)
- Editing the technical contents
- Improving the language, style of presentation
- Composing, proof reading, page making, designing
- Printing (Paper, ink, colors, to be used)
- Binding (paperback, hard binding, loose-leaf binding, Full cloth/leather binding etc.)

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- Publicity and advertisement, catalogues
- Cost estimation and pricing
- Distribution, marketing
- Feedback, updating, revising, reprinting etc.
- Copyright and other legal aspects

The publishing is done by different types of publishers such as:

- Academic & Research Organizations
- Scientific Societies and Associations
- Government Departments etc.
- Commercial Publishing Houses

For different class of people

- Children
- School & college students
- Academic, Scholars and Researchers, etc.

And for different purposes:

- education and research
- entertainment

and specialize in different subjects:

- Science, technology and medicine
- Art & architecture
- Social science commerce
- Philosophy
- Humanities
- Language & literature
- Fiction, drama, poetry

2.1 Growth in output of information

Authors seek recognition and visibility from their peers and funding agencies. They need to publish to survive the more they publish in

reputed highly cited journals, The more chances they stand gaining promotion, reputation, recognition, and renewal of research support. This has led to publishing of information, which offers little new to the world of knowledge, causing information explosion. In overall terms there has been a long and sustained growth in the number of new titles, both books and journals, available to research community. The number of scientific papers published annually has been doubling every 10-15 years for the last two centuries. In effect the number of journal titles has expanded every year, doubling every 15 years.

The enormous growth of scientific information has caused serious problems of accessibility, storage, retrieval and dissemination to the libraries and the research workers.. Efforts have been made to provide access to information through indexing and abstracting services, bibliographies, etc. Alternative methods of information transmission have led to the development of Electronic Publishing.

3 ELECTRONIC PUBLISHING

Since the advent of computers-and especially of personal computersthe publishing industry has faced a dynamic change. Computer and communication technologies have challenged the primacy of print as the publishing medium of choice, and have opened up new outlets for publishers.

Electronic Publishing can be defined as the publication process where the manuscripts are submitted in electronic format, edited, printed and even distributed to users by employing computers and telecommunication techniques. In the most conventional interpretation, computers and related devices are used for economy, speed and convenience of producing a printed document. In the most sophisticated interpretation, the full capabilities of electronic media-including text, graphics, motion pictures, sound and interactive features are exploited in the creation of a completely new form of publication, which is accessible electronically, transmitted and stored electronically. In general, the fusion of computer and communication technologies with publishing can be termed as electronic publishing. There are different types of Electronic Medium that could be used to publish any given piece of work:-

Typical examples include:-

1. Low capacity magnetic diskettes,
2. High capacity portable hard disk units

3. Solid state disks of various kinds
4. Optical disk system (recoordable, and read-only media)
5. Computer network system such as in-house intranets, private Networks and publicly accessible nets such as INTERNET.

Each medium has its strengths and weaknesses and it advantages and limitations.

Electronic publishing products may include texts, graphics, audio; video, numeric and textual databases, and references sources such as directories, encyclopedias, and computer programs.

Electronic publishing is the culmination of a number of trends that have been emerging for the last four decades. First is the rapid development and widespread use of computer technology, especially the advent of microcomputers, and word processing , and typesetting software, which brought desktop publishing to millions of people. The second trend is the growth of computer networks, which resulted in Internet-the global network of networks- and opening of Internet to commercial enterprises and citizens. The third trend is the merging of computer and telecommunication technologies which, with the help of microcomputers, telephone lines, modems, and fiber optic networks have converted educational institutions, businesses, and homes into information centers and electronic publishing houses. The fourth trend is the development of information industry that demonstrated the feasibility and advantages of electronic information for managing library functions and serving library users.

3.1 Forms of Electronic Publications:

Publications produced in electronic form are available in the following formats:

1. Stand alone,, discrete products (Like Magnetic discs, CD ROMs)
2. Electronic Bulletin Boards
3. Online interactive services
4. Information on networks

4 CD-ROM

The first CD-ROMs, which were developed by Philips and Sony, began to be commercially available in the early 1980s. A CD-ROM-compact disc-read only memory-is one of a series of devices which makes

use of optical, rather than magnetic, storage techniques. A CD-ROM is twelve cm in diameter and is capable of storing almost 600 megabytes (or characters) of information; this enables about 250,000 pages of A 4 text to be stored on one CD. The latest development in optical storage device is the "Digital Versatile Disc ((DVD)" which can hold upto 17GB of data

Some of the significant CD-ROM developments during the pastfew years include:

- developments in multimedia CD-ROMs
- growth in full text CD-ROMs
- declining hardware and software prices
- increased number of users
- general acceptance of CD-ROM (in libraries))
  Increasing number of CD-ROM publishers.

Many of the early CD-ROM products covered bibliographic information. Organizations as the National Library of Medicine in the US, the US Office for Education, and the UK Library Association had been producing computer databases ((Medline, ERIC and LISA respectively) covering indexes and abstracts to the primary literature for some years. Since the 1970s, these databases have been available for searching via online remote 'host' services such as DataStar, Dialog and ESA-IRS. The advent of these databases on CD-ROM has provided an alternative route to that information via a more 'user-friendly' interface, which is aimed at end-users rather than intermediaries, and at an annual fixed cost. The cost of CD-ROM as a distribution medium for information from the book trade has become commonplace.

CD-ROM has proved to be a suitable medium for publishing full-text databases. A major development in full-text databases on CD-ROM is the ADONIS system, which contains the full text and illustrations of 600 biomedical and related journals from fifty publishers. Subscribers to ADONIS receive weekly CD-ROM, which contain about 100 journal issues. The images of pages in these journals can be printed as required, thus offering libraries an alternative to subscriptions for hardcopy version of the journals. The concept of linking the full text to the abstracts is particularly useful as an information source in parts of the world where gaining access to interlibrary loans or other forms of document delivery is complicated.

In the 1990s the major change in coverage has been the growth of multimedia CD-ROMs. Multimedia systems combine audiovisual and data processing into one box which is represented on one medium (usually some form of compact disc or hard disc) which contains at least three of text, audio, computer graphics, still or moving footage (i.e. Film or video). The information covered on multimedia CD-ROMs is vast and includes images, features films, music, birdsong, and sports handbooks, travel guides and medical information.

CD-ROM publishers integrate the basic information, the search software and provide the necessary user documentation and support. There are a wide range of organizations involved in publishing CD-ROMs; these include traditional academic publishers (e.g. Oxford University Press, ChadwyckHealey, Elsevier, Bowker-Saur, Aslib), the computer industry (e.g. Microsoft) as well as the entertainment industry (e.g. Disney, Sega, Nintendo). The growth in number of companies involved in producing CD-ROMs mirrors closely to the number of CD-ROM titles produced.

Some companies supply a range of CD-ROM products from data supplied by other information providers. Silver Platter was an early entrant in the CD-ROM market and now publishes about 200 titles covering a wide variety of subject areas. CD-PLUS Technologies supplies CD-ROMs mainly in technical and medical areas, which are searched using the Ovid software, which runs under DOS and Windows. CD PLUS is an example of a company that moved from being a CD-ROM supplier to also being an online "host"service provider following its acquisition by BRS early in 1994. The major online host service. "Dioalog', eneered the CD-ROM market in 1987. Its Ondisc Service now has about databases and is used by more than 10,0000 users in 1000 countries OnDisc incorporates a menu-mode search facility for end-user's and can also provide the facility for linking in to a search of up to date databases on the remote host computer. Subscription agency, such as EBSSCO. also have a range of CD-ROM products, which they can supply to libraries.

National libraries such as the British Library (BL), also publish databases on CD-ROM. The Document Supply Center of the BL produces a range of CD-ROMs such as Boston Spa serials (450,000 serials holdings), Boston Spa conferences (details of 320,000 conference proceedings) and Inside Information (contents pages of 10,000 frequently requested journals)

Many organizations publish their own databases on CD-ROM and this is becoming easier as the cost of producing master CD-ROM is decreasing and there are a number of CD-R (Compact disc recordable) products available.

4.1 CD-Networking

Basically a network is a method of connecting two or more computers together in order to allow them to share resources such as printers, application software or CD Drives. Networking CD-ROMs, access from the users' owns workstation, simultaneous access by several users to the same database and better security.

5 ADVANTAGES OF ELECTRONIC PUBLISHING

In electronic publishing, the data can be maintained upto date so that the buyer will be able to purchase the latest version of publications (for example, encyclopedias). This enables 'on demand publishing', and allows retrospective searching and SDI. The individual subscribers can be provided with only those documents, which match their profiles, and can be charged accordingly. An important factor is that the Library and Information Centers need not 'buy publications" to access the information contained in them'; they can have online access to the Electronic Publication and download or print the required materials. The Electronic Publications provide aids for connectivity, audiovisulisation, customizability, creation and revision of documents, interactivity, and rapid information retrieval.

The most important advantage of Electronic Journals over the conventional journals is the saving in the turn-around time, i.e. the time lag in submission, refereeing, revision, editing, composing, printing, binding and forwarding eliminated by using computer and communication networks. This enhances timely publication and is suitable to the letter-type journals where rapid communication is of utmost importance. The electronic version also offers Boolean search of the full text to browse and read only the selected items. Further, when computer and communication facilities are available, the reader need not go to the Library and Information Center and need not have to sift through unwanted material as in conventional journals to search the relevant papers. Electronic publications may help in overcoming the restrictions on the length of the paper imposed by many scholarly journals.

6 DISADVANTAGES

Some of the problems of Electronic Publications include high initial costs to the publishers as well as Library and Information professionals have to invest before benefits are expected, the non-compatibility of hardware (and hence the market potential) due to the absence of common standards, and the usage of different retrieval software by different publishers. The acceptance of Electronic Journals depends upon the user-friendly retrieval software. As a prerequisite, Electronic Publications necessitate the availability of a computer and communication network to the subscriber. The gap between developed and developing countries (those who can access and those who cannot) makes the Electronic Publications an elitist technology.

Electronic journals may take some time to percolate down to the reader mainly due to the problem of displaying page images conveniently on a computer screen. For an entire page to be accommodated the size of the image has to be reduced and the low resolution makes it difficult to read.

Ease of use, i.e. reading at a convenient time and place, is not possible with Electronic Publications. As there are no restrictions on the length of the papers and of course no page charges, the quality of papers may be poor if lengthy papers are accepted. Other disadvantages include the psychological feeling that researchers generally read more outside their work place, thus requiring portable reading material, though this problem can be solved by taking a printout of the required literature.

Other problems include the necessity of training for the subscribers and readers, and multiple copying license/charges (for example, ADONIS). Due to these factors, unlike their printed counterparts, Electronic Journals are not open to all but somewhat restricted.

Not withstanding these drawbacks, Electronic Journals will become all pervasive as their printed counterparts, at least in some subject fields. The day may not be too far when a researcher is able to read on Electronic Journal at a convenient place and time using laptops (to read in journey, leisure, etc.) and computer at home.

7 BARRIERS TO ELECTRONIC PUBLISHING

Social habits die hard, and those brought up with the printed book or journal may take longer to change their habits than the technology allows. Conservatism is a key feature of the scholarly information system, which sees the regard to researchers not primarily, in any commercial sense but more in terms of such undying features as "Prestige", "Esteem", and "Recognition". Such motives are not easily transferred to the electronic publishing environment.

There are a variety of restrictions preventing full and open access to the electronic publications currently being made available. Some of these are administrative, some are socio-technical, with many software and display interfaces, information retrieval languages, and database structures inappropriate to users needs. The new media systems require much greater involvement by the IT experts to make them more user friendly and acceptable. In effect, technology is creating the basis for a new paradigm in scholarly information transfer. New electronic opportunities are opening up every few months as users of the emerging information technology seek to make it a technology will have an impact on the development of new media. A question, which is confronting print-based publishers, is what part they will play in the migration from print to electronic information system. The publishers are not likely to gain the same strong position in electronic publishing as they have in print based systems, because of the following:

1. The contents they hold are only part of future multimedia publishing needs.
2. They have only limited know-how and skills for developing the new media products of the future.
3. The traditional editorial experience is a barrier to electronic publishing.
4. They are not used to publishing on demand (at the article or document level).

8 COPYRIGHT ASPECTS

A fundamental principle of copyright is that its protection runs not to the ideas manifested in a work of authorship, but only to their expression. Not only the traditional works such as books, periodical articles, photographs, motion pictures, music sheets, painting and sculptures, etc. eligible for copyright protection, but so are sound

recordings (whether fixed in viny1, tape, or CD-ROM), computer programs, computerized databases and other-high-tech works.

In the case of Electronic Publishing, the condition of publications are considerably different, the conventions are not well established, and the copyright law was not written in anticipation of Electronic Publishing; although some people claim that the copyright law is sufficiently flexible to embrace Electronic Publishing. Plagiarism and reluctance to acknowledge original sources are being reported in science, which are very unfavorable to Electronic Publishing.

9 FUTURE TRENDS

The printed books and journals will undoubtedly have a place, but the appeal of new and more efficient information system-relying on computers, optical storage and telecommunications-will become more evident and acceptable. The new media (Electronic media) systems rely on the integration of information published in other forms such as text, graphics, sound, animation, moving images, etc. to create new value-added publications into alternative formats to allow a wider group of users access to and benefit from the source material. The next few years will see a decline in the printed subscription, but before increased revenues from Electronic or Optical Publications can be received, sufficient to support the same publishing infrastructure as now, a period of low profitability and margins will take place. Only a few traditional publishers will take on the new challenges. Such a structural change in the industry has important repercussions on the balance between print and new media.

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IMPORTANCE OF LIBRARY WEBPAGE IN SPECIAL LIBRARIES :A CASE STUDY OF IUCAA LIBRARY

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ABSTRACT

This article briefly describes the importance of library webpage in Special Libraries. It also tells about the importance of Web aware OPAC (On-line Public Access Catalogue). The role of IUCAA library webpage to access Electronic Journals subscribed by IUCAA Library to provide desktop access to electronic version of journals to its users has also been discussed.

1 INTRODUCTION

Special library plays a very important role in a research institute. Special library deals with specific subject. It may have collection of other related subject also. Users of special library are more specific. They know what exactly they require. So to fulfill their requirement and give service at standard level and to expose library services, library webpage is very important. It also tells its user about library activities and new services that are updated day by day by library staff.

Who needs it?

It is important to know that who is going to access your library webpage. It makes a first appearance on the library users who are going to use it. Other libraries can also access and take advantage

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for Inter Library Loan Service. Now a days almost every research institute have there own webpage. It helps to expose Institute's activities, facilities, ongoing project, various programs, and lots more.

2 LIBRARY WEBPAGE

Now a days almost every special library have there own webpage and it is very helpful to promote library services at wider level. Institute can use library webpage as a platform to explore library services to users as well as community in concerned subject and it definitely help end users to know about library activity.

There are many ways to make useful library webpage. Following things can be put on library webpage:

1. Library collection
2. Library timing / working days
3. Library rules
4. Library services (CAS/SDI/Reference services)
5. New books
6. New Issues of Journals
7. New Preprints
8. List of Thesis, CD-ROMs, Reference collection
9. Special collection, if any
10. Electronic Journals
11. Electronic books
12. Link to Web OPAC
13. About Library software being used by library

3 ELECTRONIC JOURNALS

The goal of E-journals subscribed by any Library is to provide desktop access to electronic version of journals to its users and free e-journals of relevance to institute to this end. In addition to online journals, library webpage can also contain several free, peer-reviewed electronic journals/database sites etc. Variety of information for each journal, including link to the journal web site can be stored at library webpage. Using these links, users can visit the journal site and access the full text of articles. The user can be kept informed about the online status of e-journals regularly.

Current Awareness Service (CAS): Library webpage plays a important role to provide current awareness service to its users. New books, New issues of journals, New preprints received in the library

can be put on library webpage. and it also fulfills the 4th law of Library Science (given by Dr. Ranganathan).

Selective Dissemination Information(SDI): Library webpage allows library members to propose books for purchase using web-based suggestion forms. These forms can be viewed by the library staff and books can either be marked for approval with the name of the approving authority or approved for purchase by the staff. The approver sees the list of books meant for his/her approval on web and can mark some of the books
for purchase.

On-line Public Access Catalogue (OPAC) : The Patrons in the library can search the bibliographic database (by author, title, corporate author, conference name, subject descriptors, class number etc.) and find specific information online. The Boolean search enables the user to conduct the search using all combinations including type of material, language, year etc. The search facility also apprises the user about the availability of each item for circulation, including current status of individual copies of a title and reserve status. The repository of words, names, titles, keywords, etc. is available for on-line browsing while the search phrase is being entered. This enables the display of alternate spellings, words derived from the same root and helps the searcher by providing a view of the data. In addition to these conventional searching methods, OPAC indexes every word in the description of the item. Thus, to conduct a search one need not be aware of the cataloguing style of the library.

4 WEB AWARE OPAC

Many library software has the capability of putting library information on the WWW / Intranet.Using Web Aware OPAC one can view his/ her loans and reservations. He/She can even reserve an item in the library through the internet. Along with all these features , catalogue browsing, circulation details, word/phrase search, view card etc. are also available. The appearance of these pages can be customized by library staff. Retrieval of the data is simple, fast and efficient. Even a catchy phrase in the description of the catalogued item can be used for searching in few Web Aware OPAC.

5 ABOUT IUCAA

The Inter-University Centre for Astronomy and Astrophysics (IUCAA) was founded on December 29, 1988. IUCAA was created with the

objective of reviving the teaching, research and development in astronomy and astrophysics in the university sector. At an inter-university academics from universities all over the country are welcome to visit and work on their research problems. To this end an IUC provides centralized facilities and makes it possible for the prospective users to visit the centre as and when necessary.

5.1 IUCAA Library

IUCAA Library is a special library. The library is an automated open access library, which is kept open all the year round. The object of the library is to support the main objectives and to achieve the goal of parent organization. The books include major collections of astronomy and astrophysics, physics, mathematics, statistics, computer science and electronics, and also a representative collection of books from other branches of science. The library subscribes to important journals in the field of astronomy and astrophysics, many of which are received by airmail. The library is providing excellent service to the in-house faculty as well as to the associates, visitors, students, amateur astronomers, and teachers coming to IUCAA. The IUCAA Library is one of the most advanced modern libraries specializing in astronomy and astrophysics in India. It was the first library in the country to dispense with the card index in favour of a computerized database. Serving as the main resource library in astronomy and astrophysics in the university sector, it is extensively used both on and off campus. In the latter mode it provides references, copies etc. of relevant literature to users from all over India. Contents Alert Service being provided to University community by IUCAA Library.
The main purpose of IUCAA library is to promote the economical and efficient delivery of information within the university-sector for teaching, research and development in astronomy and astrophysics. It also encourages co-operative efforts for research resources, computing and communications network. Library also strengthens communication and collaboration between research and educational communities. Library takes an national leadership role in the generation and dissemination of knowledge in areas of strategic importance to India in the field of astronomy and astrophysics and also contributes to the lifelong learning opportunities to of all users of the community.
IUCAA Library has its own homepage at (http://www.iucaa.ernet.in/~library).

Users find IUCAA Library homepage very useful. It provides all

information related to IUCAA Library and its collection. This page has been developed in HTML language and is updated regularly by library staff.

New books, New journals, New preprints, List of Audio-video materials / CD-ROMs, Thesis, COPSAT service, link to various preprint servers, And other library's web OPAC.

This homepage also contain the link to Library Web Aware OPAC. Using this Web OPAC, user can search the bibliographic database (by author, title, corporate author, conference name, subject descriptors, class number etc.) and find specific information online.

The goal of E-journals subscribed by IUCAA Library is to provide desktop access to electronic version of journals to its users and free e-journals of relevance to IUCAA. To this end, we have developed a web-accessible directory database of all journals currently subscribed by library. IUCAA library has access to 110 online journals out of 130 journals subscribed by it.. In addition to online journals, library homepage <http://www.iucaa.ernet.in/~library> also contains several free, peer-reviewed electronic journals/database sites etc. We have stored a variety of information for each journal, including link to the journal web site. Using these links, users can visit the journal site and access the full text of Articles. The user is kept informed about the online status of e-journals regularly.

6 CONCLUSION

Webpage is very essential for any special library. It is a useful tool to keep informed about library activities and new services. It saves the time of the user, which is more important. The Online, internet-based journals journal opens rich and variegated new vistas. Clearly, Library webpage allow easy bridging the distances. The internet leaps over continents. All libraries whose aim is to support research in concerned subject must maintain library webpage.

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DIGITIZATION OF RARE BOOKS AND MANUSCRIPTS COLLECTIONS OF KARNATAK UNIVERSITYLIBRARY A STUDY

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ABSTRACT

The preservation of information in an useful and quickly accessible form is the main theme of this paper. It is intended for those whose professional concern is for effective management of rare/valuable information resources collected over a period of time in the library or information centre. The recent trends in the profession are mainly concentrating on the preservation and conservation of rare and valuable resources like Manuscripts. Realizing the importance of these kinds of materials as well as the available technology the Karnatak University Library has taken up an issue of digitization and the same has been examined in this paper in detail. This paper also discusses the modest efforts made in Library in the process of digitization and creating the digital resources.

1 INTRODUCTION

In the past, Library and Information professionals have responded to Information and Communication Technologies developments by adapting them in place of traditional working practices such as classification, cataloguing etc. Recent developments have enhanced the expectations on information professionals. The most radical innovation is that, the growth of the Internet and related Web information during the past decades has seen the phenomenal and

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continues to change. As people access and use the Internet their expectations for information are growing especially in the higher education environment and university libraries increasingly experience the effect of these growing expectations. Most of the university libraries are forced to update their infrastructure to meet their users' demands for access to and use of electronic information.

The Karnatak University Library is just 5 decades old. The university is having a valuable collection of rare book materials and manuscripts scattered in Kannada Research Institute, Department of Kannada Studies and Folklore. The shrinking budget, lack of space, poor maintenance, inadequate infrastructure are some of the major problems in the library related to proper organization and utilization of rare books and manuscripts.

2 KARNATAK UNIVERSITY : A PROFILE

The university, underwent and assement by the NAAC and is awarded the 5 star status. Recently UGC considered this University with a Potential for Excellence in Polymer Science. Having had its incorporation in March 1950 under the then Bombay State, it was transferred to the then Mysore State. All the universities in the state, including Karnatak University, have been brought under a uniform constitution and administrative structure. The UGC, state and central governments have adequately supported the development of the university and encouraged the establishment of various new courses of studies in higher education. The university which was started with only few departments, today is having 47 departments under 7 faculties like Science and Technology, Social Science, Arts, Law, Commerce & Management and Education.

2.1 University Library:

The university library was established along with the university. It started functioning from the same year i.e., 1950. The library was housed in the main building of the Government Training College for Men where the university officers were also working in the same building. The library was shifted to its new house in the main educational building in the year 1959. University library is well equipped with collection catering the needs of the students, teachers and the researchers. The most worth mentioning collection of this library is its UNO Depository Centre. Since its inception Karnatak University Library is having its up to date catalogue of books, periodicals(including back volumes) and the catalogue of thesis and

dissertations.

2.2. Manuscript Library:

Karnatak University has established separate Manuscripts Library which is housed in to Dr. R.C. Hiremath Institute of Kannada Studies. It has a rich collection of palm leaf manuscripts, Core paper and Common paper manuscripts in different languages and scripts. However, a majority of the manuscripts are in Kannada Language. Some of the outstanding manuscripts have been the main source for the publication of many learned books as a part of research studies. Moreover outside scholars have been greatly benefited by consulting these manuscripts of the library. So far around 10,000 manuscripts have been collected at this library. These manuscripts cover the areas like Kannada, Philosophy, Religion, Art, History, Medicine, Theology, Science and Literature etc.

3 JUSTIFICATION FOR DIGITIZATION OF RARE BOOKS AND MANUSCRIPT COLLECTION

The rare and age old collection of documents is deteriorating in many libraries because of excessive handling and exposure to non-archival conditions. Nevertheless, researchers and other users often seek access to the originals, or to reproductions of near-original quality. Thus, the Karnatak University, is considering the conversion of its rare collection into surrogate digital images as a means of making its collection more accessible, while enabling the originals to be preserved in its original condition.

It has become widely known, even to those outside the computer field, that digital imaging technology can provide worldwide access to documents by many users simultaneously, as well as completely faithful reproduction, regardless of the number of copies produced. If the Karnatak University library collection were digitized with sufficient fidelity, it would be possible for both local and distant researchers to use digital images in lieu of the originals.

It has been seriously discussed by the authorities to explore the possibilities of networking and utilization of available Information Technology in the process of collection management giving an emphasis on caring and preserving rare books and manuscript collection. Systematic efforts are made to follow the procedures and guidelines in the collection management. New approaches to manuscripts copying and digital archiving into computer databases

with the realization of cost effectiveness are in progress. A serious thought was given to set digitize the rare and valuable books, manuscripts and other reading materials and finally store them on CD-ROMs was made by the Library Advisory Board(LAB) in one of its meeting.

4 THE VARIOUS KIND OF TECHNOLOGIES AVAILABLE FOR DIGITIZATION:

4.1. Digital Imaging Technology

Digital imaging technology has progressed to the point that it is no longer unreasonable for libraries to consider converting very large number of documents into their digital image equivalents. Numerous and varied high resolution, fast, full-color scanners are becoming increasingly available at low cost, while high resolution computer monitors have become commonplace on desktops. The power of low-end computer processors and the capacities of local magnetic storage now allow the manipulation of tens or hundreds of megabytes of data in local storage. Compact Disk, Read-only Memories (CD-ROMs) and the newer recordable compact disks make the distribution and storage of hundreds of megabytes very convenient, while most "multimedia" computer systems are now sold with CD-ROM drives. For most organizations, the speed of access to local area networks (LANs) and to the Internet have been increasing and the adoption of digital image compression standards by software manufacturers has eased the burden for the transmission of large images. Recently, the Internet's World Wide Web, with its easy-to-use graphical interfaces displaying formatted hypertext and "clickable" images and its simplified file transfer procedures, has become familiar territory to many less-experienced computer users. What this means is that the traditional barriers to very high resolution digital imaging for full color documents are no longer quite so high.

4.2. CCD Sensor Technology

Most scanners and digital cameras (except for some very high resolution devices) use charge coupled device (CCD) image sensors. CCDs are solid state, silicon-based devices and are available in either linear or area array configurations. Linear array CCDs sensors are able to sense a line of pixels during a single exposure and, therefore, can be used to capture a full two-dimensional document image only through motion of either the document or the sensor along the direction perpendicular to the line of pixels. Area arrays are able to capture a two dimensional image with a single exposure, but are

much more expensive to manufacture, especially in the larger array sizes. CCDs are almost ideal image sensors. In their response to light intensity CCDs are inherently very linear over a large dynamic range and their solid-state design makes them geometrically precise and dimensionally stable. They are sensitive over a broad range of wavelengths, from the near infrared through blue and violet, although they are much more sensitive in the red region than in the blue region.

4.3. The Tag Image File Format (TIFF)

The Tag (or Tagged) Image File Format is a published de facto standard and is probably the most widely supported image format. Developed in a cooperative effort between seven companies, TIFF Version 1.0 was published in 1986. TIFF is now copyrighted by Adobe Systems Inc. of Mountain View, California and the current revised (dated June 1992) is 6.0. TIFF was developed to provide hardware and operating system-independent means of exchanging raster image data between application programs and scanning devices. TIFF is a very capable and expandable standard and can accommodate bi-tonal, grayscale, indexed (palette)-color, and full-color images. It supports many color spaces, compression types, a wide range of image data storage formats, including 1 to 64 bit signed or unsigned integer and 32 or 64 bit floating point. Because TIFF is a powerful and flexible standard, it's easy to develop software for writing TIFF files, but very hard to develop a universal TIFF reader.

4.4. Graphics Interchange Format (GIF)

The Graphics Interchange Format (GIF) is a de facto standard for 2D raster data, either monochrome or color table (indexed or palette color) of up to 256 entries. It is copyrighted by CompuServe Incorporated and uses lossless Lempel-Ziv Welch (patented) compression technology; the LZW patent is now owned by Unisys Corporation. GIF is well-suited for computer-generated images, in which the pixel runs (sequential pixels of unchanging color) are long and, therefore, the compression ratio is high. Because of its limited color range and run-length-based compression, it is much less suited for the storage or transmission of natural scene or illustration images.

4.5. JPEG, JFIF, and JTIFF

JPEG is actually a suite of (official) standards developed by the Joint Photographic Experts Group (hence, its name) for full-color and continuous tone raster images. JPEG (ISO 10918) is not a file format, but rather an encoding format for compressed raster images. JPEG's "Baseline Sequential" mode is the basis for the majority of current JPEG implementations and is a non-information-preserving or a lossy

compression technique. The selection of quantization tables is implementation dependent and in current implementations there is not a unique way of describing the tables for a system user. Various JPEG implementations use various terminology to describe these tables which select the trade-off point between image quality and data quantity. For the same quantization table, one manufacturer's "good" quality may be another's "medium" quality or yet another's quality value of "50" on a scale of 0 to 255. JFIF (JPEG File Interchange Format) is a file format for JPEG-compressed images, which was originally developed by C-Cube Microsystems. JTIFF uses the TIFF file format for JPEG-compressed images.

5 PRINTERS

5.1. Halftoning/Non-halftoning

Printed color copy is produced by a subtractive mixture of inks or dyes. In most cases, three colors, cyan, magenta, and yellow, are employed. However, all possible combinations of these three provide only a choice of eight colors. To extend the range of printable shades, therefore, requires an ability to modulate the amount of ink placed upon the paper. Printing devices able to render shades of color (or gray tones) may be categorized into those which perform halftoning and those which do not.

Non-halftoning printers are able to control the density of ink through a modulation of the physical process of transfer of the ink to the paper, such as by controlling the temperature of a heating element applied to the dye during a dye-sublimation process. Thus, for every printed pixel, non-halftoning printers can render a range of colors or gray tones.

Halftoning is the process of changing the density of ink placed upon a page based upon a very fine screen with variable hole size or density. In digital halftoning (sometimes known as dithering), the intensity of ink placed on the page is determined by the density of (tiny) printed dots—each printable dot is either present or not; gradations of tone for a single dot cannot be generated. Using the printing of magenta as an example, if the highest dot frequency for the digital halftone screen was 1,200 dots per inch, a fully saturated magenta would be created if every dot was filled, whereas a lighter magenta would result from 50% of the dots being rendered.

6. DIGITIZATION ACTIVITIES AT KARNATAK UNIVERSITY LIBRARY:

Considering the importance of rare and manuscript collection and its usability the authorities of the university have decided for digitization. A HP 5200'C A4 scanner was purchased and employed to digitize these documents. Since these collection are available in Devanagari lipi, Halagannada lipi etc., it can be only store in the TIFF and GIF technology format, each of the document scanned and indexed through Adobe Acrobat PhotoShop. After fine-tuning these are written in the CD with the help of a CD writer.

Looking into the financial position of the university has procured the less expensive method, more permanent, capable of full colour, faster, in-house and extensible(capable of being used to master databases, CDs, and share over the Internet). Arrangements are made for the sharing of rare books and manuscripts with others as freely and widely as possible. Their use can be licensed(especially manuscript graphics), and they can be shared via the Internet or by CDs of the rate books and manuscripts. The philosophy of sharing information is as important as any archiving and digitization technique.

The digital image can be manipulated as a graphic or converted into alphanumeric(text). Images before compression are quite large but, when compressed into image formats like JPEG, become quite tiny files. Computerization is completed with various forms of storage(re-writable media like hard drives are quite fragile but CDs have at least a half-century life rather than a few decades like microfilm).

7 LEGAL AND ECONOMIC ISSUES

Legal issues may include; intellectual property rights in the resource or integral software supplied with it; contractual terms attached to a resource or the hardware and software needed to access it; protecting the confidentiality of individuals and institutions; protecting the integrity and reputation of data creators or other stakeholders in the resource; or any legal obligation to select and preserve the authenticity and content of categories of records or individual resources.

The priorities and objectives of funding, and the funding agencies, for the resource through the life cycle can also vary and influence in number of different ways. This is particularly important for documentation and metadata on the context and content of the

resource which are most easily developed or captured when the resource are created and can only be –constructed at greater expense, if at all, at a later stage of management and preservation. The cost-effectiveness over the life cycle of the resource of completing data documentation and metadata when the resource is created.(and often its immediate benefits to the data creator) needs to be recognized and its practice encouraged.

The returns required on investment in resources may also require physical control of storage and access procedures for encrypting, locking the resources, user registration and authentication, charging and rights management. All of these can affect and in some cases can militate against long-term preservation unless they are specifically addressed as issues and the requirements of different stakeholders can be met.

8 CONCLUSION

India is very rich in its age old, rare and valuable and manuscripts collection. The most important and precious information is stored in these resources. Preservation of these resources is very difficult even under the best conditions available in the country. Currently microfilming is the accepted method in a situation where it can be afforded. But many libraries and archives just do not have funding to go for microfilming due to several reasons and incidently it is becoming obsolete. Emerging technologies becoming cost effective and planned efforts in transferring the knowledge embodied in the manuscripts and rare collections may help to a considerable extent for preserving the ancient thoughts and use them as and when necessary.

Karnatak University Library is making a small beginning in the digitization process. The active participation and growing demand for digital sources encouraging the authorities to sponsor the project with additional funds. Well planned user education programmes, active participation of the professionals in the professional forums may help the users to make use of the digitized resources and create a new wave in the library use.

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MARKETING AND PRICING OF CD-ROM DATABASES FOR MAXIMUM EFFECTIVENESS

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ABSTRACT

Marketing is essential to information management. Electronic databases offer a faster method of disseminating information and its capability to hold a large amount of information in compact form. Discusses the impact of IT on information management, with particular reference to publication of databases on CD-ROM. This paper also explains the concept of marketing and marketing-mix, besides describing various pricing methods.

The Defence Scientific Information and Documentation Centre (DESIDOC) functions as the information resource centre and publication wing of Defence Research and Development Organisation (DRDO) and so the dissemination of information covering the current developments in defence science and technology forms an important component of its activities. Therefore, besides subscribing to a large number of journals and CD-ROM databases, DESIDOC brings out several publications in conventional paper form and also brings out in-house CD-ROM databases. This study further identifies and lists important CD-ROM databases being subscribed by DESIDOC highlighting ASTI, GDI, INSPEC and NTIS. Summarizes statistical trends in subscription price of select CD-ROM databases from 1996 to 2002. Suggests that marketing techniques of information dissemination, product differentiation and market segmentation as well as resource sharing is beneficial to the library users. Concludes that in light of depleting library budgets, India could not only use CD-

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ROM media for publishing in-house databases but also devise a suitable mechanism for making a consortium of libraries like IITs, DRDO, etc to bargain for discount during purchase of costly foreign CD-ROM databases to save precious foreign exchange.

1 INTRODUCTION

The Defence Research and Development Organisation (DRDO) is conscious of its wider responsibility at the national level towards dissemination of S&T information of relevance to defence organisation within the country and abroad. One of the DRDO establishments, viz., Defence Scientific Information & Documentation Centre (DESIDOC) brings out various journals, monographs and special publications, and popular reading books on topics of general as well as special interest. These publications have a big market potential. This study aims to give an overview of the CD-ROM databases subscribed and produced by the Centre, with a view to suggest a marketing strategy, which is expected to help optimise the marketing of not only sales/subscription of DRDO publications, but also of other information services and products.

2 THE CD-ROM REVOLUTION

CD-ROM products are just over a decade old, but they have already made an impression on the library market. Their fixed price and unlimited access- similar to single copies of books and journals – make budgeting simple. They also offer a real price advantage over online "equivalents" when usage is high. The value addition of CD-ROM over print is recognized as high, but the dependence on PCs for reading (as with online) adds a cost that has been transferred neatly to the consumer. Some libraries also treat CD-ROM subscriptions as complementary to the print collection, while others consider them as substitutes and cancel equivalent or comparable print subscriptions; all of this affects pricing and packaging.

The popularity of CD-ROM is due to a number of factors: they are versatile; large amounts of data can be held in a variety of formats; access to information is fast and a variety of user-friendly search option is offered; and end-users can use a CD-ROM with little or no instruction. From the point of view of the library or information service, they can save costs compared to online services both for bills and to provide intermediary assistance when online services are used. They are, of course, also space-saving when compared with their print-based alternatives.

3 MARKETING

Marketing is the function that involves itself with the management of the flow of goods (CD-ROM databases in this case) and services from the producer to the ultimate consumer. It is therefore concerned with all the functions that are engaged in producing and selling a product that fulfills a need of the ultimate consumer. In marketing terms, pricing is viewed as part of the marketing mix, along with Promotion, Place (distribution), Product (i.e. the product/service you are offering) and (for services) People and Process. Philip Kotler, a marketing guru who has written extensively about marketing of services and marketing in non-profit organizations, has redefined the 'P's' of the Marketing Mix as 'C's'. In this new system, 'Price' becomes 'Cost to the user'. This is a useful reminder that a user will look at all the time, money and energy they have expended in order to use the service, not just the part you charge for. Therefore, users might be willing to pay extra for a service that delivered information directly to their door, because the overall cost to them is lower, rather than paying less and having to collect the information themselves.

Basically, one might look at marketing as the wide range of activities involved in making sure that one is continuing to meet the needs of your customers and are getting value in return. Marketing analysis includes finding out what groups of potential customers (or markets) exist, what groups of customers you prefer to serve (target markets), what their needs are, what products or services you might develop to meet their needs, how the customers might prefer to use the products and services, what your competitors are doing, what pricing you should use and how you should distribute products and services to your target markets. Various methods of market research are used to find out information about markets, target markets and their needs, competitors, etc. Marketing also includes ongoing promotions, which can include advertising, public relations, sales and customer service.

4 THE MARKETING MIX

The marketing mix is the organization's overall offer, or value, to the customer. 'The basic marketing mix is often nicknamed 4Ps" (product, place/distribution, pricing, and promotion).

The marketing mix can be expressed in a more customer orientated way as the '4Cs':

- Customer Value 'product' benefits from the buyers point of view
- Cost to the customer 'price' plus the customers costs - e.g. travel

- Convenience for the buyer equivalent to 'place'/channels of distribution
- Communication a two-way dialogue - not just 'promotion'.

4.1 Marketing of Information Services

The marketing of information services presents particular problems given characteristics such as:

- **Intangibility**
  Services cannot be touched or stocked. They are an experience.
- **Inseparability**
  Production, consumption and distribution are simultaneous.
- **Variability**
  Quality is variable - and users tend to use Price as an indicator of quality.
- **Perceived Risk**
  Customers are less easily convinced of reliability than with a tangible product.

To address the special difficulties of information services marketing, 3 more 'Ps' can be added to the marketing mix:

- **People**
  Staff selection, motivation and particularly customer care training are critical.
- **Physical Evidence**
  The décor, ambience and are customer testimonials are very much part of the product offer.
- **Process**
  The efficiency of the process is what provides the benefits for the customer.

5 PRICING

Library and Information Science literature shows that LIS professionals have been debating ways of determining the value of information as the value is extremely relevant to price. Price is also important in relationships with customers. Price is the value placed on what is exchanged. Price represents the value at which a seller is prepared to exchange and the value at which the customer is prepared to participate in that exchange. Something of value, usually buying

power, is exchanged for satisfaction or utility. Often that something of value is money, but other commodities of value to both parties may also be exchanged, such as other goods, time or commitment. From a microeconomic perspective, or the perspective of the individual organization, price is the single most important decision in marketing. This derives from the fundamental relationship between profit and price, which can be expressed simply as:

Profit = Price - Cost, on a per unit basis

Sales volume is the other factor that affects profit. This is also intimately related to price, since price impacts on sales volumes. A fuller expression of the relationship between these Quantities is represented by the following equation:

Profit = (Price per unit x Quantities sold) - total input cost

The production quality of a CD-ROM database is directly proportional to the cost involved in producing it. However, the increasing cost factor will lead to steep rise in the price that will be finally fixed for the CD-ROM database, and this price may go out of reach of the prospective readers. It is therefore very important to work out an optimum match between the production quality and the price of CD-ROM database. In determining prices, the marketer has to take account of costs, demand, and competition. Pricing for a new product (CD-ROM database) presents quite different problems than does price management for existing products. And environmental factors such as inflation, technological change, or government regulation-also must be considered. Some of the general pricing objectives discussed in traditional literature is (a). profit maximization, (b). cost recovery, (c). market incentive, (d). market disincentive, and (e). social benefit.

5.1 Pricing methods

A variety of pricing methods has been discussed in the literature to meet a given pricing objective. These are

i) Cost-based pricing

Refers to price set largely or even entirely on the basis of the costs. Typically, in cost-based pricing, all costs are included. usually with a somewhat arbitrary allocation of overheads made on the basis of expected operating levels.

ii) Average-cost pricing

Covers all the fixed and variable costs associated with the product/ service, and results in only one price common to all users.

iii) Marginal-cost pricing

The cost resulting from the addition of the last unit output. It is the ratio of the increase in cost to the increase in output for small increment in output. It is generally lower than average cost.

iv) Demand-based pricing

Looks at the intensity of demand rather than the level of cost to set a price. It is pricing based on what the consumer will bear or on what the perceived value of the product/service is. Lower prices are charged when or where demand is weak and higher prices are charged where demand is intense, even though unit costs may be the same in both cases.

One would look at "what the market will bear": the perceived value of the service. This means one could charge more for a service which is seen as being value-added or elite (e.g. extra-fast delivery; delivery by electronic mail; formatting information into a report). One needs to find out what your users perceive as being value-added.

v) Price discrimination

Montag identifies two kinds of price discrimination practiced against libraries: (1) institutional vs. individual subscription pricing and (2) pricing based on the geographic location of the library or the library or the library's supplier relative to the country of publication for books ordered by a foreign bookseller directly from them.

In this method the product is sold at two or more prices with the price differentials not corresponding to differences in costs of production.

vi) Competition-based pricing

You will want to gear you're pricing strategy towards your key target market, and uses the strategy encourages repeat buying. Discounts, and subscription or membership schemes, are sometimes used to foster customer loyalty and create the impression that a special, tailored service is being offered.

When a product or service is priced by being based on what other organisations are charging for same product/service. You might decide to charge the same, to undercut, or to present your service

of over 130,000 entries archived from 1986 to the present, making GDI the most extensive current news and research product available today.

6.3 INSPEC

Produced by the Institution of Electrical Engineers, INSPEC is the leading English-language bibliographic information service providing access to the world's scientific and technical literature in physics, electrical engineering, electronics, communications, control engineering, computers and computing, and information technology.

INSPEC was formed in 1967, based on the Science Abstracts service, which has been provided by the Institution of Electrical Engineers since 1898. Though based in the UK, its sales are worldwide with over 80 per cent exported. The INSPEC database, which lies at the center of this service, dates back to 1969 and has a long-standing reputation for database quality.

INSPEC assists engineers, scientists and others in their research, to locate relevant journal articles, conference papers and other documents. In addition, the database may be used for:

- Current Awareness
- New Product Information
- Technological Forecasting
- Competitive Intelligence
- Patent-Related Searching

Over 3500 scientific and technical journals and some 1500 conference proceedings, as well as numerous books, reports and dissertations are scanned each year by INSPEC staff for relevant articles to abstract and index for inclusion in the Database. The Database now contains over 7 million bibliographic records and is growing at the rate of 350,000 records each year.

6.4 NTIS

NTIS is the federal government's central source for the sale of scientific, technical, engineering, and related business information by or for the U.S. government and complementary materials from international sources. Approximately 2.5 million products are available in a variety of formats including online, electronic, multimedia, CD-ROM, paper, and microfiche. One can access information on more than 750,000 of these products. Thousands of new products are

added each week.

CD-ROM Databases – Subscription price (Rs.)			
Year	1996	1999	2003
CA	8,99,415	13,09,916	12,77,232
INSPEC	2,95,120	3,85,804	4,49,504
NTIS	99,630	1,00,392	1,13,481
CD-FICHE	1,10,007	2,43,732	2,38,293
ASTI	NA	74,944	1,00,935
GDI	NA	3,79,318	4,29,781
PATENT VIEW	2,13,043	2,83,694	3,42,070
AEROSPACE	1,64,735	2,08,578	2,84,997
AIAA PAPERS	NA	2,17,350	3,77,673
ASTM	NA	2,27,240	3,01,032

7 CD-ROM DATABASES PRODUCED BY DESIDOC

7.1 Defence Science Journal CD-ROM Database

Defence Science Journal (DSJ), a primary research journal of DRDO issued quarterly since 1949, contains original research papers, review articles and short communications in the various disciplines of science having a bearing on defence. The journal with the high quality papers published in its various issues, brings to the notice of its readers title research output in defence science and technology and the work being done in this area. The journal is multidisciplinary in nature and covers the entire gamut of defence related subjects, including aeronautics. armaments. electronics, explosives, naval science, food technology; human physiology, computer applications, etc.

Special issues of DSJ, brought out from time to time, provide state-of -the-art on a given topic of current defence interest. The review articles covered in each special issue are written by experts specializing in a given subject area. Eminent scientists in the respective fields are associated with these issues as Guest Editors. In terms of visibility, DSJ is abstracted and indexed in over a dozen international secondary journals and databases, such as: Chemical Abstracts, INSPEC Science Abstracts, COMPENDEX, BIOSIS, MATHSCI, Mathematical Reviews, Engineering Index, International

Aerospace Abstracts, Indian Science Abstracts, etc. Its annual subscription rates are Rs. 100 for individuals/Rs.500 for Institutions/ $24 for foreign individual subscribers/$40 foreign institutional subscribers (ordinary postal charges are included).

7.2 Popular Science & Technology Series CD-ROM Database

The Popular Science & Technology (PST) Series is aimed at popularizing defence science and technology among the defence personnel, students and the public. Each issue of title series gives comprehensive information on a particular topic of defence interest in popular style. The series creates awareness of current developments in frontier areas of science and technology and promotes knowledge and understanding of the subject. The text is written by subject specialists and is profusely illustrated; the treatment of subject is kept at senior secondary school level so as to make it quite comprehensible. Each issue in the series is priced very low. The publication of this series has been temporarily stopped by the Centre for certain unavoidable reasons. However, the details of title issues brought out so far are given here. arranged in chronological order.

Night Vision Devices (1985. 130 p. Rs. 5)

Battle with Barnacles (1987, 76 p. Rs. 5)

Super Vision (1988, 122p, Rs. 10)

Electronic Warfare (1988, 124 p. Rs. 10)

Satellites (1989. 84 p. Rs. 10)

Toxicology & Human Life (1990. 74 p, Rs. 10)

Composite Materials (1990, 102p. R.5. 10)

Guided Missiles (1991,81 p, Rs. 10)

Sagar Mein Sangram (Hindi) (1991. 88 p, Rs. 10)

Computers & Defence Applications (1991, 104 p, Rs. 10)

Computers evam Raksha Anuprayog (Hindi) (1991, 104 p, Rs. 10)

Radiation & its effect on Human Life (1992, 113p, Rs. 21)

Laser & its Applications (1993, 100 p, Rs.20)

The Living Desert (1994, 129 p, Rs. 25)

Kindling Creativity (1996. 100p, Rs. 100)

7.3 PATRIKA CD-ROM Database

Newspapers provide access to the most current information, which include news reports, editorials, letters to he editor, product evaluations, biographical information, financial information, etc. A newspaper clipping service (NCS) satisfies the user need for quick, reliable and comprehensive access to the information published in the daily newspapers. The objectives of a typical NCS are: (i) to enable scientists and decision makers identify problem areas where investigations are to be initiated: (ii) to disseminate information on prominent issues of current value in the field which may not be available in books and periodicals; (iii) to identify new areas where research activities can be undertaken; (iv) to track the competitors; and (v) to avoid duplication of research by updating archives.

In a typical NCS, all the subscribed newspapers are scanned for selecting items of their field of interest. The relevant items are marked and all marked items are cut. In cases, where many newspapers cover the same news item, the item with the maximum news is included. All relevant editorials and review articles are also included. Some of these items are enlarged or reduced while Xeroxing to fit in A4 size sheets and are arranged by a specified subject order. At the bottom of each item, the source (newspaper name) and date is stamped. Daily clippings are bound and given a unique serial number. Photocopies of the original set are mailed to the various users on the same day. These bound sets are arranged in chronological order and preserved for archival purposes. These items can also be put on local area network for wider use. The NCS is thus an updated supplement to other reference sources and is an integral part of any research-oriented organisation/institution.

However, newspaper clippings have a limited lifetime. The acidity of ground wood paper has a decisive factors of its lifetime. Slightly acidic or neutral modern newsprint's loose their strength very slowly due to accelerated aging, very acidic historic newsprint's, however, are already in a higher stage of degradation and lose their strength intensively after a certain time of accelerated aging. To overcome this problem DESIDOC has made the newspaper clippings available as CD-ROM database called Patrika. The software used is user friendly and searchable.

8 CONCLUSION

The exponential growth of knowledge and increase in the number of documents suggest for exploitation of CD-ROM technology for providing effective information services to the users. The marketing puts the customer at the centre of the organization. The organizations, which do so, reap the profits. The pricing strategy needs to fit in with the overall mission of your organisation, and reflect one's financial objectives: it will be part of organisations marketing or business plan. The usual advices about goals and mission apply: if your staff do not 'own' the objectives, then they may not work to support them. So that pricing 'remains largely a combination of good management, experience, trial and error, intuition and good luck'.

Social responsibility by way of dissemination of information and not commercial profitability is the basic factor behind the pricing of all DRDO publications. However, in the case of titles brought out under PST series and the two priced periodicals (Defence Science Journal and DESIDOC Bulletin of Information Technology), the price of each title has been subsidized heavily, keeping in view the targeted readership. Each title has been priced nominally to ensure that only interested persons have an easy access to it. As such, there has been no pricing formula for calculating the cost/price of each title and each title is priced informally, irrespective of the cost of inputs that have gone into production of each title.

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CD-ROM Databases - Subject wise

Chemistry				
1. Chemical Abstracts	12/12	1996	Bibliographic	ACM
Library Science				
1. Global Books in Print PLUS Bowker		6/12	1997-1998	Bibliographic
2. LISA Plus	12/12	1969-1999	Bibliographic	Silver Platter
3. Ulrich's Serials Database Bowker		2/12	1986-1993	Bibliographic
4. Whitaker's Book Bank	6/12	1996-1993	Bibliographic	Bowker
Standards/Specifications				
1. ANSI	6/12	1996	Full Text	ANSI
2. ASTM	4/12	1998-1999	Full Text	ASTM
3. BSI	6/12	1996	Full Text	BSI
4. Defence Standards, UK	4/12	1999	Full Text	ISH
5. DIN-Standards	3/12	1998	Full Text	ISH
6. DoD Standerds	6/12	1994-1998	Full Text	ISH
7. Historical Standards Specifications	1/12	1994-1998	Full Text	ISH
8. ISO-Standards	6/12	1996-2000	Full Text	ISH
9. Mil Specificatons	12/12	1999	Full Text	ISH
10. Indian Standards	4/12	1999	Full Text	USA Inf. Sys
11. World wide Standards	6/12	1994-1998	Full Text	ISH
Patents				
1. Patent View (Derwent)	52/12	1996	Full Text	Derwent
2. US Patent Images	52/12	1995	Full Text	Derwent
3. Ekaswa : A	1/12	1999	Bibliographic	TIFAC
4. Ekaswa : B	1/12	1999	Bibliographic	TIFAC
Biological and Physical sciences				
1. Science Citations Index	12/12	2001	Bibliographic	ISI
2. CNS Database	4/12	2002	Bibliographic	CNS
Defence Science/Technology				
1. Aerospace	4/12	1992-1999	Bibliographic	DIALOG
2. CNS Data (PNS, ENSP,	4/12	1994-1999	Full Text	CISNP
3. Global Defence Information (GDI)	12/12	1987	Bibliographic	Skanfo
4. FMM Middle East &	4/12	1999	Full Text	AFI
5. FMM NATO & Europe Forecast	4/12	1999	Full Text	Forecast International
6. FMM Pacific Asia, Australia & Rim Forecast		4/12	1999	Full Text Forecast International
7. Jane's Defence Eqipment Library	4/12	1999-2000	Full Text	Jane's Information Group
8. Jane's Geopolitical Library		4/12	1998-2000	Full Text Jane's Information Group
9. Jane's Market Intelligence Library	4/12	1998-2000	Full Text	Jane's Information Group

10. Jane's Unmanned Vehicles & targets	4/12	1998-2000	Full Text	Jane's Information Group
11. Jane's Year of Defence	1/12	1999	Full Text	Jane's Information Group
12. Land & Sea-Based Electronics Forecast	4/12	1999-2000	Full Text	Forecast International
13. Risk Report	6/12	1997-1998	Bibliographic	Risk Report
14. Space System Forecast		4/12	1999-2000	Full Text Forecast International
15. Unmanned Vehicle Forecast		4/12	1999-2000	Full Text Forecast International
16. AIAA Papers	4/12	1999	Full Text	AIAA
17. Warships Forecast	4/12	1999-2000	Full Text	Forecast International
Engineering /Technology				
1. Applied Science &	12/12	1983+	Bibliographic	Silver Platter
2. Current Technology Index		4/12	1986-1993	Bibliographic
3. EI COMPENDEX	4/12	1995-1999	Bibliographic	DIALOG
4. IEL(IEEE/IEE Electronic Lib.)		12/12	1988-2000	Full Text I H S
5. INSPEC	4/12	1989	Bibliographic	IEE
6. Inside Information Plus Sci. British Library		12/12	1999	Bibliographic
7. NTIS	4/12	1983	Bibliographic	DIALOG

48
MARKETING VALUE ADDED MANAGEMENT INFORMATION TO USER COMMUNITY:A CASE STUDY OF AIMA LIBRARY

Rumma Sharma*
Pravin Kumar Choudhary**

ABSTRACT

Paper tries to explain the information marketing activities offered at AIMA library. It explains in brief different services rendered like, SDI, Table of content, New Addition, Web alert, Document Delivery services, Newspaper clippings and Question bank facility. The cost and financial aspects of the services has also been discussed in detail considering the quality and quantity the services being provided.

1 INTRODUCTION

Library and information systems so far have been more storage, security and audit purposes. Any change in this approach would have to be thought planned for and implemented over a long period. Marketing of information products is gearing up in big way. It is because of the fact that increasing dependence of professionals from different walks of life for their endeavour of excellence. The corporate world is not exception, where emphasis is much on knowledge management and management information system

2 DEFINITION OF MARKETING

According to Philip Kotler marketing is the social and managerial process by which individuals and groups obtained what a need and

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want through creating offering and exchanging products of values with others.

3 COMPONENTS OF MARKETING

It is worth mentioning that the different components of marketing in brief. The term marketing is being used in three different ways:

- Marketing as a process (Customer)
- Marketing as a function (Product decision)
- Marketing as a technique (Pricing, research, etc.)

We can sum up the marketing concept as understanding consumer's needs, matching organizational strength to market opportunity, segmenting market to direct your efforts for survival and future growth. The decisions with respect to four components of marketing i.e. products, price, place (where the goods are available), and presentation are important for marketing. The components of marketing are also known as marketing mix, since these are interdependent (detail discussion of the marketing components is beyond the scope of the study).

4 WHY INFORMATION MARKETING AT AIMA

To discuss this point let us highlight the objective of All India management Association (AIMA)

The All India Management Association (AIMA) was set up in 1957 as the national Apex Body of the management profession with active support of the Government of India and Corporate Sector. AIMA is intended as a cause group – a body to pool management thoughts in the country; a forum to develop a national managerial ethos; an organization to facilitate the furtherance of the profession and its contribution to society. AIMA is represented on a number of policy-making committees of the Government of India, the Indian Institutes of Management and Professional bodies and also maintains close links with a number of overseas professional bodies. These linkages help AIMA bring to the Indian Managers the best management practices and techniques available across the world.

Therefore, marketing plan at AIMA considered the following points:

I. Information for development
II. Inadequate resource utilization
III. Increasing resource constraints
IV. Increasing cost of information and Information Technology (IT)
V. Most efficient use of resources
VI. To meet establish corporate objects and targets.
VII. To generate resources for the library in view of diminishing budget

5. AIMA LIBRARY

The AIMA library is a rich resource center, providing multifaceted services and facilities to meet the growing requirement of the management world. As the main learning resource hub of AIMA, the library caters services to the students, individuals and corporate members. The various information services to the users community at remote access through conventional mail, e-mail. The users can also ask for thematic bibliographies on specific subject areas of their interest of research.

(a) Collection : The library has an enormous collection of books, periodicals, CD-ROMs, video cassettes, Project Reports and many more. Some of the leading thematic areas of management on which these collections are developed such as CRM, KM, E-Commerce, Insurance and Banking, Trade etc. The current holdings is as under:

i. Books: 7,500
ii. Periodicals (national and International): 110
iii. CD-ROMs: 170
iv. Video cassettes: 400
v. Project Reports :500

(b) Reference & Electronic Resources: The reference collection in the library includes dictionaries, directories, reports, encyclopedias, American Management Association study material, and online databases.

(c) Networking & Resource Sharing: AIMA is an institutional member of British Council Library, American Resource Centre, IIMs, MANLIBNET.

6. MARKETING PLAN AT AIMA LIBRARY

Following considerations were made while deciding the marketing plan at AIMA Library.

1. What is current situation regarding the information centre, the product or service?

2. Where does the information centre want to be in the next year?..... 2 years?.....5 years? Or where should the product or service be in the next year? .....2 years and so on.
3. How is the product or service to realize specific set targets?
4. Did the information centre, product or service realize identified goals and targets?

7 STAGES OF MARKETING PLAN

(A) Product planning
(B) Pricing of product and services
(C) Promotion
(D) New production planning
(E) Market research
(F) Preparing the organisation

7 **(A) Product planning:** AIMA library authority has been given freedom to develop the product according to the needs. it has started giving value added information services to its users. AIMA gives services to its member through electronics means on its waves and OPAC.

(a) AIMA holdings are accessible through OPAC (Online Public Access Catalogue) of Books, Serials, Video Cassettes and CD-ROMs.

(b) Access to on-line databases such as DELNET (Developing Library Network)

(c) Recent additions of Books added to AIMA and other libraries

(d) Access to annotated bibliography developed from various leading national and international periodicals.

(e) Tables of contents – contents selected from various reputed periodicals will be sent through email on weekly or monthly basis

(f) Selective Dissemination of Information – On demand or the request made by the researchers, selective articles can be sent depending upon the availability.

(g) Book Procurement – On special request from organisation, books can be procured from local distributors of Delhi and delivered through speed post or courier. The cost of the book(s), and the postal charges would be borne by your organisation.

(h) Web Alerts – As and when obtained special web alerts on rising contemporary issues would be sent to you through email.

(i) Access to Article database: Member can avail the facility of annotated bibliography from the AIMA Website. The database has details of article, which can be searched under the title, author, subject and keywords.

(j) Conference Alert Service Forthcoming events of workshop, seminars and related to management and allied subjects will be complied and will be sent to you through e-mail.

(k) Resource lending services: Book lending services, CD-ROM, Video cassettes lending on inter-library loan

(l) Consultancy Services: Library provides consultancy service in following areas:

§ Library Automation
§ Bar - Coding
§ Classification
§ Library Re-designing

7 (B) Pricing of Product and services:

(a) Rational: Professional-marketing approaches will help in maximum utilisation of information products and services and thus generate more and more revenue. . For this purpose, library and information managers have to take initiative and a lot of freedom has to be given by the management to them in their pursuit in this thrust area.

(b) A Need Assessment: Distance education students have unique needs from library services. We have received feed back from students about a number of topics like what IS library service. Distance education students cannot walk into the library and have photocopy of an article they need

Selective dissemination of information is a technique often used in special libraries. By developing and maintaining user interest profiles, the library can continually monitor the information needs and interest of its users, allowing more effective collection building.

The users of AIMA library are divided into five segments:

a) AIMA Members/Students
b) Non-AIMA Members/Students
c) Corporate Members
d) Online Members
e) Alumni Members

Each of these segments has different needs and the variety of services that Library offers must be known to as many people as possible so that whenever necessary people must remember library only. It can be achieved by adopting effective advertising methods and selling the products of library and information centres.

Membership Details

Membership Deposit for Loan facility Rs. 1000/- for 1 ticket
Rs. 2000/- for 2 Ticket (refundable)

For Non AIMA Member/student

Membership Fee Rs. 1000/- per annum (Non-refundable)
Membership deposit for Loan Facility Rs. 2000/- for 2 tickets (refundable)

For Corporate Members

Membership Fee Rs. 3000/-per annum (non-refundable)
Membership Deposit for loan facility Rs. 3000/- for 3 tickets (Refundable)

Audio Video Library

Life membership Fee Rs. 2000/-
Hiring Charges Rs. 100/- for 1 Cassette for 7 days
Temporary Membership Rs. 50/- per day
Cyber Centre Fee Rs. 40/- for 60 minutes.
(Membership is open to library members only).

7 (C) Promotion:

Awareness of Information for Development: The LICs should develop information brochure that can be given to potential end users and make them aware of the same. This should include visit or talks to potential end users communities, preparation of attractive well presented brochure describing objectives, services etc., of the library. The LICs should engage in activities that help to promote the services to the specific individuals . This should include identification of user's groups, finding their information needs, sending them the promotional material/information of newsletter, periodical survey of end users,

sending of specimen copies of information products to perspective users, users group meets.

Advertising: Wide publicity is given to AIMA products/services by various advertising methods. Exhibition: Exhibition of books are arranged on certain occasion of AIMA's major programmes,. Carrer Fairs etc.Recent Addition of books (Monthly) added in the library send to AIMA Members, LMA's through e-mails.

Information Technology (IT)-which facilitates the generation of various information products and services and also selling it for revenue generation.

Marketing plan: this is because of the fact that it provides the information manager with a blue print for the cost-effective supply of specific information products/services to identified client groups

7 (D) New Product Planning

AIMA library 's continuous endeavour is to give new services to its members User survey is also conductED regularly to improve the existing information services. This is also in view of launching of new information product. The user survey has also helped in making the facilities user friendly and services to the world class. Recently AIMA's previous year question papers have been put on CD-ROM and being sold to AIMA students.

Carefully identified and defined research projects are carried out with the help of sponsored scholars. The results are published in monographs available to managers and teachers. AIMA is now poised to catalyse setting up of research parks for more intensive research in the applied area of management.

8 ASSESSMENT OF THE REVENUE GENERATION

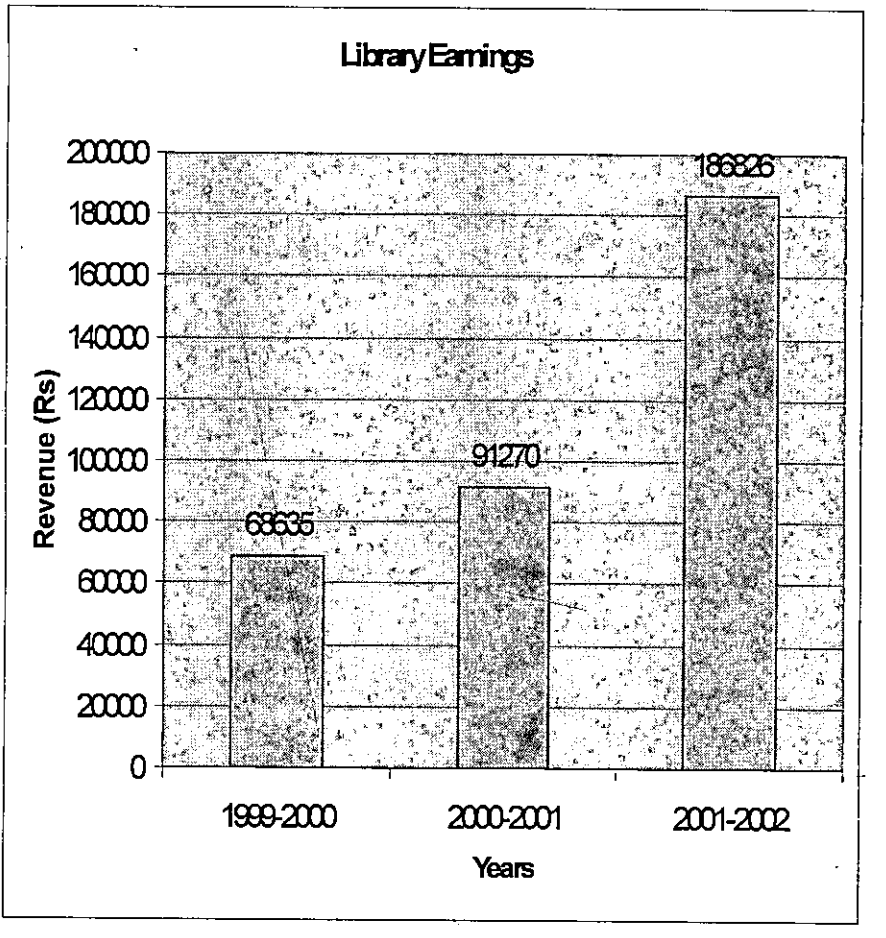
i. Revenue Generation in AIMA Library:

AMembership can be taken by filling up prescribed form, providing suitable identification, photograph and payment of the membership fee. Fee can be paid in cash or by demand draft in favour of All India Management Association, New Delhi. We do not accept any payment by cheque.

9 FUTURE PLAN

To reflect the growing needs of the reader community, we must give them the knowledge resources speedily and at their convenience. We propose to increase access to electronic media, and increase

the level of digitized knowledge in our library. In order to give the reader more and easier access, we propose to give him digital entry for more and more sections of our library products and services.



In the long term, the library must be self-sustaining. In order to raise the required resources for expansion and conversion of the print knowledge into its digital form, we propose to offer some of our products and services at affordable prices to the reader. When our resources increase, we shall see it as a reflection of our pricing, as much as a sign of the readers' acceptance of our services. This will enable us to increase the variety of our products to the readers.

In the ultimate analysis, we wish to attract our readers so that they

can reach and utilise our resources, wherever they are, and whenever they wish to.

10 CONCLUSION

It is very encouraging experience of marketing the information products and services at AIMA library. The user satisfaction assessment is overall good, which is evident from the fact that users are requesting for information through all the possible means, say email, telephone, fax, mail and personal visit. The types of information products offered to users have also increased keeping pace with the market condition globally. i.e., hardcopy, CD-ROM, video cassette,. Revenue generation of AIMA library through product and services is also good and it is moving towards self-sufficiency. We are of the view that in the age when library budgets are shrinking, marketing of its products is earnestly required. This practice will give a cutting edge to library professionals to give latest information at no cost to organisation

Acknowledgement:

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MULTI-LINGUAL E-PUBLISHING

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Yakub Ali*

ABSTRACT

The paper discusses the importance of e-Publishing in this era of information revolution, where the shift is from print based communication to electronic channels. After briefly introducing the concept of what is E-Publishing, the paper enumerates the various forms in which E-Publishing currently exists. Special importance is given to provide information regarding the various options available for free flow of information in a multi-lingual environment, with special reference to the Indian scenario.

1 INTRODUCTION

This is an era of information revolution, with the emerging trend of a shift from print-based communication to electronic channels of communication. and Publishing is the medium which bridges the gap between the author and the distribution mechanism, from type setter to the book store, and finally the reader. Publishing includes the printing and selling of books, periodicals, newspapers, newsletters, etc. But, it is with Books that most people associate the word "Publishing".

The publishing world is changing rapidly and radically. Almost all the publishing houses of repute are adapting to the new wave "publishing digital information.' The trend is to publish books that have some kind of electronic information associated with them, in one medium or another. It is predicted that in the time to come, information may

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as well be disseminated through the medium of broadcasting methods and those users, interested in hard copies may be forced to capture the necessary information in order to generate their own books?!!

In these days companies, institutions and government organizations, the world over, offer services that are integrated to the Internet. ePaper is the latest paradigm for paperless organizations, after the eBooks and eJournals, as organizations use lesser and lesser paper documents in inter , as well as intra-organizational communications.

DEFINITIONS

The New Lexicon Webster's Dictionary of the English Language has defined the word Publish as "to arrange the printing and distribution of Books, Newspapers etc. for sale to public"

Publishing is the business or profession of the commercial production and issuance of literature. It includes the publisher, publication process, editing and editors. Production may be conventional printing method or by electronic publishing.

2 PUBLISHING - THE TRADITIONAL AND THE MODERN CONCEPTS

After oral communication system, the publishing of various types of printed material has been one of the most important channels of communication as well a valuable record of human thoughts for centuries. For quite some time, book has been a primary source of knowledge dissemination. From rock inscription, clay tablet, papyrus to paper, whatever be the media adopted, human knowledge regarding philosophical, historical, cultural or scientific data got recorded and disseminated. The speed, accuracy and the type of knowledge being disseminated varied according to the type of media used and the target user it was intended for.

With the advent of modern technology in the publication field, the composition, printing and storage techniques changed to be not only more efficient and faster, but the final products became aesthetically pleasing. The revolution in the field of communication technology - has ushered in an era of Electronic Communication and Electronic Publishing along with E-Commerce.

2.2 E-PUBLISHING

The application of Information Technology to the communication field has revolutionized the communication and publishing systems and has triggered the advent of Electronic Communication and Publishing. Users have now colorful, attractive and exiting new formats to choose from. Multimedia CDs, DVDs etc. are flooding the markets. Even the conventional publishing has undergone remarkable change due to the availability of the latest technological applications. As a result publishers find publishing business a competitive, but at the same time a much more efficient proposition than before.

As the costs of printing ink and paper went up, the paper publication costs escalated. This necessitated a set of mechanisms to ensure that the money was not expended with out proper returns. With the onset of electronic publication, this filters function has become actually the most important value-added service that a 'E-Publisher' performs.

2.2.1.WHAT IS E-PUBLISHING

Taylor and Saarinen ask, " If an electronic text can be published in printed form, is it really electronic? This issue is explored in the "E-Jorurnal" issue No.3. of Volume.No.6 by presenting a cluster of interrelated hypertexts. "Hypertext Notes" by Richard Anderson and two shorter hypertext essays by John December and Charles E., provide to an extent comments and dwell on the theory and practice of writing in hypertext.

Anderson maintains that the versatility of the medium allows a link from this archived version to the author's developing version and thus renders meaningless the question of which version is the 'right' one. It all depends on ones' purpose in reading it.

Electronic publishing does everything which has traditionally been done in the image assembly operation up to paste-up stage. It combines typesetting with the electronic creation and manipulation of line art and half-tone in one system. In electronic publishing system, the document is created using computer and disseminated electronically over networks in the final farm. In a broad sense the term electronic publishing encompasses other communication techniques such as E-mail, videotext, teletext, electronic journal etc.

The product of e-publishing can be read directly from a computer

screen using a special viewer or reader (such as the Adobe Acrobat Reader) or it can be read using a browser (such as Internet Explorer, Netscape Navigator, etc.), which gives the experience that the reader is surfing in Internet, only difference is that it is offline.

E-Publishing can also be read using special hand held readers called Slates. Currently, Rocketbook is the most widely known e-reader and can hold 10 to 20 e-books.

2.2.2. E-PUBLISHING DEFINITION

E-Publishing (short for Electronic Publishing) is publishing information – books, reports, information products, interactive media – in electronic format, available or accessible in several forms: on CDs as downloadable files (zipped or compressed , executable in .PDF or .RTF) or in 3.5 diskettes. Smaller e-publishing matter can be transmitted through e-mail as attachments.

Multimedia is changing how we read newspaper by eliminating the need for the paper and offering all the features of a multimedia.

2.2.3.COMPUTER AIDED PUBLISHING

Computer aided publishing is getting the electronic text in the printed form.

Computer aided publishing is getting the print of relevant or required matter/ information that appear on a computer screen with the help of a printer.

The attempt to maintain a stable copy of the text for archival purpose begin to more and more like an antique practice of Bolter's "Late age of print"

3 WEB PUBLISHING

A web page is nothing more than a text file, a HTML file (Hyper Text Markup Language) – a simple computer language, a better page description language. A set of codes determining what a page will look like in a Web browser.

Hypertext is to locate something in a book quickly from index or table of content. Markup comes from printing. It tells the type setter how to

put text and images on a page that will be printed.

4 E-JOURNALS

Electronic journals are a fast developing feature of electronic publishing. Electronic Journal may be defined as "Any Journal existing in an electronic format that embraces all periodicals available electronically as well as in paper copy, including the text of periodicals accessible through online networks and those periodicals distributed in CD-ROM form."

E-Journals are full text journals that are accessible via Internet/Intranet. Hypertext has made it much easier for libraries and other institutions to place their collection on the Intranet for the patrons to access them.

This is the information revolution era, the shift from print-based communication to electronic channels of communication. Today there are thousands of electronic journals, scholarly publications that are available online via an electronic network along with print.

4.1 Case study of E-Journal

"E-JournAal" is an all electronic e-mail delivered, peer reviewed, academic periodical, particularly concerned with the theory and practice surrounding the creation, transmission, storage, interpretation, alteration and replication of electronic text including display. The journal is also conserved with the broader social and economic implication of computer mediated networks. The journal's essays are delivered free to Internet Addresses and recipient can make paper copies. Publishers of E-Journal also provide on request authenticated paper copy from their read only archives.

The latest trend is that with the issue No.6. of Volume 3 E-Journal goes hypertext. This is the first issue of E-Journal to take full advantage of hypertext and the World Wide Web.

It marks the issue break through for E-Journal, as it represents an attempt to use the hypertextual capacities of the WWW to do more than link together linear documents which are essentially print like in nature.

Ted Jennings has articulated in the "E-Journals" editorial policy " as

"If we are to be useful in the evolution of the network culture, E-Journal has to be 'dependable'.

1.2. E-BOOKS

Electronic Books or 'e-Books' are texts designed to be read solely on a computer screen using proprietary hardware devices, or multi-purpose PCs. Purpose built "reader" software attempts to recreate the look of traditional printed book whilst also enabling electronic multimedia enhancement.

e-Books provide text that take no space beyond that on the hard-device—they have an amazing potential for enriching the books, both in the provision of accessory media and also in their capacity for providing cross references, relevant information at the press of the button.

CD-ROM base provides a shelf full of texts on a single disk – multimedia presentations, and have in place of labourious cross references, hyperlinks which lead to he required information.

4.2. e-PAPER

Organizations create, manage, and deliver information across, with physical papers through e-Paper, a new paradigm for paperless organizations. In large organization, especially in the case of government bodies, many levels of documentation required to be done. Through digitalization it is possible to broadcast the documents to large number of recipients through the online communication systems.

5 WEB SITES

A web site is an information portal that has been exposed to the whole world or to a selected set of people. Web sites can contain any kind of information –data sheets of a company, the resource of an individual, picture of Yosemite national Park, Video clips of Star Wars and so on. The idea is to make the information readily and easily available to customers or other people interested in the data.

Website: http://publishing about.com/cs.ebooks/ebooks and epublishing: A comprehensive collection of links, articles and information about electronic publishing and digital books.

2.Translation Services
www.Wetranslate.com/home -html -9k
3.EBL Translation Multilingual eContent Management
www.ebuslabs.com/multilingual.html -22k
4.Microsoft, Multilingual Arabic English Software
www.aramedia.com/mshome.html -25k
5.Software localization
www.cimos.com/software.html -4k

7.4. SOFTWARE –INDIAN

1.Indology
www.UCL.ac-uk/ucgad kw/indnet - softwarw.html –16k
2.Baraha.com
www.baraha.com/about.html -11k
3.Multilingual Victoria
www.vicnet.net - au/vicnet/COUNTRY/COUN.HTM –17k
4.Urdu language resources
www.theory.tifr.res.in/bombay/history/people/language/urdu.html -15k
5.BM Software
www.bmsoftware.com/61k

6.www.vishvakannada.com
7.www.tamillinux.org

8 MULTI-LINGUAL SOFTWARE – INDIA

The professional publishing industry in India has been using generic software package for bringing out newspapers, magazines and books. Indian language publishers have traditionally been hindered by non-standard character sets and mappings that prevent information interchange and publishers have no other option but to buy separate fonts for each publishing application. Publishing in Devnagari script is difficult because of the composite letters. The Devnagari script based languages, which have over 600 characters, are inherently different from the Roman script based languages like English. Thus there was a dire need for publishing software suitable to the Indian scenario.

8.1. QUARK X PRESS: A CASE STUDY

Quark India Pvt. Ltd. has released in the country, *Quark X Press*

Mudra, the Indian language version of leading publishing software, Quark X Press which to great extent fulfills the need for publishing software suitable to multilingual environment of India. *Mudra* is a complete publishing package which enables all the features of its original version (Roman script) for Devnagari script.

Just like the original one, Mudra is an integrated electronic publishing package that combines layout, colour and graphics handling with professional illustration tools, word processing and sophisticated pre-press functions. With Mudra one can create a document, then electronically design and do the layout, edit, text, create and import graphics, fine-time layout and finally print that.

Further Mudra combines the above features with number of indigenous utilities also, such as 'find and replace' to find any particular character in Devnagari script and also to replace it with a desired one. This utility supports wild character also. It facilitates to search composite character without breaking them, while checking for the whole word. 'Spell Check' can also be done in any of the mentioned Indian Languages and a separate "Auxiliary dictionary" can be prepared for different Indian languages. It allows 'kerning and tracking' of Devnagari characters supporting its extended character set. Further it facility to import text with any third party vendor's fonts and use them within documents. Greater control over Indian language text is made possible through a set of algorithms for functions such as hyphenation and justification.

The current version of Mudra supports the Hindi, Sanskrit, Marathi and Nepali languages. A wide range of Indian language support is expected to be made available soon. The font map utility enables the incorporation of any number of Indian fonts.

8.2. Special Features of Mudra

Even though there are only five Devnagari scripts namely, Agrgenya Dev, Lothal Dev, Swara Dev, Sutra Dev, and Uttara Dev, the 'font-filter' utility in Mudra allows to work with almost any Indian language font format. This utility creates a matrix of mapping between Quark's Devnagari font and Devnagari fonts provided by other font manufacturers. Since users can import and export Indian Standard Code for Information Interchange (ISCII) text, Mudra becomes the preferred software utilized for Indian language information exchange.

Mudra tries to accommodate maximum number of characters of the Devnagari character set on the English language key board (which has a limited number of keys) by providing four states of the key board—normal, shift, scroll, and shift+scroll. Mudra tackles the problem of Composite Letters quite efficiently and in an interestingly manner. The Edit tab of Application Preferences (Edit>Preference>Application>Edit tab) displays four choices with the help of which, the text entry in Devnagari can be controlled. These are "Composite Formations" , "Typing Sequences", "ISCII Validation Rules" and "Navigation".

Apart from ISCII standards which has been set by the Department of Electronics, Mudra defines its own standards for composite formation, which are specified in the two choices—Phonetic and Lenient Phonetic. Choosing either of the two Devnagari texts can be entered according to the language rules defined by Mudra.

All these special features have positioned Mudra as leading local language electronic publishing software in India.

8.3 ADOBE SYSTEMS INDIA

The Indian branch of Adobe Systems have initiated recently ePaper solutions in India, through a suite of products, namely, Adobe Acrobat 5.0, Abode Capture, Adobe Distiller, Adobe Messenger and Adobe Reader which help in creating managing and delivering information across organizations digitally.

Adobe Systems India has tied up with system integrators across the country in order to facilitate eGovernance. In Andhra Pradsh, Adobe has tied up with Inspira Technologies in order to implement the AP government's effort to integrate and streamline all the processes of the various departments at all levels. Adobe also has been responsible for the Maharashtra government's efforts to install paperless solutions in 28 districts(Express Computer 2002:14).

9. CONCLUSION

As rightly said by Frank Lukey, from Silver Platter, a CD-ROM Supplier, that the nearly 500 years of print seems to be drawing to a close. May be in short time a range of electronic publications will easily available with the portable book acting as a catalyst in popularizing the idea of E-Publication as a viable reading material in the minds of

the most ardent devout conventional book/magazine user.

Especially in the case of India, where information and communication revolution has arrived and impinging every aspect of life, be it social, political. Professional or administrative structure of the country, the publishing industry, especially the e-publishing has a major role to play as a communication tool in the multilingual, multicultural, multi-layered fabric of the vibrant and complex country. For example of Andra Pradesh and Maharashtra which have initiated Online Transaction Processing project as part of its eGovernance programme, with a view to vertically and horizontally integrate all governments and agencies. The aim of the project is to streamline all the information and service processes of the various departments from village to state level, with he Mandal Office as the focal point or hub. If many more states follow suit, then *ePaper* will have brought information to the door step of every village and would be able to overcome the barrier to the right for information of every citizen of India.

Taylor and Saarinen remark, 'Our dilemma is that we are living at the moment of transition from print to electronic culture. It is too late for printed books and too early for electronic texts. Along this boundary we must write our work.'

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SOFTWARE PACKAGES FOR LIBRARY AUTOMATION IN HIGHER EDUCATIONAL INSTITUTIONS IN ASSAM

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ABSTRACT

The present situation of Academic Libraries in Assam is not satisfactory one. During the last two decades library automation is come into existence in Assam. Lack of infrastructure facilities, irregular power supply, financial constrains, lack of trained manpower, actual need/ real need / present requirement of the automation, lack of willingness of the Librarian and Higher Authority, lack of demand from the user community, etc are the main factors behind the delaying of library automation in Assam. A library software package implies a key role for information storage and retrieval purpose as well as library automation. At present numbers of library software packages are available in India, some are developed by commercially and some are developed by National Organizations, varying in price ranges, features, capability, suitability etc. At present, selection of library software package has become the most critical one, there is no such evaluated standard software in the field, few are in the field, each is advocating on itself. In view of future need of the library software, it should be selected keeping in mind it's present advantages as well as disadvantages and future problems in terms of its functionality, financial involvement, user friendliness etc. The present study deals with the library automation and its various steps and the emphasis are given on the various library software packages to serve the purposes of information storage and retrieval as well as library automation. The problems and prospects are critically studied.

1 INTRODUCTION

Library automation is the process of automating the library functions using the modern technology like application of computers,

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telecommunications, computer software, micro forms of storage media, human interface etc. and other micro information technology, which helps in information storage and retrieval purposes. The information storage and retrieval problem has become progressively more serious in recent years, especially in the areas of science and technology where the volume of data and information is increasing at an unprecedented, nearly exponential rate. Therefore, computerization is the only answer to organize and disseminate the tremendous flow of information in a systematic way. The main objective of library automation is basically to integrate all library activities towards ensuring an easy and accurate retrieval of information.

Software is a set of programmes, which are developed to enable the computer to do desired operations. Nowadays, quite a number of library software packages are available for libraries for house keeping operations and information storage and retrieval purposes. Even though wide ranges of software packages are available, it is necessary for librarians to keep a watch on the development and to choose appropriate technology depending on the needs. At present, selection of library software package has become the most critical one, there is no standard software; the few in the field, each is advocating on itself.

The present situation of Academic Libraries in Assam are not satisfactory from its services, fund position, building and furniture, collection, manpower etc. Due to the above mentioned problems the process of library automation are not going in full swing in higher educational institutions in Assam. One of the important factors for library automation is the selection of library software packages for handling the library house keeping operation activities as well as information retrieval. The problem to be dealt is what sort of software is to be selected for what purpose.

Keeping this objectives and problems in view concerning the library automation in higher educational institutions in our area, several experiments based on comparative study have been designed to find out a suitable software package which is cost effective, less complex, user frankly for the purpose of information storage and retrieval.

2 STEPS FOR LIBRARY AUTOMATION

The following are the prime steps for library automation.

1. Firstly survey and analysis of the existing system.

2. Deciding which sections are to be automated.
3. Automated activities going parallely without disturbing existing system.
4. The manpower resources should be well trained up phase by phase.
5. The higher level management should look after by the higher authority.
6. The financial side should be accounted.
7. Procuring the standard hardware and software equipments.
8. Recurring budget should be in the master plan.
9. Motivation of the staff towards latest information technology.

3 SHORTCOMING /PROBLEMS OF LIBRARY AUTOMATION

The followings are the shortcoming as well as the problems of the library automation.

1. Lack of motivation towards latest information technology.
2. Lack of trained personnel.
3. Lack of fund.
4. Lack of proper/standard technology.
5. Lack of organisation effort toward library.
6. Lack of suitable library management software package.
7. Ignorance of senior library staff on the technology.
8. Selection of appropriate software package.

4 SELECTION OF LIBRARY SOFTWARE PACKAGE:

The followings are the main criteria for selection of a library software package.

1. Source/ agency/ organization etc.
2. Price
3. After sales Services
4. Hardware requirements
5. Search facilities
6. Export / import facilities
7. User friendliness

8. Training facilities
9. Accommodation facilities etc.

Comparative studies of few software packages based on different criteria used for the information storage and retrieval as well as library automation in higher educational institutions in Assam are presented in here.

Table 1

Different criteria for evaluating the software packages	CDS/ISIS (Computerized Documentation System/ Integrated Set of Information Service)	SOUL (Software for University Libraries)	LIBSYS (Library System)
Sources	Developed by UNESCO, Paris	Developed by INFLIBNET Centre, Ahmedabad	Developed by AK Jain for LIBSYS Corp, New Delhi
Kind of software package	Text retrieval package	Library automation Software package	Library automation software package
Single user/ Multi User	Both single and multi user environment	Multi user environment only (server/client server)	Both single and multi user environment
Cost/ Price	Low cost or almost free/ Rs. 1500.00 only	Low cost / Rs. 50,000.00 only For Stand alone Rs. 15,000 only.	Costly one / Rs. 80000.00 for single user and multi user Rs. 250000.00
Capacity of accommodation	Can build innumerable records	Can build innumerable records	Limited and unlimited depending upon the version and price
User Friendliness	User friendly except display format (where Pascal language is use for display format)	User friendly and readymade display format	User friendly and ready mate display format
Export/ Import facility	Available on ISO format	Available on ISO format	Available
Search Facilities	Retrospective as well as specific and direct	Subject, keyword, author, title, or any word	Subject, keyword, title, author etc.
Existing examples	Yes	Yes	Yes
Update facility	Available	Available	Available
Training facility	Available	Available	Available as per payment.
House Keeping Operation	Circulation facility is not available (but scope is their using the Pascal programming)	Circulation facility is available	Circulation facility is available
Programming	Available	Not available	Not available
Search period/ response	Takes more time during the retrospective search, when database is bigger one, direct search is quick.	Quick search facility	less time during the search period.
Platform	Based on RDBMS platform	Fully based on SQL RDBMS platform	Base on RDBMS platform
Menu driven	Fully	Fully	Fully

Backup facility	Available.	Available	Available
Password system	Available	Fully protected by password	Fully protected by password
Serial control	Partly done	Easily done	Done
Help message	Partly available	Available	Available
Readymade format	User can follow the AACR-II and MARC format, but there is no such in-build facility	AACR-II and MARC facility for data entry worksheet is followed	AACR-II and MARC format for data entry worksheet is followed
Internet compatibility	Not ready to internet	Ready to internet	Not ready for internet
Catalogue card generation facility	Can generate catalogue card in AACR-II format using the advanced programming.	Can generate catalogue card in AACR-II format	Can generate catalogue card in AACR-II format
Report generation	Can not generate day to day various report.	Can generate day to day various report depending on query	Can generate day to day various report depending on the query
Online facility/ Union catalogue support	Not online facility or not union catalogue support	Online facility is available and Union catalogue support also	Union catalogue support
Accession register facility	Can not support accession register facility though it generate one Master File Number (MFN) itself	Accession register facility	Accession register facility is available
Barcode facility	Absent	Available	Available
Reservation facility	Not available	Available	Available

Table 2 and 3 represents the present status of the library automation in Assam as well as other states of North East with special reference to higher educational institutes.

Table 2

KIND OF AUTOMATION WITH LIBRARY AUTOMATION SOFTWARE

Name of the Library	Kind of Automation	Hardware platform	Software used for library automation
Assam Agricultural University	**Partially**	**Pentium -II**	**CDS/ISIS**
Assam Engineering College, Guwahati	No	Does not arise	Does not arise
Bajali College, Pathsala	No	Does not arise	Does not arise
Barama College, Barama	No	Does not arise	Does not arise
B.H. College, Howly	No	Does not arise	Does not arise
Bongaigaon College, Bongaigaon	No	Does not arise	Does not arise

Darrang College, Tezpur	No	Does not arise	Does not arise
Demow College, Demow	No	Does not arise	Does not arise
Dergaon College, Dergaon	No	Does not arise	Does not arise
Dibru College, Dibrugarh	No	Does not arise	Does not arise
Dibrugarh University, Dibrugarh	Partially	Windows NT Server	CDS/ISIS
D.H.S.K. College, Dibrugarh	No	Does not arise	Does not arise
Digboi College, Digboi	No	Does not arise	Does not arise
Gauhati Medical College, Guwahati	Just Starting	486	CDS/ISIS
IIT, Guwahati	Fully	Pentium-I	LIBSYS ver. 4
Jorhat Engineering College, Jorhat	No	Does not arise	Does not arise
Majuli College, Majuli	No	Does not arise	Does not arise
Manipur University, Imphal	Partially	Pentium-I	CDS/ISIS
Moran College, Moran	No	Does not arise	Does not arise
Nagaland University, Kohima	Just started	No available	Not available
NEHU, Shillong	Partially	Pentium-II	LIBSYS ver. 4
NERIWALM, Tezpur	Partially	Pentium -II	CDS/ISIS Ver. 3.08
Pandu College, Pandu	Patially	Pentium-II	CDS/ISIS
Pragjyotish College, Guwahati	No	Does not arise	Does not arise
Radhamadhab College, Silchar	No	Does not arise	Does not arise
Rainforest Research Institute, Jorhat	Partially	Pentium-III	LIBSYS ver.3.1
Regional Engineering College, Silchar	Just Started	Windows NT Server	LIBSYS ver. 4
Regional College of Nursing, Guwahati	No	Does not arise	Does not arise
Thiu College, Tihu	No	Does not arise	Does not arise
Tinsukia College, Tinsukia	No	Does not arise	Does not arise
Tezpur University, Tezpur	Fully	Pentium -II	LIBSYS ver. 4

Table 3

Status of the Library Services Using the Library Software Packages

Name	Acquisition	Cataloguing	Classification	Circulation	OPAC	Information	Up date facility	Report generation
Assam Agricultural University		Yes						
Assam Engineering College								
Bajali College								
Barama College\								

B.H. College								
Bongaigaon College								
Darrang College								
Demow College								
Dergaon College								
Dibru College								
Dibrugarh University	Yes	Yes	No	No	Yes	Yes	Yes	No
D.H.S.K. College								
Digboi College								
Gauhati Medical College								
IIT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Jorhat Engineering College								
Majuli College								
Manipur University	Yes	Yes				Yes	Yes	
Moran College								
Nagaland University								
NEHU	Yes	Yes		Yes	Yes	Yes	Yes	Yes
NERIWALM	Yes	Yes				Yes	Yes	
Pandu College	Yes	Yes				Yes	Yes	
Pragjyotish College								
Radhamadhab College								
Rainforest Research Institute	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Regional Engineering College	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Regional College of Nursing								
Thiu College								
Tinsukia College								
Tezpur University	Yes	Yes		Yes	Yes	Yes	Yes	Yes

5 STEPS OF INFORMATION STORAGE AND RETRIEVAL BY USING A LIBRARY SOFTWARE PACKAGE

Due to the information explosion, no body can gather all the information. Therefore, the library should be gathered the selected information to serve its user. With the help of modern information technology one can gather the selective information in a systematic way. During the time of information storage, everybody should cautious and should have an presumption or psychological attitudes of the users. Keeping in mind the users' query the library should follow the step for information storage procedure. In general within a

library the user can be query on the bibliographic information like Author, Title, Any word, Broad subject, Call No, Acc No, Year of publication etc. The library try to keep the maximum bibliographic information for the information storage as well as for information retrieval purpose. If we store the maximum relevant information then we get the better result of information retrieval. In some system there is an option of indexing and abstracting, in that system the library should fill up the necessary fields for the same. During the information storage, we should follow the international standard for resource sharing purposes. The ISO format should be follow during the information storage. The storage information should be always make a backup except the Hard Disk for management the failure of the possible hard disk crass or other possible failure of hard disk. The database should have update regularly.

For information retrieval purpose we should trained up our staff as well as the users either by providing the in-house training or initiation program to the users. The computer having the OPAC facility should have the necessary instruction to guide the users. At the necessity, staff should guide / help the user.

6 RESULTS

I have already conducted the survey on existing conditions of library automation in higher educational institutional library of Assam as well as other states of North East. The present investigation reveals that most of the libraries of higher educational institutions of Assam are using either CDS/ISIS or LIBSYS software package for information storage and retrieval as well as library automation purpose. The Assam Agricultural University, Jorhat, Dibrugarh University, Dibrugarh, Gauhati University, Guwahati and Pandu College, Guwahati are using CDS/ISIS software package, whereas, the Assam University, Silchar, IIT, Guwahati, REC, Silchar and Tezpur University, Tezpur and NEHU, Shillong are using LIBSYS software package for information storage and retrieval purposes as well as for library automation purpose. Most of the state university likes to practice the SOUL package for their information storage and retrieval as well as library automation in near future.

It can be suggested from present studies that the CDS/ISIS is the best software package for information storage and retrieval purpose. Here, we can accommodate innumerable records in a database as well as we can make various databases as our requirement to store the data. In CDS/ISIS we can use various information into the databases by using the various data entry worksheet as well as

display the search result in various display mode according to our choice by using various display format in which, we have to writer in PASCAL. It should be mentioned here that the WINISIS, a version of CDS/ISIS compatible for windows, is easier than the CDS/ISIS's earlier version. A layman also can use the CDS/ISIS and WINISIS for information searching and retrieval. We can make easier to the layman (library users) by providing some guide as well as the initiation program also. I am using one searching program written in PASCAL, which is more convenient for the user for OPAC purpose. In the said program, we can make search by Title, Author, Keywords, Acc No, Class No, Year of Publication and Any words. The said options of the search menu are always getting displayed on the OPAC machine, where any body can choose the option by using the arrow key - (up arrow and down arrow) and then choose any option (highlighted) and then by pressing Enter key user can get the blank space where he/she can type out his/her search elements and after completion of the search elements by pressing the Enter key he/she will get the result, and the result will be displayed in a box. If the hit record is more than one then the system asked him/her to press page up or page down key for viewing the previous records or following records.

The CDS/ISIS is also largest practiced software for information storage and retrieval purpose in India and abroad, as any one can retrieve any kind of information by using the information retrieval services in the main menu of the CDS/ISIS from the prime databases. Any one can store any bibliographic information and any other relevant information in the prime databases. By using the international standard for information storage any one can make resource sharing by using the export/ import facilities provided in the software. CDS/ISIS is the best software for the information storage and retrieval purposes in Assam as it involves minimum investment on both hardware and software. But it is not suitable for other house keeping operation.

LIBSYS is a powerful software because it provides facilities for article indexing, abstracting SDI services, CAS services etc. But it is costlier than other available packages. But its use is limited due to financial constrains of colleges and universities of Assam.

The National Assessment and Accreditation Council (NAAC), Bangalore, an autonomous body of U.G.C., has given a deadline for the universities and colleges of Assam by the end of 2003 to assess them. Keeping in view of the aforesaid condition the colleges as well as universities of Assam are taking steps towards library automation recently.

From the above account it can be inferred that most of the libraries of higher educational institutions in Assam are using either CDS/ ISIS or LIBSYS software for their information storage and retrieval purpose and library automation. Most of the state university likes to practice the SOUL package for their information storage and retrieval as well as library automation in near future, because they have already funded by the INFLIBNET. The CDS/ISIS is also largest practiced software for information storage and retrieval purpose in India and abroad, where any one can retrieve any kind of information by using the information retrieval services in the main menu of the CDS/ISIS from the prime databases. Any one can store any bibliographic information and any other relevant information in the prime databases. By using the international standard for information storage any one can make resource sharing by using the export/ import facilities provided in the software. By using the advanced programming service any one can use CDS/ISIS for other housekeeping purposes also. The university library of Assam leads for library automation with the financial help from the INFLIBNET program. CDS/ISIS is the best software for the information storage and retrieval purposes in Assam because of the financial constrains of the libraries, where CDS/ISIS is almost free. The library professionals should take it as the challenge and make the library service glorified through adoption of the latest information technology for providing better services to the user. If a library wants to make a beginning, CDS/ISIS is best suited as it involves minimum investment on both hardware and software. Once a database with bibliographic details is developed, the same data can be used for circulation activities.

The LIBSYS is the one of the largest practiced commercial library software in India for information storage and retrieval purposes as well as for the library automation. LIBSYS is a powerful software because it provides facilities for article indexing, abstracting SDI services, CAS services etc. But it is costlier than other available packages. For this case, a small library cannot afford to buy LIBSYS software.

7 CONCLUSION

Study strongly suggests towards the judicious selection and use of SOUL software for library automation as it is cost effective and developed by the reputed and leading non-profitable organization i.e. the INFLIBNET Centre, Ahmedabad.

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TRANSITION OF CONVENTIONAL LIBRARY TO ELECTRONIC LIBRRAY : A CHALLENGE

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ABSTRACT

This paper presents the various aspects required to effect transition of a conventional library to an electronic library. The different issues involved for the transition have also been discussed. This study shows that the most important ingredients for the complete and effective transition are: awareness and commitment, motivation and accountability of the authorities/librarian/staff as well as the computer-savvy environment on the campus. A case study of some institutes – all the universities in Punjab and some post-graduate/ degree level colleges, a few schools and a deemed university – vis-a-vis present status of their libraries has also been carried out; and, the study clearly corroborates the most important ingredients, mentioned above, for the complete and effective transition of a conventional library to an electronic library.

1 INTRODUCTION

During the last decade, libraries have experienced significant changes in the information world(1). These technological changes have necessitated transition of conventional libraries to electronic ones. This change has been inevitable to keep pace with the latest technology; as even an excellent conventional library, cannot provide highly specialised information generated from across the world without the help of electronic technology.

The revolution of Information Technology has brought about major changes in the working of libraries. Computer application in the

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libraries have been attracting attention of librarians and the authorities throughout India. Due to information explosion, the libraries have to use various technologies like computers, mass storage media, etc. for handling enormous inflow of information(2). The ability of computer to store and manipulate vast amounts of data has made it possible to create virtual information environment. The adoption of computer, for technical operation in libraries, is an indicator of initiation of transition process.

Nevertheless, several libraries are facing a number of challenges to cope with new demands put on them; some because of the lack of computer-savvy environment; some because of the scarcity of appropriately trained staff; some because of the inadequacy of finances, and some because of lack of requisite awareness and knowledge; and some because of the requisite line-of-action and motivation.

2 ESSENTIALS FOR TRANSITION

Following are the essentials of an electronic library(3):

- Hardware
- Software
- Humanware

It is not difficult to acquire hardware or software or humanware, or other paraphernalia for the change over, once you have funds. Other inputs are appropriate training as well as regular and constant updation of the existing professionals/staff. Above all this are: awareness, knowledge, commitment of the authorities and staff, in addition to, computer-savvy environment on the campus, and proper follow-up by the authorities. To achieve all this, there is a need of appropriate motivation of the staff and introduction of an element of accountability. The transition may be easy for an institute where requisite environment, work culture, motivation and accountability exist. In the institutes, where there is a total miss of these elements, the transition can really be an extremely difficult affair. In such a situation, the role of authorities/librarians will be terribly difficult, demanding and challenging.

3 A CASE STUDY

Some institutes in Punjab like: universities and some postgraduate/ degree level colleges, a few schools and a deemed university were visited to assess the present status of their libraries, vis-a-vis, e-services. Following are the findings:

- The universities, though have enough funds, professionals and quite a bit of advanced infrastructure, are either yet to change over to e-services or are in the pipeline. Their problem is either lack of proper line-of-action/guidance or missing work-culture and accountability or motivation.
- The postgraduate/degree level colleges, in general, still have conventional libraries, though, quite a few of them have computer(s) and internet facility. The problems of some of the colleges include awareness and knowledge; and, of others, though they have awareness and knowledge, but no requisite line-of-action and motivation.
- A private, senior secondary school, interestingly, has a well-equipped computerised library; and, heading for complete automation. Undoubtedly, it speaks volumes about their awareness and knowledge, proper line-of-action and unlimited motivation.
- Ours is a deemed university – a government-aided private engineering institute – and has a library, which, already, has switched completely on to an electronic library. The institute has all the ingredients required for transition.

4 SOLUTIONS

Need of

- Introducing an environment of work-culture on the campus
- Making the students, faculty and the other staff aware of the benefits of e-networking
- Creating a culture of trusting all concerned and making them accountable
- Identifying, delegating powers to a positive, knowledgeable, and committed library professional, no matter even if he/she is junior in seniority, to effect library transition from conventional to electronic.

5 CONCLUSION

In nutshell, if authorities/librarians, are aware of the underlying problems in their set-up; and, know, what their institute, faculty, and students are being deprived of in the absence of e-library; and, they, and their staff, have requisite commitment, and lots of motivation as well as a sense of accountability to the students, in particular, and

the society, in general, there is no doubt, their institute can do anything; what of transition from a conventional library to an electronic library.

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AUTOMATED INFORMATION SERVICES IN A.C. JOSHI LIBRARY CHANDIGARH

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ABSTRACT

This paper throws light on the present state of automation in Punjab University Library and also describes the information services provided by the library.

1 INTRODUCTION

Library automation refers to the use of computer in the routine and important services of a library. Library is a trinity of collection of information, organisation of information and dissemination of information. Computerisation of all the library housekeeping operations is called library automation. Due to the explosion of information, Librarian is facing difficulties in acquiring relevant documents for their readers. The basic objective of librarian that is providing pinpointed, exhanstive and expeditions information to the user is still in force. The task however, has become more challenging due to various factors such as information explosion, Democratisation of knowledge and its global nature, the more demanding attitude of information seekers and impact of the computer technology. Libraries have taken advantages of the new information technologies to provide a wide range of services and products, which were not possible, a few decades ago. Today, CD-ROM and online search services have revolutionized the provision

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of services to users. There is no doubt that without information technology, libraries would have never been able to satisfy the changing need of the users in an information era of today. To cope up with this complex situation library networks and resource sharing programmes have been developed in recent years. The emphasis on storing large number of volumes become obsolete. Economic pressure along with the availability of current information technology encourage librarians to focus their attention more on the information seeker than on the holdings of the library. This ultimately resulted in the expansion of utilisation of computers and their application in many areas of librarianship.

2 PANJAB UNIVERSITY LIBRARY

The Panjab University Library, named officially as A.C. Joshi Library," after the name of an illustrious vice-chancellor of this University, was established in the U.S. club, Shimla in the year 1947. The Panjab University started shifting its offices to Chandigarh, the new capital of Punjab, in 1955-56. The foundation stone of the new library building was laid in 1958 by Dr. S. Radharishnan, the then vice-president of India. The Library in its new premises was formally inaugurated in 1963 by Pt. Jawaharlal Nehru, the then Prime Minister of India.

2.1 Automation of A.C. Joshi Library

The automation of the library was started in 1997. For this purpose under the Eighth Five Year Plan, INFLIBNET has sanctioned an amount of Rs. 50 lakh to this library. The bibliographic records of all the books received in the library from beginning is on the data base. In order to promote the use of its resources and to cater the needs of the students, research scholars and teachers, the library has procured Techlibplus software package developed by information dimension & corporation, Columbia, U.S.A and in India it is technically supported by NIC (National Informatics Centre). The Techlibplus package supports almost all activities relating to housekeeping service of a library. The library is now fully computerized with an integrated system connected to the campus network providing internet and e-mail facility to the University community. The references collection of the library is continuously updated, and augmented with the acquisition of CD-ROM data bases and access to on-line databases on internet. On Line Public Access Catalogue (OPAC) facility is available at the reference desk on the first floor of the library. OPAC can also be accessed through any terminal on the campus network. The library

has a collection of nearly 6,25,000 volumes both rare and latest, and nearly 650 current periodicals, with the back volumes of periodicals going back to nineteenth century. The library possesses various facilities like photocopying, overhead projectors, e-mail, internet, multimedia, CD-Rom database, fax and interconnected computer terminals.

2.2 Applications

The library issuing computer for housekeeping, reader services, management support activities, networking, fax, e-mail and the Internet. Printing of catalogue cards, done with the aid of computers, has helped to clear the backlog of books to be processed. Circulation has been computerized to active speed and accuracy in maintaining the circulation records, barcode technology is being used. The laser scanners are used to issue and return books. To facilitate the payment of fines, debt collection has been integrated with the circulation system. In reader services, the OPAC circulation queries, database searches, and bibliographic services can be accessed by computer Financial management and compilation of report are also computerized. The library has developed online Public Access catalogue (OPAC) which is bibliographic database of books, periodicals (bound volumes) and these/dissertation available in the library. Users cab access the OPAC inside the library at any time four terminals are provided for reader to access the databases. OPAC can be accessed through author, subject, title, class number, keywords, etc. It can also answer queries relating to the books, their availability, status and reserves. Users can educate themselves about library rules and for initial orientation. It provides instruction for how to use OPAC and CD-ROMs.

2.3 Databases

The library has created in house databases such as for books, current as well as bound volumes of periodicals and theses/dissertation. In addition to its in-house databases, the library has already subscribed to twelve CD-ROM databases namely:

1 International Dissertation Abstracts;
2 LISA Plus;
3 McGrew-Hill Encyclopaedia of Science & Technology;
4 SPORT DISCUS (Department of Physical Education);
5 India Business Insight (University Business School);
6 Inside Science;
7 Inside social Science;

8 DELNET Database: online (articles, theses, dissertation, GISTNIC, ENVIS, MEDLINE etc.);
9 Index Translationum;
10 Encyclopaedia Britannica;
11 Hutchinson Multimedia Encyclopaedia; and
12 International who's who.

Online Public Access Catalogue facility is also available at the Reference Desk on the first floor of the library for recent added publications.

2.4 Online Search Services

Online search service is available to its members. The library has created its own OPAC, which is accessible to users. Terminals on first floor have been provided for users to access the OPAC. Library members cab also access the Internet through the LAN. In addition, all subscribed e-journals are accessible on the Internet.

2.5 CD-ROM Search Services

The reference and information section is providing CD-ROM research services, which is extremely popular among students. Owing to increasing demand, its use is being regularized by allotting time slots to the users. Faculty and research scholars use this service extensively. Users are allowed to carry out searches themselves, but library staff helps when needed.

2.6 Internet and E-main services

Many networks provided E-mail in India such as ERNET, NICNET, SIRNET, INDONET and 1-NET. Out of these, the ERNET, NICNET and I-NET are providing E-mail to University libraries in India. The Panjab University Library is connected with NICNET. NIC has supplied the software UUCP (Unix to Unix communication Protocol) free of charge. This facility helps students, researchers, teachers and other staff to collect information from anywhere in the world available through Internet. Through E-mail facility these members are able to send and receive messages throughout the world. There facilities are extended to teaching departments of the university. Presently the web page of Panjab University is also available on the net and it is regularly updated. The E-mail address of Panjab University library is publib@pu.ac.in.

2.7 Information Services

A modernized library information service includes internet access, E-mail, CD-ROM databases, national databases and online data basses available in the library. The library has access to online database on Internet and National Library Network like INFLIBNET and DELNET. It also has plan to access databases of important libraries of the country A cyber-café being run by a private contractor at the entrance of the library is providing information service like Internet and E-mail to the academic community at nominal rate.

3 CONCLUSION

The use of new information and communication technologies in Panjab University library has no doubt increased the efficiency of the library services. It has enabled the Library to computerize almost all the activities of the library, create in house database of collection, generate current awareness services from the database of books and periodicals and provide E-mail and internet services. But a complete transformation of the library in to an information center is yet to be achieved.

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CONTEMPORARY BOOK ACQUISITION DYNAMICS: SOME TRENDS

Chetna Khera*

ABSTRACT

There is new power today, to find solutions, where once there were frustrations. Yes, there are so many web sites in virtually all library operations requirements. Electronic access to publishers/vendor databases, bibliographic databases- (both CD-ROM/online) & services facilitate the ordering process, speed up the delivery cycle, reduce operational costs and save staff time. Easy access to publishers web sites, and ordering information extend the power & scope of acquisitions for a library/information centre. Searching databases electronically gives various options to enhance the collection development process. Ordering online is now within reach of any library with access to the Internet. Indian libraries cannot lag behind in innovation & improved performance in their acquisition processes. The paper highlights the online trend to order the traditional stuff, the Books of which libraries are made of. New search refinements/options, are also explained. A keen web surfing habit & awareness, as well as browsing library journals which give updated information on library related web development, certainly enhances ordering capabilities.

1 INTRODUCTION

Technology has transformed how we run our libraries. The Internet, in particular the World Wide Web is the subtle force behind new perspectives & new ways of thinking. Library acquisitions or book ordering to use the traditional term too has profoundly changed. In

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the Indian context, some libraries today, are more comfortable with the new digital world of ordering.

This first decade of the new millennium – will not see any going back. As other library departments are being reorganized corresponding with this phenomenal growth of the Internet, a concerted effort, too is required to examine the changing acquisitions scenario.

There are now many more access options & many more ordering options – compared to the traditional scenario of book ordering. One big factor behind this is: To keep pace with the growth of the Web – (one estimate is: "expands by more than 1.5 million pages every day." "we get smarter, not worse, as the Web gets bigger.... That's our competitive advantage." - Sergey Brin of Google. [1]

Each library/Information Resource Centre should have on its agenda an acquisition reform for innovation & cost effectiveness. It will bring improved performance together with cost savings. Embracing this change is an opportunity to grow. It makes us become better knowledge workers; and not just acquisition persons. A library needs to acquire books, periodicals, audio/videos, hardware, software etc. Many web sites are coming up with great service solutions to literally charm the librarian. It's our judgement that brings the desired solution at our steps. This paper will take up primarily books acquisition.

There is a whole range of services and user friendly databases out there, just a few have been mentioned in this paper. It is like having a big pile of attractive catalogs for ordering, the time frame of the paper is to open one or two! Some names are American, the approach global, the goal: efficient libraries!

2 COUTTS LIBRARY SERVICES WWW.COUTTSINFO.COM

Coutts Library Services is a leading international supplier of books to academic, medical, professional and reference libraries. Coutts has taken many steps on the path towards the goal of offering customers a world-class, single-source service.

Being a global library supply company Coutts On-Line offers a comprehensive range of services to the customer anywhere, at

anytime. It's web site www.couttsinfo.com combines book provision with the convenience and speed of the World Wide Web.

2.1 Selection support and subject profiling. Coutts helps libraries manage their collection development. An experienced selection team works with customers to select titles according to specific library profiles.

2.2 Electronic ordering. (EDI and on-line) Orders are accepted in all formats. Coutts does however, encourage electronic ordering as this speeds up the delivery cycle significantly.

2.3 Reporting and invoicing. Coutts offers EDI reports on the status of the order, as well as EDI invoicing. A full status of all orders can be viewed via the website.

2.4 Delivery. Shipping and courier companies with the latest sophisticated tracking and delivery systems are used to benefit Coutts customers in over 80 countries.

2.5 Bibliographic database. Access to an extensive range of bibliographic information via the website is also available. In the bibliographic database one can search for titles by keyword, ISBN, author or subject. The database is password protected. For a password and account number, one has to click to register.

2.6 Shelf-ready. Coutts provides a full shelf-ready service, whereby books are catalogued and processed per library specific requirements.

2.7 Customer Services. Each customer has a dedicated customer services contact that works as part of an area team.

2.8 Standards. Coutts is committed to providing the best possible service and to ensure a clear focus on meeting the customers' needs.

2.9 eBooks. Coutts works closely with established eBook vendors and publishers, to offer an eBook service that includes profiling and selection support together with cataloguing services.

2.10 Standing Orders / Continuations service. Offered since the company's inception. Currently providing more than 23,000 titles.

There is also a User-friendly Standing Orders / Continuations Database access to which is also password protected.

2.11 Publisher Services. A specialized team that deals solely with publisher issues and negotiations, ensuring a strong working relationship with all of their suppliers.

2.12 Selection Support Highly experienced bibliographers and selectors provide selection support facilities to customers in the form of Book Approval Plans and New Title Plans. Libraries have worked closely with Coutts to develop a sophisticated web service providing on-line access to approval and new title information.

2.13 New Title Plan (NTP) For libraries that prefer to select new publications title-by-title, Coutts supplies bibliographic data for all books either published, or available, in the USA, Canada (both EnglishandFrench)andintheUK.

Using Coutts' criteria of Subject, Readership Level and Country of Origin, allows libraries to set up their own NTP profiles.

The NTP information, including bibliographic data in MARC format, can be transmitted on a regular basis to the library on slips or by diskette,e-mail,FTP or the web.

NTP can be established and maintained with the help of Coutt's Selection Team, or directly on-line.

3 WHAT DOES IT OFFER

1 Ability to source books from around the globe. Improved delivery times owing to an efficient international infrastructure
2 Books arrive shelf ready, with full cataloguing & processing
3 Higher fill-rate
4 Reduce operational costs – by eliminating the need to locate dealers, compare prices, and call for bids
5 Relaxed and efficient service to the library/information center users.
6 Reduce errors and associated costs
7 Saves Staff-time

4 BAKER & TAYLOR
HTTP://WWW.BTOL.COM

Baker & Taylor is a leading full-line distributor of books, videos and music products to libraries and both traditional and Internet retailers. Maintains one of the largest combined in-stock book, video and music inventories in the United States with one of the most flexible and scalable distribution systems in the industry. A proprietary database contains detailed, comprehensive, up-to-date information on over 3.5 million book titles. **(Source: http://www.btol.com)** Access is convenient and easy through on-line or CD-ROM.

American Center New Delhi Information Resource office, earlier used the CD-ROM access, now the Online Baker & Taylor database, a very informative & helpful place for title searches.

Besides details like ISBN, LCCN, Dewey, Format, LC Class No., List Price, Release Date, Edition, Supplier; *Status* If Out of Print, or Not Yet Published etc. of the books is part of the record.
Also the Net Price after discount or Extended Price is given which helps in quick ordering. It saves staff time/ and possible delays in communication involved in getting a price quote from the vendor.
Even inventory information for most of the titles, is there on the web for the customers.

Baker & Taylor is a leader in the library market because of the wide range of products and services addressing library needs, like:On-line ordering and order confirmation, Cataloging services Continuing collection development and refinement ,Preparing books for circulation

Through Baker & Taylor's product availability, accurate product information, distribution system and proprietary database, its successful Internet commerce site is able to offer fast and flexible deliveries on a nationwide basis, a deep catalog of a broad range of products, and value-added services. Result: an efficient and effective service.

Thus books databases & online ordering make a welcome combination at any site. It's a useful & pervasive trend. The degree

& level of service differ.



At the Penguin Australia web site
http://www.penguin.com.au/ordering/f_ordering.htm

Listed are ONLINE BOOKSELLERS Classified into General | Specialist (Including Academic & Tertiary) | Children's

Denoting secure online credit card transactions where available.

This is an ideal classification approach that Indian publishing can increasingly consider.

We have some wonderful online book ordering sites listed at India's great Search Engine KHOJ http://www.khoj.com/Life_and_Family/Shopping/Books/ One famous name there is: English Book Depot, India's premier landmark bookstore since 1923 http://www.ebdbooks.com/



The site has an ideal form for book ordering. Gives shipping charges, and other details to meet any librarian's questions. English Book Depot's inherent strength in publishing has given it a niche in the distribution and wholesale of books. EBD has reprint arrangements with many British/American publishers.

"With the developments in Information Technology and installation of Fax, Telex and Modems we are at your doorstep round the clock. Update your stock with the help of the EBD Book List. ... In the liberalised era, the technology constraints no longer exist and thus our print technology is keeping pace with the very best." **(Source: http://www.ebdbooks.com/)**



How true are these words – about the developments in Information Technology. Traditional book ordering has certainly changed for the better. Another approach is to classify the products well. The more the technology of alternative form of books, like eBook, the digitized books, advances - the greater will be the need for such classifications.

At The McGraw-Hill Companies web site one can purchase products online by selecting one of the images: Books and Multimedia, Online Learning, Magazines and Newsletters, or Industry Products.

India is not only a technological giant, but also a cultural fiesta. A visit to the Vedams eBooks (P) Ltd. site shows the same. http://www.vedamsbooks.com/

Here is the most comprehensive annotated catalogue of books published in India. There are detailed descriptions of several thousand books ranging from Vedic scriptures to the architectural beauty of India's age old monuments; from books on the Indus Valley Civilization to Economic liberalization; from Anthropology to India's unique biodiversity; books on the vibrant democracy that is present day India to India's colourful past. The range and depth of the books here reflects India in all its myriad forms and colour.

Orders are accepted at the site from both individuals and institutions. Titles are added to the shopping cart, choosing from the subjects of interest. A user can "View Cart", fill up the order form. The price of the books includes registered airmail postage and packing. There are courier options too which are charged extra, and the order form reflects the total amount due. An acknowledgement is received within 24 hours on the status of the order transmitted by Clicking on the "Send order" button.

There are options for Institutions to send their purchase orders via email or airmail their paper order forms. The site very interestingly says: "Please note we accept orders via email also (this is for those who find filling up forms boring!)."

D.K.Publishers Distributors http://dkpd.com database on the web has books from over 1100 publishers. The drop down menu selection is title/keyword/author/publisher. And there is the option to order online. The site also offers Subject List/Catalog. The site instructs: To Purchase Book(s) Kindly select the checkbox and the book will be added to your shopping cart.
Libraries may wish to join the site offered Mailing List, indicating the areas of interest, in which to receive new titles information. One of the well categorised subject in the mailing list form for instance is POLITICAL SCIENCE: PUBLIC ADMINISTRATION (Including Police , Law , Defence-Studies , International Relations , Crime , Terrorism Current Affairs)

"Yesterday's dream is today's reality. A seed planted at the right season, in the right soil and with persons to care and nourish, grows into a big tree in course of time." – (source: D.K.Publishers Distributors web page: About Us at http://dkpd.com/about.htm)

Foreign Internet retailers such as Amazon.com maybe seen as competitors in the book market; and undermine the importance of booksellers in a country's culture. For the purpose of this paper, their importance is highlighted as a source of convenience to a librarian grappling with ordering tasks requiring much effort & time consuming expertise. A librarian has more to think & do than remain in the technicalities of book purchases. For that matter, a neighborhood bookstore or a phone to a bookshop, can come to the rescue of the librarian, with their ever responsive & reliable services. But what if the titles are hard to find, time very less!

There are problems here, no doubt: Online stores sometimes list the wrong editions of the textbooks they sell. To exchange a book, there is need to spend on Postal Service. Some of the online booksellers sell used books, but it is sometimes difficult to evaluate their condition online. Online transactions in a vast library need to be postponed due to delays in the approval of titles, books get out of stock. Delays maybe because of the credit card limit exceeding and other such factors.

In the SERIALS field there are Vendor's like EBSCO subscription Services, with a well-established networked operational system of regional offices and centralized support services providing quick, accurate and personalized service. No matter where your organization is located, or from which country you order titles, EBSCO can be the vendor. This provides the customers several benefits. Title research, electronic subscription services, easy claiming process helps keep the journal issues arriving according to your specifications. Plus EBSCO's information systems & services facilitate a variety of print & electronic management reports that can help the customer analyze collections in many ways.

Similarly in the area of Books, EBSCO Book Services, www.ebscobooks.com, offers more than 2.5 million book titles from all disciplines and an extensive collection of audio and video products. EBSCO Book Services' Web-based interface streamlines the book

ordering process. Invoicing and reporting options help organizations manage and track book purchases, while the simple ordering system, fast delivery and competitive prices appeal to users. Next day delivery is available in most locations in the U.S. Convenient payment options include monthly consolidated invoicing, purchase orders, credit cards and corporate purchasing card.
(Source: http://www-us.ebsco.com/home/books/default.asp)

Ordering from online bookstores like Amazon.com, Bn.com, dkpd.com brings not only the 24 hours a day, 7 days a week benefit. It offers an Internet ordering system that is customized for the user's organization. The user enters his personal information into an order form on secure web servers. Options can easily be added to choose quantities, enter purchase order numbers, choose billing and shipping information, and other data. The system shows the status of the order.

In addition to the Electronic way, alternate options like a paper form for those customers who cannot use the Internet-based system, are there to send orders- by fax or mail. Amazon.com added a Corporate Accounts Program to its buying options, as an alternative to using credit cards. It provides dedicated account representatives; There is also a mention of Amazon making selected parts of a book viewable without having to pay [2]

Besides the benefits offered to customers, there are other reasons behind the increase in the sales of electronic retailers like Amazon and Barnes & Noble. Amazon.com provided a model for book information systems. For that matter there is also a concern expressed by libraries about competition between libraries and these online services.

Taking a pause here: Credit card payment – Is it secure?

One web site I chose to highlight this: The University of Nebraska Press web site (http://unp.unl.edu) which also offers the option of ordering books on-line (after easy searching of the on-line database and adding books to your shopping cart). Note the "Payment Methods" at the web site captures the essence of the doubt & the solutions for credit card payment of orders
Payment Methods

Check Credit Card

If paying by credit card: The University of Nebraska Press, and the University of Nebraska are not liable for any damages that may occur by placing your credit card number on this form. You may print this form, and fax it, or call our customer service department and give them the number over the phone.Thus there are secure (sometimes psychological, at some sites technical) benefits of off-line ordering.

We can go on focusing on the popularity and interpretations of electronic commerce and the convenience of the customer in online shopping; Improvement of the purchasing system; Development of the book publishing industry. Let us now switch to another aspect, a prerequisite for Book Ordering: Searching.

Search

At the more general level, available on the web are the fax/email contact addresses of various vendors/publishers/bookstores. Information everywhere! A library has an expanded directory to look. There is certainly much junk on the Web, but the required information on a book is some clicks away almost always.

Reference tools come handy. Like the American Book Trade Directory : an essential resource for librarians, publishers & professionals. (now in its 48th ed. 2002-2003) Includes over 28,000 booksellers, over 1300 wholesalers and hundreds of book trade service-providers & resources from across the U.S. and Canada.

Searching the bibliographic details for titles to be ordered has become easier due to the growth of the Internet. And very refined & effective due to the availability of electronic databases like Books in print.
It is very encouraging to know that the *Indian Books in Print* (3 vols. Set), published by the Indian Bibliographies Bureau, is on its way to be available on CD-ROM. I predict, that day too will come, when it will be online. Subscribers passwords would then open the world of information in this essential reference tool for scholars, libraries & organisations engaged in book distribution worldwide!

Of such useful products like Books in Print, there maybe a print

version, often several years old in libraries. It involves heaps of work and it is not rewarding enough compared to the access to the large database on CD-ROM. There are online databases for books, with charged access too. The alternative formats facilitates librarians to create customized bibliographies for patrons or to churn out purchase lists. Another example: The ability to search for award-winning titles (and books that have been nominated for key awards) helps librarians to ensure that the best titles are on their shelves. Books in print has a tag "Title Reviews" if a full-text review is available. Reviews help in better decision-making, and quicker/instant access to reviews is a welcome thing for any librarian.

Books are dense, factual and comprehensive. They also describe assimilated research and opinion a minimum 6 months to a year old by definition. [3]

Information Research: Locating Books FAQ touches upon some important things to be considered in making book ordering decisions. One is: Availability of Free Books Online, and refers to the On-Line Books Page at Carnegie Mellon University.

Note: Since 1999 this Online Books Page, originally founded in 1993 is now hosted at the University of Pennsylvania, who provides the server, disk space, and network bandwidth for the site. It facilitates access to books that are freely readable over the Internet. At http://onlinebooks.library.upenn.edu/

Coming back to core products like Books in Print from R. R. Bowker, a trusted and respected member of the library community (since the first issue of Library Journal came out in 1876). R. R. Bowker continues to meet the ever-changing information needs of libraries with the world's premier book, serial, video, and audiocassette databases.

Their various reference resources are matched with the technological innovations setting new standards in data retrieval. "*Books In Print has continued to expand ... and enhance the variety of information and accessibility to it.*"

Online Availability at: www.booksinprint.com – is the definitive source for unbiased bibliographic data: over 3.5 million titles, more than

600,000 full-text reviews, stock availability from over 20 major suppliers and more! Of course for a cost, you can access this world's most inclusive, accurate, up-to-date, trusted – database of book, audiobook, and video titles online! It offers a wealth of value-rich enhancements for librarians, including:

A streamlined order/selection process – searching the full 3.5 million title database for titles.

Bowker's Hooks to Holdings (for libraries with Z39.50 compliant catalogs)- lets you link to your local catalog to see if you already own titles. Children's Room area –to access all children and young adult books, audios, and videos.

The Fiction Room -gives librarians the ability to access Fiction Titles using 12 search criteria, including Review Source, Award Winners, and other criteria. Favorite Series area - lets you link to all titles (books, audios, and videos) in any series with just one click. With a powerful and easy-to-use search engine, it offers superior search capabilities that can combine up to 31 search criteria.
(Source: www.booksinprint.com)

The print complement to Books In Print on Disc and booksinprint.com. has almost two million up-to-date entries, its the definitive information source in print format on books published and distributed in the United States.

In eight volumes of author, title, and publisher indexes it is a core reference guide to count on.

The CD-ROM version has unmatched speed, flexibility, and convenience to offer. Books In Print on Disc puts the world of in-print books at one's fingertips. It lets you quickly:

Access any book of any genre or type — from limited-run technical monographs to mass-market bestsellers. It keeps current with new titles, price updates, and other data revisions. The benefits never end with Books In Print OnDisc. This remarkable tool, Updated monthly is simply indispensable for library acquisitions, reference, and collection development.

Accessibility is literally at the user's fingertips. A couple of mouse clicks to find the title availability or a review. Full Descriptions give the bibliographic data, publisher information, subject classifications, and other details. Many library patrons find it an outstanding service for its reference value. Books In Print OnDisc is used extensively at the American Center Information Resource Office ordering department, and at the Information Resource Center by the reference librarians & patrons almost everyday.

5 TRENDS

An article of great significance I read, focuses on the growing online services of independent college bookstores at several universities in the U.S. It talks about the transition & change in independent college bookstores finding that they must offer services on the web to be competitive.

Wayne S. Sharrer of bookstore at Towson University, who was initially wary of this development displayed banners reading in bold letters "Apparently, you can get screwed over the Internet" above "Books on time, not online."

Today, the same Towson encourages students to buy books online—from the book store's own Web site, that is. Towson's store, like others at colleges across USA, is making its own foray into the online world, setting up e-commerce components and Web features. "Web sites are part of a mission to cater to students who demand conveniences offered by online booksellers, as well as to serve the growing number who are enrolled in far-flung distance-education programs."

Online offerings are potentially successful, still, coordinating an online component is not always simple or economically rewarding for a college bookstore. Setting up and staffing a Web site is time-consuming, Mr. Sharrer notes. "But to keep up with the online providers, we have to do this."

Says Pamela A. Mills, the director of the bookstore at the University of Colorado at Boulder, that "her store set up the online component to be competitive, especially since there is a Barnes & Noble textbook outlet just down the street."

This article then says "College-store giants like Barnes & Noble and Follett have online arms in their businesses, complete with discounts. And popular book sites like Amazon.com, ABEbooks.com, and Half.com, a subsidiary of eBay, have all added textbook icons to their sites this fall; all of them offer used books for prices sometimes better than half off the list price.

But these services don't seem to worry college stores or their technology providers. Now college stores that set up online components, like the one at Brigham Young University, have their own sites to worry about." [4]

The trend is significant, the application universal. There is change – there is continuity.
Behind the scenes, Towson University's online bookstore relies heavily on a low-technology system. It's just as a typical order is processed from "clicks" on ordering requirements to the "bricks" that is the manual part when an employee prints a copy of the order and pulls the books off the shelves making sure that the books match those on the order form, before books are shipped.

The great promise of the Internet was eliminating the middleman- and selling direct it to the customer, "Yes you can bypass traditional salesmen or sales channels, but to do so, you add logistics issues. You can click-but someone still has to bring home the goods to the customer." [5]
Excellent international courier services with well-established infrastructure & network have complemented and facilitated electronic commerce – making it faster & possible.

It is true that consistent global sales are a profitable reality only for global companies with national subsidiaries that can avoid heavy shipping costs across national borders. The Internet is perhaps the first true global medium – but e-commerce is not. Not yet, anyway. "What you see on the screen is really just the tip of the iceberg, and it is not a trivial tip," says Amazon's Frazier. "Below the customer façade , you have to deliver on the promise you made to customers. Then you have to drive people to the site and deliver. That all cost a lot of money." [5]

In this One World – Global/domestic; common goals are being achieved from structures already made/processes already begun! Continuity & change go on simultaneously.

6 CONCLUSION

Easy access to publishers' web sites, and ordering information extend the power & scope of acquisitions for a library. Thanks to the glory of the Internet, One can pin point the source and get information needed, to order a particular book and then maybe order online.

The power & flexibility of a comprehensive library services vendor makes the task more easier & productive – by providing search of their database, and other enhanced ordering capabilities.

With the dot-com hype going on, there is opportunity to be part of it, and to benefit from it. This acquisitions scenario has promises for Indian libraries: to bring operating efficiencies, expand resources, and provide better services; to work with book publishers/distributors in formulating of their web site strategy. The strength of the approach is in the flexibility to apply global solutions in the specific areas where they can accomplish the most good, ensuring vast benefits - a concern, particularly crucial in a library environment. More awareness, keen browsing of web sites & of the web information rich library journals, that track library related web development, certainly enhances ordering capabilities. Choices are many, solutions ours to make.

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3 Coutts Library Services http://www.couttsinfo.com/
4 D.K. Publishers Distributors http://dkpd.com
5 EBSCO Information Services http://www.ebsco.com/home/default.asp
6 TheEnglish Book Depot http://www.ebdbooks.com/
7 KHOJ.COM http://www.khoj.com/Life_and_Family/Shopping/Books/

8 The McGraw-Hill Companies http://www.mcgraw-hill.com/utility/shop/shop.html
9 Penguin Australia http://www.penguin.com.au/ordering/f_ordering.htm
10 Vedams eBooks (P) Ltd. www.vedamsbooks.com
11 The University of Nebraska Press web site http://unp.unl.edu
12 University of Pennsylvania
13 http://onlinebooks.library.upenn.edu/

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DIGITAL REFERENCE SERVICE AT THE CENTRAL LIBRARY OF IIT MADRAS

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ABSTRACT

The present paper is based on the practical experiences gained over three years to provide successful digital reference services (DRS) at the Central Library of IIT Madras. It discuses the objectives for providing DRS, information infrastructure and digital information resources available at the Central Library. The paper also highlights the DRS mechanism, major features and issues for discussions.

1 INTRODUCTION

The Indian Institute of Technology Madras (IITM) was established in 1959 by the Government of India, as an Institute of national importance. Its primary objective was to promote higher technical education, research and consultancy. The activities of the Institute in various fields of Science and Technology are now being carried out by thirteen Departments and four Centres. The Institute has nearly ninety well-equipped laboratories attached to the different Departments. The Institute Campus covers an area of 256 hectares of forestland and houses a community of about ten thousand people. The Institute offers several course-based undergraduate (UG) and post-graduate (PG) programmes as well as research-based post-graduate and doctoral programmes. It has over the years, responded to environmental changes and user needs by redesigning curricula, offering new UG and PG programmes and undertaking initiatives in continuing education. The Institute also undertakes a large number of research and consultancy projects sponsored by a wide spectrum of funding agencies, including Government and Industry.

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The Central Library is one of the central support services of the Institute which has been awarded ISO-9001 certification by RWTUV of Germany for the establishment, application and maintenance of quality library systems, services and procedures. It is well equipped with all modern facilities and rich resources in the form of CD-ROM, On-line databases, printed and non-printed documents on Applied Sciences, Engineering, Technology, Humanities, Social Sciences and other new emerging areas. The Central Library holds, 3,58,632 collections, 906 current journals and catering the needs of 5,404 members. The Central Library subscribes large number of e-journals including Science Direct-web based database for scientific research offers on-line access to 1700 full text journals from Elsevier Science, ACM Digital Library, Institute of Physics, Oxford Journals. In addition to this, currently, the Central Library is also engaged in arranging access to full text journals and bibliographical databases under MHRD Consortia which are listed below:

- IEEE/IEE Electronic Library (IEL)
- IDEAL
- Springer Verlag
- ABI/INFORM
- JCC
- Math Sci Net
- Sci Finder Scholar
- Web of Science
- J-Gate

2 DIGITAL REFERENCE SERVICES

Wasik, J. M. (1999) states that digital reference and Ask A services are Internet-based question-and-answer services that connect users with experts in a variety of subject areas. In addition to answering questions, experts may also provide users with references to other online and print sources of information. As opposed to traditional expert systems that attempt to capture and model problem-solving tasks in a manner similar to hymen, digital reference service use human intermediaries, or experts, to answer questions and provide information to users. Keeping this fact in view as well as the importance of digital reference service, the Central Library of IIT Madras has initiated to provide digital reference service with the following objectives

- To extend library and information services at door step
- To provide services to remote users
- To encourage disadvantageous users to seek desired information

- To meet information needs through digital reference service
- Services to virtual stakeholders
- To provide reference service to the industries under industrial associateship scheme of Institute
- To develop an Internet based continuous interaction with stakeholders

3 INFORMATION INFRASTRUCTURE

The Central Library has developed very strong information infrastructure with the objective to provide effective and efficient IT based library and information support services to users. The major information infrastructure available in the Central Library is given below:

- CD-ROM Networking System with 64 drives
- Internet Connectivity
- Servers and Workstations
- Scanners-Handheld and Flatbed
- Portable Data Capture Unit
- Laser Printers
- Thermal Laser Printer
- CD-Writer
- CD-Printer
- Laptop
- LCD
- OPACs
- CD-ROM Databases
- Software
- Electronic Display System
- E-Journals
- On-line Databases
- CD-ROM Databases
- E-Books
- Media Resources
- Fiber Optic Cables and UPS

4 DIGITAL INFORMATION RESOURCES

Realizing the importance of digital information resources for the benefits of users, IIT Madras, has encouraged the Central Library to develop digital information resources. Accordingly, the following digital information resources have been made available under Intranet and

Internet environment to users.

4.1 Electronic Scholarly Journals

As we know that electronic scholarly journals have become necessarily of academic environment which help the stakeholders for achieving excellence in the area of teaching, research, developments, consultancy and also other diversified academic pursuits. The major advantages of e-journals over printed journals are listed below:

- Speedier Delivery
- Easy and Effective Search
- Multidimensional Interaction
- Dynamic Hyper Links
- Multimedia Effects
- Downloads
- Cost Effective Option
- Flexibility
- Manipulation of Text
- Operating Cost Free

Keeping these factors in view, we have provided access to over 1900 full text e-journals through creating dynamic separate web page for journals in the Central Library website. This page provides information exclusively about journals like: journals of the month, list of journals subscribed during 2002, journals available on trial, holdings of current journals, free- e-journals available. A screen shot of this web page is given on figure1.

4.2 E-Books

Globally, the importance of e-books is drastically gaining grounds and teachers, students, scientists and industries are largely depending on e-books. The major advantage of e-books is that it can be read on all types of computers including handheld devices. E-books contain audio, video and dynamic hyperlinks. It can be delivered instantly from any where in the world by downloads, e-mail file attachment, on diskette or CD-ROM. The major features of e-books are listed below:

- E-books are accessed faster
- Cheaper
- Easily searchable
- Easy to print and copy

- Users can manipulate the text easily in desired manner
- Online purchasing is possible

Due to these factors, the Central Library has created separate webpage for e-books, which provides further links to various e-books vendors and also the institutions providing access to free e-books. The screen shot of the same is given on figure 2.

4.3 E-Reference Sources

The Central Library has developed various e-reference resources in the form of maps, atlases, encyclopedias, directories, dictionaries, citation guides, biographical and translation sources to provide digital reference services. It has been observed that students, staff, faculty and industrial associates are largely using these resources to supplement their academic work. Necessary efforts have been made to update the web page periodically. It further provides hyper links. The screen shot of the web page is given on figure 3.

5 FEATURE OF DIGITAL REFERENCE SERVICE

The major features of digital reference service provided at the Central Library are listed below:

- Instant and personalized
- Comprehensive
- Short range
- Long range
- Based on digital resources available at the Central Library

6 MECHANISM FOR PROVIDING VIRTUAL REFERENCE SERVICES

Realizing the importance of DRS, the Central Library has initiated to provide DRS to users, based on the e-resources available in the Central Library. Currently, we are using the following mechanism to provide digital reference service to the faculty, students, staff, and industries. This service can also be utilized by external users under Internet environment.

6.1 Creating Web Reference form

A web reference form has been created which is available in the Central Library website for users. The form has been created with the objective to get details of users and also the nature of reference queries raised. The screen shot of the web page is given on figure 4.

6. 2 E-mail Based Interaction

We also interact with users through e-mail. For this purpose, e-mail addresses have been created so that users can contact the concerned staff for various types of problems. The Central Library website provides interface to these e-mails under contact web page. Specific e-mails for all major activities like books and periodicals acquisition, inter-library loan, document delivery, circulation desk, book bank, desktop publishing have been created.

6.3 Virtual Reference Desk

This desk has been created to assist the users at their desktops. This page contains information about the reference collections available in the Central Library along with their locations. The information about the contact persons is available on this web page during working days as well as weekends. An e-mail link hchandra@iitm.ac.in has also been created for the users to contact the Librarian.

6.4 Ask the Librarian

The Central Library has created separate webpage for providing an opportunity to an user through highly specialized service called Ask the Librarian. The reference queries through this facility are answered on priority by the Librarian and related staff. The screen shot of the web page is given on figure 5.

7 MAJOR ISSUES FOR DISCUSSION

- Information Literacy Program
- Developing Digital Information Resources
- Developing Collaborative Reference Services
- Transfer of Questions among Libraries
- Creating Digital Culture in Libraries

8 CONCLUSION

It can be concluded that digital reference service is the key to a successful digital library initiative. This service has great potential to develop strong and sustainable links amongst library and users.

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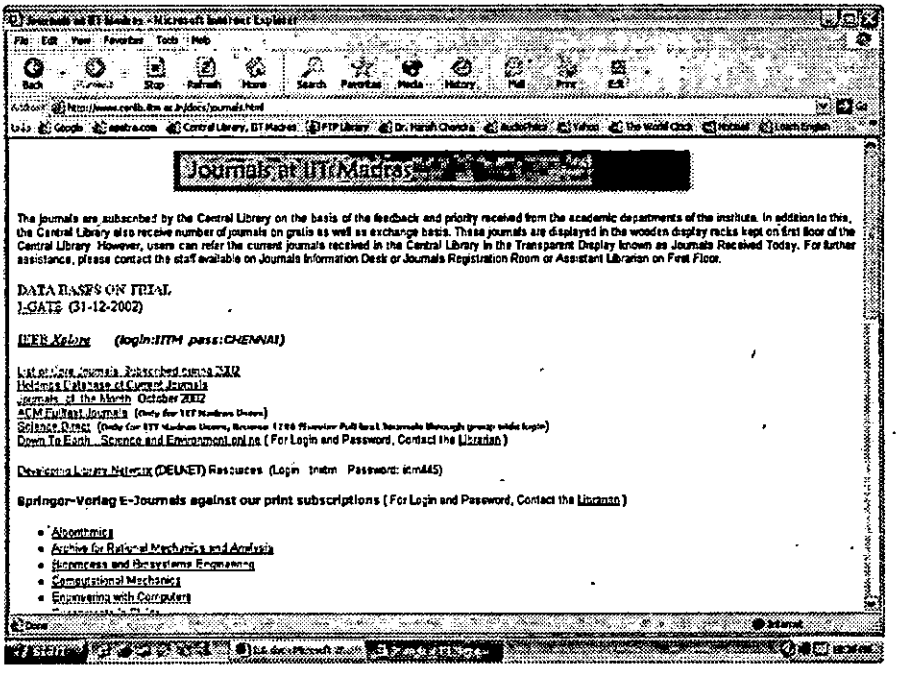

Journals at IITMadras
The journals are subscribed by the Central Library on the basis of the feedback and priority received from the academic departments of the institute. In addition to this, the Central Library also receive number of journals on gratis as well as exchange basis. These journals are displayed in the wooden display racks kept on first floor of the Central Library. However, users can refer the current journals received in the Central Library in the Transparent Display known as Journals Received Today. For further assistance, please contact the staff available on Journals Information Desk or Journals Registration Room or Assistant Librarian on First Floor.
DATA BASES ON TRIAL
J-GATE (31-12-2002)
IEEE Xplore (login:IITM pass:CHENNAI)
List of New Journals Subscribed during 2002
Holdings Database of Current Journals
Journals of the Month October 2002
ACM Fulltext Journals
Science Direct
Down To Earth - Science and Environment online (For Login and Password, Contact the Librarian)
Developing Library Network (DELNET) Resources (Login lrcitm Password: itm445)
Springer-Verlag E-Journals against our print subscriptions (For Login and Password, Contact the Librarian)
Algorithmica
Archive for Rational Mechanics and Analysis
Biomimetics and Biosystems Engineering
Computational Mechanics
Engineering with Computers

Fig. 1

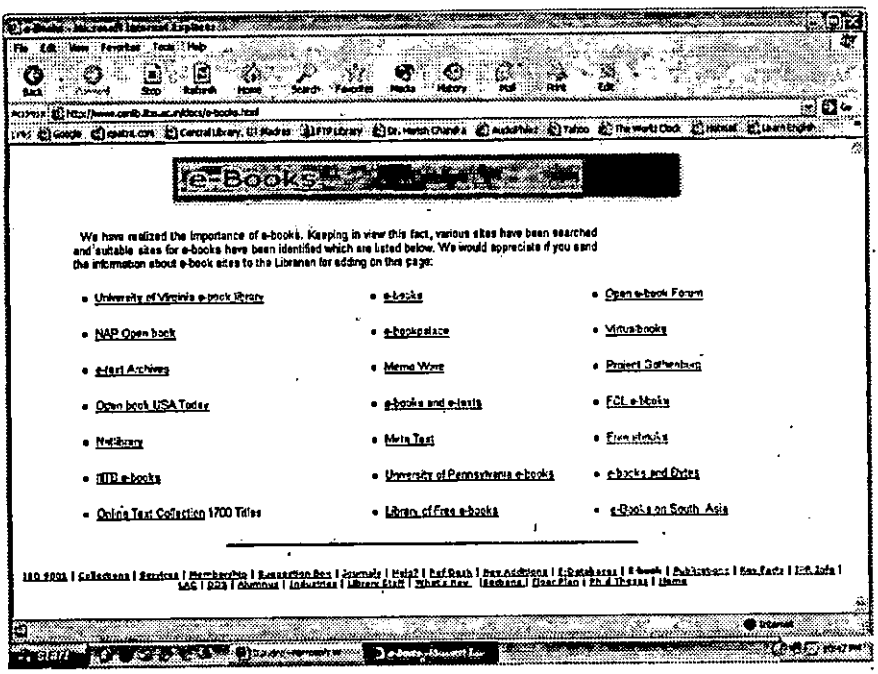

e-Books
We have realized the importance of e-books. Keeping in view this fact, various sites have been searched and suitable sites for e-books have been identified which are listed below. We would appreciate if you send the information about e-book sites to the Librarian for adding on this page:
University of Virginia e-book library
NAP Open book
e-text Archives
Open book USA Today
NetLibrary
IITD e-books
Online Text Collection 1700 Titles
e-books
e-bookspace
Memo Wire
e-books and e-texts
Mets Text
University of Pennsylvania e-books
Library of free e-books
Open e-book Forum
Virtualbooks
Project Gutenberg
FCL e-Books
e-books and Dotes
e-Books on South Asia

Fig. 2

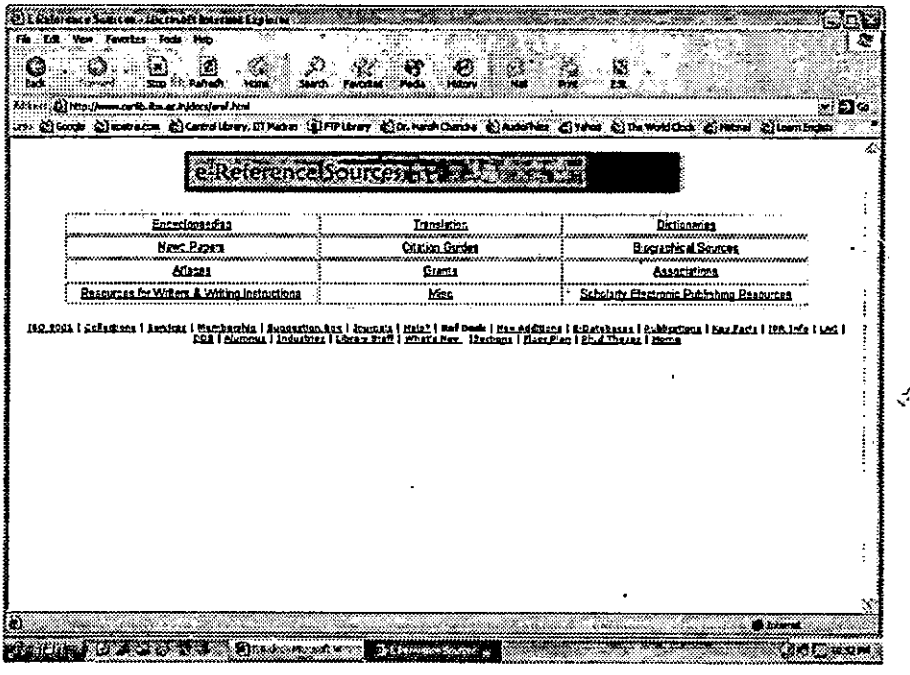
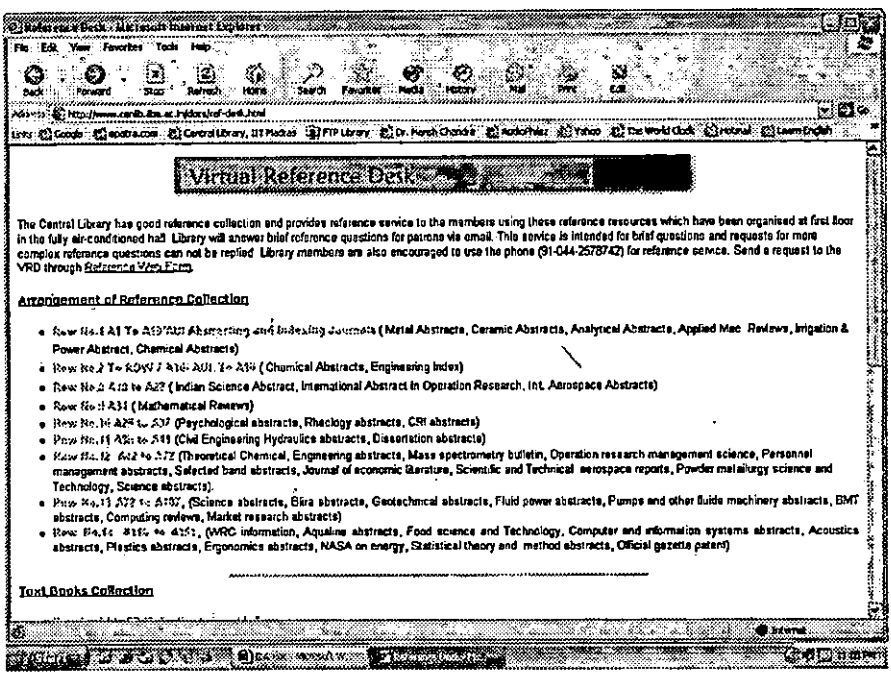

e-ReferenceSources
Encyclopaedias
Translation
Dictionaries
News Papers
Citation Guides
Biographical Sources
Atlases
Grants
Associations
Resources for Writers & Writing Instructions
Misc
Scholarly Electronic Publishing Resources

Fig.3



Virtual Reference Desk

The Central Library has good reference collection and provides reference service to the members using these reference resources which have been organised at first floor in the fully air-conditioned hall. Library will answer brief reference questions for patrons via email. This service is intended for brief questions and requests for more complex reference questions can not be replied. Library members are also encouraged to use the phone (91-044-2578742) for reference service. Send a request to the VRD through Reference Web Form.

Arrangement of Reference Collection

- Row No.1 A1 To A59 (Abstracting and Indexing Journals (Metal Abstracts, Ceramic Abstracts, Analytical Abstracts, Applied Mec Reviews, Irrigation & Power Abstract, Chemical Abstracts)
- Row No.2 To A90 / A96- A01 To A99 (Chemical Abstracts, Engineering Index)
- Row No.3 A10 to A22 (Indian Science Abstract, International Abstract in Operation Research, Int. Aerospace Abstracts)
- Row No.4 A24 (Mathematical Reviews)
- Row No.5 A25 to A37 (Psychological abstracts, Rheology abstracts, CSI abstracts)
- Row No.6 A38 to A49 (Civil Engineering Hydraulics abstracts, Dissertation abstracts)
- Row No.7 A50 to A72 (Theoretical Chemical, Engineering abstracts, Mass spectrometry bulletin, Operation research management science, Personnel management abstracts, Selected band abstracts, Journal of economic literature, Scientific and Technical aerospace reports, Powder metallurgy science and Technology, Science abstracts).
- Row No.8 A73 to A107, (Science abstracts, Bira abstracts, Geotechnical abstracts, Fluid power abstracts, Pumps and other fluids machinery abstracts, BMT abstracts, Computing reviews, Market research abstracts)
- Row No.9 A108 to A151, (WRC information, Aquaine abstracts, Food science and Technology, Computer and information systems abstracts, Acoustics abstracts, Plastics abstracts, Ergonomics abstracts, NASA on energy, Statistical theory and method abstracts, Official gazette patent)

Text Books Collection

Fig.4

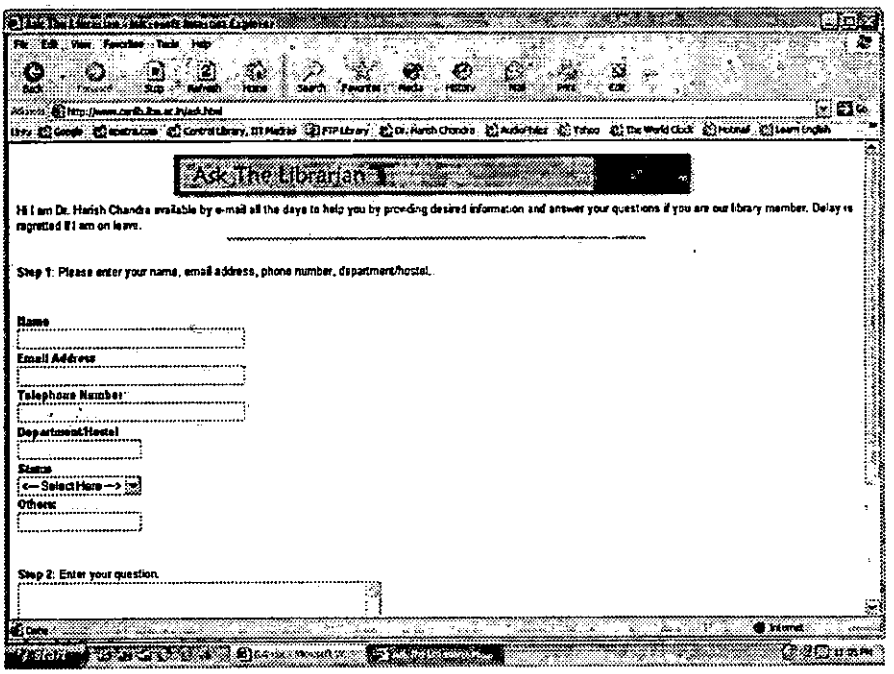
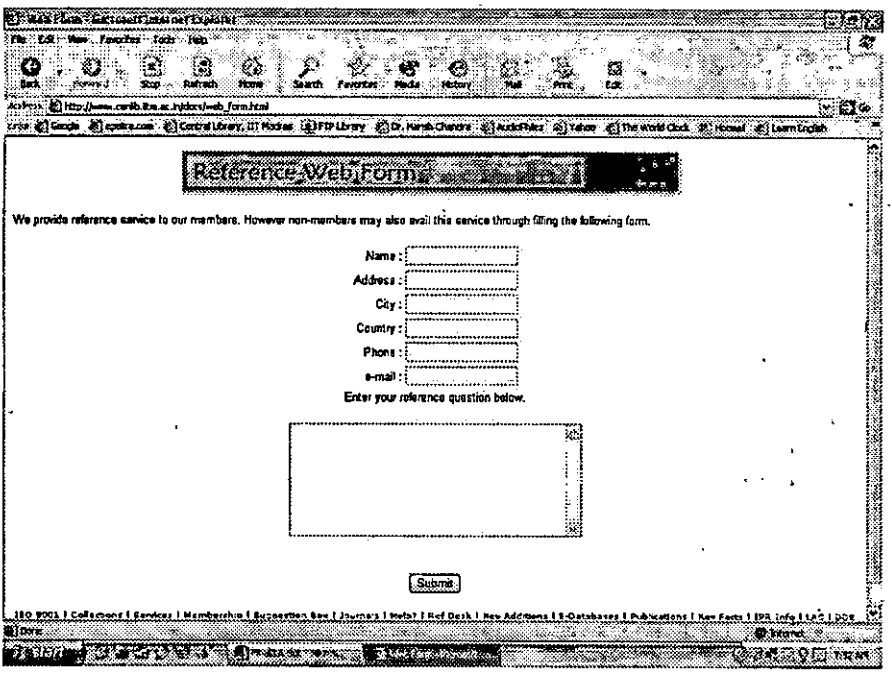

Ask The Librarian
Hi I am Dr. Harish Chandra available by e-mail all the days to help you by providing desired information and answer your questions if you are our library member. Delay is regretted if I am on leave.
Step 1: Please enter your name, email address, phone number, department/hostel.
Name
Email Address
Telephone Number
Department/Hostel
Status
<--Select Here-->
Others
Step 2: Enter your question.

Fig.5


Reference Web Form
We provide reference service to our members. However non-members may also avail this service through filling the following form.
Name :
Address :
City :
Country :
Phone :
e-mail :
Enter your reference question below.
Submit

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DIGITAL REFERENCE SERVICE

B.Ravi*
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ABSTRACT

The digital information and online resources have surged in popularity as more libraries connected to the global network. The mode of disseminating the library services has changed due to the advence of technology. The internet based information delivery as an effective and efficient method, expanded its service for providing the reference service in libraries. This article briefly explains the concept of the traditional reference service, the digital reference service - its workflow, forms and the role of digital reference librarian.

1 INTRODUCTION

The emergence of technology affected so significantly the core mission of a library and has contributed the dramatic changes in all areas of library profession such as acquisition, cataloguing, reference and circulation.. These technological advances have created new opportunities for libraries, information managers, researchers and library patrons of all kinds. The Internet is expanding at a dramatic rate and is creating a fundamental change in the way people collect information and acquire knowledge. Digital reference is currently a hot topic in libraries, with everyone moving their reference services online and looking to learn from others who have ventured into this new territory.

Digital reference service has been around for quite a while, modestly in the form of a questionnaire box on several libraries homepages.

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The service has functioned as a complement to the ordinary reference service provided in the library at the reference desk and on the phone. Reference service on the net will however play an important role as more and more people have access to the Internet. The role of the digital librarian has

always been to facilitate access to information, to do this effectively today requires continual updating of our knowledge of the 'information universe', including new and innovative information retrieval tools, understanding of client needs, and the flexibility and creativity to work out appropriate quality solutions.

2 TRADITIONAL REFERENCE SERVICE

Traditionally libraries have stored information and produced cataloguing systems to make the information accessible to their users. It has been the main task and organizing the sources available in using controlled vocabularies and other standard tools to make materials fully accessible. This helps for providing reference service. Reference services is the process of establishing contact between a reader and his documents in a personal way.

Traditional Reference service mainly arose for the following reasons

a. an increase in the number and variety of information resources available, including, but not exclusively, those found in libraries
b. an increase in the complexity of those information resources
c. jointly, these combine to make it more difficult, in general, for people to find the resource they are looking for and to find the information they need within that resource
d. an increase in the number and diversity of people using libraries leading to a wider range of information needs and enquiries and sophistication with the search for information.

3 MODEL OF THE REFERENCE PROCESS

The traditional reference service is based on the following steps and it involves interaction between the librarian, the library users, and the library resources in order to satisfy the users information need.

a. Develop the essential elements of information
b. Collect the information
c. Record, sort, evaluate, and interpret the information
d. Disseminate the processed information to the users

Due to the impact of technology on libraries particularly reference services, in areas such as:

a. implementing new integrated systems in reference services
b. answering the "new" reference questions
c. evaluating systems and databases
d. involving reference expertise in license agreements to accommodate users needs
e. guiding successful users interactions in the shift from print to e-sources

4 WHAT IS DIGITAL REFERENCE SERVICE

Digital reference is an Internet based question and answer services that connect users with experts in a variety of subject fields. In addition to answering the questions, experts may also provide users with referrals to other online and print sources of information. The question/ answer process in digital reference services is modeled after the methods practiced by reference librarians in traditional way. As in a face- to- face interview, experts determine the amount of information appropriate for the user, the applicability of that information, and the level of information required. User queries must occasionally be clarified, and an online reference interview may be conducted to help define the user's information needs

5 DIGITAL REFERENCE SERVICE WORKFLOW

The first step is the identification of the essential information in the request of user via e-mail or web interface, and then decide on an appropriate course of action. At this stage, the librarian analyzes the query to determine the subject of the request and to identify the type of information needed. New questions may be checked against an archive of previously answered questions for an appropriate answer, and if no suitable answer is found, passed along to an expert for answering. The expert supplies the necessary information, which may consist of a factual information, pointers to additional resources like referral information or some combination. The selection of the answer is crucial because the information identified must be accurate, complete and it is useful to the user. The selected information is communicated via e-mail or posted to a web site for the user to access at a later date. If the information provided is not satisfied by the user, the query is renegotiated, and the individual steps in the decision making process are repeated.

6 FORMS OF DIGITAL REFERENCE

Digital reference services can currently be broken down into two main types: e-mail and chat.

Libraries are using a couple of different means of running an e-mail reference service: using basic e-mail or web forms. There are also a few different ways of operating a chat reference service: using simple chat software, web-based chat rooms, and web contact center software.

a. E-mail: User sends the library an e-mail with a reference query, supplying whatever information he or she feels is necessary. The library may reply by e-mail, phone, fax, letter, etc.

b. Web forms: User fills out an online form on the library's web site. The form asks the user to answer clarifying questions that will help the reference librarian responding to the query. The user sends the completed form to the library by clicking a button on the page labeled "send" (or "submit" or something similar). The library may reply by e-mail, phone, fax, letter, etc. While e-mail reference allows the user to write down the query in his or her own words, a web form structures the user's request somewhat, prodding the user to supply additional information that will specify the request.

c. Chat reference using simple technologies: User exchanges short, text messages back and forth with the librarian. There are three ways of running this kind of a service:with free, instant messaging software (such as AOL Instant Messenger), with a web-based chat room (such as those at Anexa.com), or with chat software purchased by the library (such as Conference Room). With most of these services, the user types in an opening query or greeting to get the attention of the librarian staffing the chat reference service. The user and librarian may exchange a series of short messages to get to the heart of the user's request. This exchange of messages is live (it takes place in real time) and allows for negotiation of the user's query.

d. Chat reference using web contact center software: Borrowing technology from online customer service, software for web contact centers not allow for instant messaging, but they also offer give the librarian power to control the user's browser. A librarian can actually make the user's browser display a recommended web page, such as a search engine (with a suggested query typed in by the librarian!) or the main page for the library's online catalog. As the librarian

pushes pages onto the user's browser, the chat window can also appear on both user and librarian's screen, allowing them to have a typed conversation about the web pages being sent to the user.

e. Collaborative networks for reference: In this model, two or more libraries team up to offer reference service using any of the above online formats. The user would send to a member library his or her request, which would be forwarded to the library best able to answer the question. A library may get a question routed to it because it has particular strengths in its collection that match the needs of the user. The member library might get a question routed to it because it happens to be open when the user makes his or her request.

7 ROLE OF DIGITAL REFERENCE LIBRARIAN

The reference librarians are at a crucial point in the evolution of the career where they can actually command their place in society better than ever before. The digital age has changed everything about a reference librarian's job, and it has changed nothing. Until the 1990's most reference librarians were expected to prepare subject bibliographies and user guides to the many indexes and abstracts shelved in the reference collection. It was part of the generally accepted practice of offering "service". The impacts on technology is that these guides have either fallen by the wayside or been converted into html format and are now mounted on the web instead of being printed. So that Digital Reference librarian's job to provide service to the users with expert assistance in locating the most useful information. The digital reference librarian must be

- fluent in informatics
- search engine evaluation and use
- electronic journal article retrieval,
- citation verification,
- citation formatting,
- keyword formation and
- subject retrieval, and the evaluation of products and information research as published in all formats
- provide instruction, both one-to-one and in groups, with the aim of helping the client become a more independent user of information resources.
- create web pages of links to resources useful to our local clientele
- meeting with clients by appointment, spending considerable time helping them work through a research problem.

The reference librarian needs to evaluate just how he or she is going

to conduct the inevitable reference interviews. Are we going to react only when addressed or are we going to be proactive and anticipate the kinds of questions that will be asked and provide gateways, bibliographies, interactive tutorials, access to workstations equipped with multi-format capabilities. How are we going deal with the proliferation of web pages on every subject imaginable. The reference librarian has to develop online guides to subjects, topics and resources, redesigning the library web pages, department and subject specific pages to include filtered search engines.

8 CONCLUSION

In today's rapidly changing information environment, digital reference is an important tool in the service sector of the library. The digital reference service is meeting the information needs of thousands of users, and the number of user requests to these service has increased. The need for specialized training and information resources for digital reference providers has become increasingly critical as the popularity of such service continue to grow.

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ELECTRONIC INFORMATION ENVIRONMENT AND LIBRARY SERVICES

Babita Garg*

ABSTRACT

The information technology and digital technology has brought about a sea change in the function of libraries with the help of digital information system large amount of data can be stored in a retrievable form. Electronic information supports majority of the library activities and encompassing acquisition, circulation, serial subscription and On-line Public access catalogue. The information is supplied on floppies as well as CD-ROM along with users manual.

1 INTRODUCTION

Today learning a new skill obtaining information or getting advice takes effort and involves inconvenience. In future, many things, which, one required individuals to go out of their way to acquire them, will be available instantly and on demand. Detailed instructions on anything from speaking English to designing gardens will be available on 'Tap', of course, much of this will come with commercial strings attached and some will be less than impartial. But Libraries information service and even Government can also be expected to go on line in a big way.

We sure are evolving into an electronic society, we are witnessing it all around us, and be it industries, airlines, railways, banks, supermarket or even government offices. Today we have not only multi-channel face to face discussions Tele-shopping, Tele-voting etc. But also e-mail, e-commerce and e-banking. The internet

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which is the result of the combination of the Computer Technology and telecommunication technology has changed the lines of over 200 million people in the world. The cyber technology is instantly pouring out with new surprises which are mind boggling. Distance is no problem for any thing that can be sent through the computer.

No major news papers periodicals encyclopaedias and educational institutions have their own web-sites. Some periodicals are available only on-line owing to capabilities of convergence and digitalization a number output options are available today of the communication of information. For example, conventionally printed encyclopaedia , can have its electronic version on the internet. The same can also be distributed in a CD-ROM it can also be adapted for a touch screen interactive kiosk.

Television is a popular source of information education and entertainment to the literate & illiterate alike. It has penetrated into the lives of people to such as extent that it governs the way they arrange their furniture, the time when they eat their meals and the hour when they go to bed. Moreover television is a continuos medium, like a tap if turned on it flows non-stop. This media through its visuals has made a tremendous impact on library services.

Owing to the capabilities of the electronic media a dilution in the impact of print media is an imminent possibility as individual researches are becoming familiar with online databases. They certainly would like to retrieve specific information quickly through electronic media than wading through the printed documents. However, even Lancaster himself agrees, "literature read for relaxation or inspiration is unlikely to be enhanced by display at a terminal and will continue to be available in printed book form". Therefore, for entertainment and relaxation people will continue to read. It is a fact that, although dramatization of fiction on the non-print media makes a visual impact but at the same time it also leaves a great deal out, as every minute detailed can not be dramatized as much as it can be written and read. Reading to stretch ones imagination is definitely a form of entertainment which is unparalleled that is why even in this electronic age, children world over, also in the US, which is the seat of silicon valley, are waiting anxiously for the next book of Harry Potter by

J.K.Rowling .If a book can captivate the imagination of young minds in an electronic society which is the richest in the world, it is an indication that books are still potent mediums of expression and would be so for many generations to come.

If electronic media becomes easily accessible to the man on the street and also provides him with a great deal of information, nobody needs to feel sorry about it. But the fact is that for full transition to take place from print on paper to electronics the necessary terminal.

Infrastructure is required, which especially in the developing countries, may not be within the reach of the common man. Moreover, a full transition to electronics is possible only when there is enough on-line market and the cost of electronic. Publication is less than that of print on paper. The reality still is that printing of books requires relatively low capital investment.

The purpose of the paper is not to write a manual where a scope of each function and how to perform it, has to be described in detail. Therefore, the library functions, which can be performed with electronic media have been addressed very briefly in the following paras.

2 LIBRARY SERVICES

Acquisition services supports all the acquisition functions. It initiates titles for ordering either by data import or direct data entry ; policies of duplication checking ; monitors the approval process and placing of orders; tracks and receipt of material against firm orders; follows invoice processing and accessioning; answers payment status; takes follow up action on orders; allows queries by titles, orders, invoice, vendors and budget heads; and facilitates the generation of various records such as approval request form, purchase order, overdue notices, budget and expenditure analysis, payment requisition reports, accession register, bill register etc.

Circulation services supports front desk operations such as charging and discharging of reading material; renewal and reservation of books; membership record keeping; collection updates including monitoring of items on display and in bindery overdue follow-up and recall facility; inter library loans; stock

verification; flexibility in operation including option for use of bar code scanner for borrower and reading material identification ; statistics on circulation; queries facility on both borrower and collection; reporting capabilities, which include list of highly reserved titles, statistics or number of issues by title / borrower, list of delinquency cases, non-circulating material of delinquency cases known circulating material, list etc. ; and keeping log of all the circulation transaction. Serials system initiates new subscription; renewal of subscriptions; extension of subscription; processing of invoices; analysis of budget and expenditure; recording of issue received i.e. Kardex update; monitoring or claims including generation of notices for "Not received", overdue and damaged issues; bindery management; recording of bound volumes; reporting of duplicate and missing issues; recording of various indexes / list; answering on-line queries on various aspects of serial control including serials holding; and circulation of loose issues and bound volume including user defined routing.

Computer manufacturers will soon be publishing books, book publishers could be running information portals, quite literally emerging as partners in the emerging information and networking society . Printed books will soon have a formidable rival in the digital era, on-line books apart we will soon have what are called e-books, or electronic books. A preliminary version of this came a few years ago in the form of a portable electronic tablet that could store information and data for users. The technology has been refined to now produce commercial version of e-books.

Users download text or e-books on to the readers and carry them around much like they would carry actual books or magazines. The addressees the major issue of portability , something the traditionalist harped on the argue that electronic reading could not rival a printed book.

Instead of going through the net, one could download books from an electronic bookshop, or a kiosk vending books. Just take your reader there .Load it with your favourite titles and walk away. No need to lug books on holiday.

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ELECTRONIC INFORMATION ENVIRONMENT AND LIBRARY SERVICES: A CONTEMPORARY PARADIGM

Khaisar Muneebulla Khan*

1 INTRODUCTION

Libraries in the past in whatever form they existed, used a vast variety of devices and materials from clay, papyrus, paper and the written and printed material. Today, they have besides visual aids and large data banks of computerized information, to make available to large community the accumulated knowledge of scholars. Essentially libraries are engaged in the transfer of knowledge without which no worthwhile teaching, learning and research is possible. In the past limited number of readers visiting the library, were left to themselves to gather the information they wanted from the available resources, mostly within the four walls of the library with their own efforts and rarely made use of intermediary agencies to exploit the resources. With the exponential growth of new advances in science, technology and the Social Sciences, the number of information producers and users increased manifold.

"Information explosion" resulting in a proliferation of publications both in size and scope, the advent of variety of newer media available for collecting and disseminating information, the growth of specialization in various disciplines and the emergence of the interdisciplinary nature of research have all contributed in creating a complex situation in organizing libraries for the benefit of users.
Thus efficiency of the modern librarianship essentially depends on

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how best we adopt appropriate bibliographical apparatus and how effectively we avail the benefits of computer technology and data processing equipment, which have so far provided viable and swift communication aiming to conquer time and space. The pressures put on library services envisage new approaches to solve intricate problems. The need of the hour is to adopt new structural arrangements to have deliberate and discreet co-operation and co-ordination in pooling the resources by participating in global information system in order to establish a link between various units in a most programmatic way to provide the best information services in the most economical and effective manner.

New information is being created at a break-neck pace. A large proportion of this information comes from outside sources, such as the new media, industry and trade press, the world of science and technology. For instance, imagine being able to look through a library in the ocean of books periodicals, and other sources information and finding whatever needed in a matter of seconds. Hence, the need for going electronic for accessing this vast ocean of information available needs no emphasis.

2 GENERAL CONCEPT OF ONLINE AND ITS IMPACT ON MODERN LIBRARIANSHIP

Online is the term used to describe the process of accessing a remote computer through a telephone line from a micro computer or terminal in our home or office. Instant access to information is the operating philosophy of an online system. This system puts instantly at our command literally millions of items of information stored in a central computer database miles away from us. Yet available to us in seconds, simply quickly and economically through the use of a small, inexpensive terminal that links us to the computer through a standard telephones or telex. In practice it allows us to search database interactively. In other words, we can receive immediate responses to our queries.

2.1 Agencies Involved

There is a technological interplay of three agencies in an online system. They are

* Database Producers like mead Data Central, Inc. who produce Lexis admiralty and Maritime library, or West Publishing Company who produce Westlaw Labour Data Base etc.

* Database Vendors like DIALOG or MEAD DATA CENTRAL, Inc. or WEST PUBLISHING COMPANY who put the database in their host computer and provide necessary software to access the database. They are like electronic distributor of the information resources.
*Telecommunication Networks, Domestic and International like our telephone/ data communication networks such as DELNET, CALIBNET, INDONET, TYMNET, TELNET, BOMNET, NICNET, AGLINET, ERNET, SIRNET, INFLIBNET, OCLC, ACLNET etc. and ofcourse the INTERNET at times.

3 DATABASE

A database can mean any collection of information but, usually applies to information in computerized form, it may be a collection of indexed references to the literature, perhaps with abstracts of summaries, or it may be a collection of facts, such as statistics. Prices or addresses, or it may provide the full text of primary documents, such as law court judgments or newspaper clippings. Whatever be the information, it is logically organized for efficient retrieval.

3.1 Type of Database to meet the various demands

There are many types of database that are available online and they differ in a number of ways by subject, scope, geographical and chronological coverage, periodicity of release of new information by the producer and frequency of updating. In addition, they differ in the type of information or data they contain. The kind of classification scheme used is as follows:

Reference Database: Refer or Point users, to another source (e.g. a document, an organization or an individual) for additional information or for the complete text.

Bibliographic: Contain citations, sometimes with abstracts, or the printed literatures, e.g. journal articles, reports, patents, dissertations, Conference proceedings, Books or newspaper items.

LEGAL RESOURCE INDEX which contains citations to legal and law-related periodical literature. It also covers articles, news case notes, letters to the editor, reviews commentaries and other materials of substance published in both legal and general publications.

- Referral: Contain references, sometimes with abstracts or summaries of non-published information. Generally refer users to

organization, individuals, audiovisual materials, and other non-print media for further information.

SOURCE Databases: Those contain original source data, the full text of original source information, or materials prepared specifically for electronic distribution. There are three types of Source databases.

i) Numeric ii) Textual Numeric iii) Full text- Legal database fall under this category.

i) Numeric databases contain original survey data and / or statically manipulated representation of data.

ii) Textual Numeric are generally data bases of records that contain a number of data like dictionary or handbook type data, typically of chemical and physical properties.

ii) Full Text databases contain records of the complete Text of an item e.g. a newspaper item, a specification a court decision, or a newsletter, e.g. DAILY REPORT for EXECUTIVES contain full text of the Daily Report for Executives, covering significant government legal, regulatory economic, and tax developments of interest to business.

4 PUBLICLY AVAILABLE ONLINE SYSTEMS(COMMERCIAL ENTERPRISES)

Today there are several online systems in the public domain ranging over 500 as ones estimate goes today. Some of them well known in the field of law are WESTLAW, MEAD DATA CENTRAL/ LEXIX, DIALOG etc. It may be noted that Lexis and Westlaw Play and Mead data play the role of both database producer and online service company.

In India, we can have an online access to databases in one of the following ways. For e.g. to access information from DIALOG Information Services, Incorporated we have to a) A Direct International STD call to DIALOG b) An International STD to telecommunication networks like DIALNET or TYMNET or TELENET and then a Network call to DIALOG. c) An STD call to Videsh Sanchar Nigam's i.e. Gateway Packet Switching service, then an International STD call to TYMNET, TELENET and then a call to DIALOG. d) A local call to INDONET, NICNET then an STD to VSN Gateway. Then international STD to TELENET/ TYMNET and then to DIALOG. Supposing we are calling from Bombay. e) A local call to VSN i.e. GPSS, then international call to TELENET/ TYMNET and then DIALOG.

5 SEARCHING ONLINE NEEDS KNOWLEDGE AND SKILL

Once the infrastructure facility is set, we need to decide about the online system or systems which will meet our requirements and obtain a PASSWORD for each of these online systems by paying a fee depending upon the system. DIALOG has authorized information in India to assign passwords to Indian users.

It will be essential either for the user himself to get trained or identify a person in the organization for training. With the infrastructure resources, password, and trained manpower available, using an online system becomes a matter of experience in the contemptory electronic information environment and Library Services.

To conduct a search, the searcher will dial the number of the system's host computer through a choice of communication network. After accessing the system, he/ she will call for the database which is likely to provide information on the topic of his/ her interest. Once connected to the database, he will express his subject in the form of a set of keywords. The search is interactive and provides for refining the search based on the answers received which will enable the searcher to define more and more clearly the search topic while interacting with the computer. The system will tell the searcher the quantum of information available on a search topic. The searcher can then ask for printing the retrieved output either immediately online or offline. The system provides for limiting the scope of the retrieved output by qualifiers, such as author, journal name, company name, source information, publication date, product name, case name etc. Presently, most of the librarians have internet facilities and the users have good knowledge of search by the use of internet in libraries as well as the commercial venders providing internet access services which would be helpful in using the facilities in libraries and information centers.

6 CD-ROM TECHNOLOGY

CD-ROM is ten to twelve year old technology that has emerged for high density compact storage of information on a disc which can be used by a PC. Information in this media, unlike online is physically available to the user for accessing and searching from his desk top computer and hence does not require expensive telecommunication infrastructure and high power computing facility.

CD-ROM is an optical disc of 12cm diameter in which about 2,75,000 pages of information (600 mega bytes) can be stored. The recording is done by laser device. The recorded information can be read by a laser drive attached to a personal computer.

The exciting and functionally advantageous features of this medium are: a) High density storage- more compact than magnetic medium and microfilms. b) PC based –600 mega bytes of magnetic storage requires a super mini whereas this optical medium can be read using any PC costing much less. c) Data integrity- like magnetic medium the data will not get corrupted. The disc is not affected by dust, power fluctuation, magnetic field, etc. d) Permanent store- the data cannot be erased, nor anything can be written on it again. It is READ ONLY MEMORY like paper. e) Low cost- It is proving to be a low cost publishing medium for high volume reference publications such as handbooks, encyclopedia, standards, abstracting and bibliographic database etc. f) Hence many libraries particularly University libraries and special libraries have adopted CD-Rom technology and has become a common service in their Libraries to provide effective and efficient service in an electronic information environment.

7 IMPACT ON LIBRARY AND INFORAMTION SYSTEM AND SERVICES

Considerable progress has been made on the procedural technology for storage system, automated indexing and classification. The establishment of Data –banks and data Centres is one of the important achievement of the modern technology providing new methods in automated library service. Technology available for miniaturization of documents and reprography will in due course will further revolutionize the library system. Among the mission oriented system, the experiment carried out in the field of Education in USA are worthy mentioning. INTREX (Information Transfer Equipment) Project Is designed to provide on-line access to information source at remote terminal first within Maschusetts Institute of technology. Further, the project, EDUNET and ERIC deserve special mention. EDUNET projects has far reaching impact on library management, current awareness and retrospective searching including research eg. On-line data recording, on-line simulation, etc., and teaching itself, through connection with computer assisted information networks.

Modern technology enables us to carry on various human activities cheaper, faster and more efficiently than what we are now doing. Further modern technology has capability to do what could not do at

present and again the impact of modern technology on libraries and information centers has brought out new form of communication and contact in society, affecting all walks of life.

In the context of the electronic environment and library services - contemporary paradigm it may be noted that though they so far may not have proved as a reality the concept of paperless society, but then we are slowly moving in the same direction as firstly, New technology will provide users with greater access than ever before. Individuals will easily and directly access information to fill their needs from their homes and offices. Secondly librarians could be key players in the information market place or they could become obsolete. Our Challenge is to figure out what business libraries are in the book business or the information business and finally, two major assumptions are at work here. The first is that we are moving toward a paperless society. Books will soon be historic artifacts, and full-text electronic publishing will hold away. The second assumption is that hardware and software will be readily available and usable affordable, desirable, and satisfying to everyone.

8 IMPEDIMENTS IN ACCESS TO INFORMATION

Information Technology, as always with any new technology has thrown up several opportunities and alternatives before us. These opportunities are endless. We can leapfrog, say from magnetic storage of optical storage technology, if we have the will and capabilities to absorb the latest. Our capabilities are undoubtedly supreme. But our will is always a bit shaken because of too many impediments. These impediments could be cultural, technology related, educational or fiscal & regulatory. Coupled with socio-political factors these impediments are becoming major restrictions for any meaningful globalization of access to information. What follows is a discussion of these impediments and the way they affect access of these impediments and the way they affect access to information in developing countries like India.

Access to information in an electronic media requires the following as technological infrastructure. a) Reliable and low-cost data communication. b) Easy availability of microcomputers. c) Local databases and Online hosting facility.

9 DATA COMMUNICATION

Lack of priority on data communication was until recently a major impediment for information access in India. The situation is expected to improve dramatically as the Government of India has recognized telecommunication as one of the four national missions according priority. The situation is still worse in our neighbouring regions at Pakistan, Srilanka, Bangladesh, Nepal and others. They are yet to develop a data network for International data access.

10 COMPUTERS

Micro-computer availability is on the increase, still, the costs have not come down to the level in the developed countries. Education sector in particular is seriously affected by lack of easy availability of microcomputers within the library though most of the libraries particularly the College University and special libraries have computers. Students and research scholars being the major user, we feel the need for more computer terminals in our Libraries.

11 EDUCATION

The library and information venture facility in India do not form an integral part of the curriculum designed and the teaching practice. With the result, information seeking has not become a habit. This is a serious impediment in promoting the concept of access to databases in electronic media such as: online and CD-ROM. There is a need for the Library and information scholars and the University librarians in India to develop educational progammes to promote information seeking habits among its users. This will also require support of the University administration and involvement of the faculty in making the information retrieval and integral part of the curriculum activities. In this arena it is possible by creating a) An ability to organize data and information for people to use, b) An awareness of the totality of information resources and the strategies (i.e. probabilities of success) in searching for information in any specific situation. c) An awareness of and capability in the range of information technologies-from print to sound and image to computing, d) A sensitivity to use, uses, and users of information, allowing this profession, more than others, to consider the human context in the design of systems and services; and e) A strong tradition of service, which demands that attention, be paid to client satisfaction.

12 CONCLUSION

With the growth of complexities in Library operations, it is proved beyond doubt that many library problems cannot be solved by simple manual techniques, just as in other walk of life, Libraries have to adopt and benefit from the modern technology in order to survive and continue to grows. The successful implementation and use of a new technology, computerization information technology and the electronic information environment have been based on the combination of many factors and these will influence even in the future whether or not a library should adopt modern technology. Modern technology and managerial techniques evolved during the last few years in developed countries are not substitute for a capable and efficient administrator, who could use these tools to achieve the goals set for libraries. The prospects of introducing modern technology in developing countries depends on administrative, physical and operational decisions. Once such plans and programmes are designed and proper guidelines are provided with adequate financial support, it will be possible to establish and manage an effective information network in India. Further, such a system finally created with its infrastructure, may give lead for the establishment of World-wide information network activities and would lead to the concept of global village.

Thus, there is a paradigm shift in contemning library organization, storage and services in an electronic information environment.

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ELECTRONIC INFORMATION : IMPACT ON LIBRARY SERVICES

Vinita D.Jain

1 INTRODUCTION

Books cannot be replaced by machines. Books as gifts still remain a popular and meaningful show of appreciation, love, gratitude and other emotions. We learn from books, we are entertained by books, and we posses them. Books has survived major reforms among people and nations. Radio & TV programmes come and go; at best we may remember a catchy word or phrase, or a fleeting image may haunt our memory.Those who predict that printed circuit boards will replace all of our printed books are mistaken, paper books are always functional and cannot be discarded. User often turn to the web to find information not available in print, i.e. background information or past articles.

2 ACQUISITION SERVICE

Manually accession register can be omitted now . Records can be entered in the computer through library software.First of all we enter book received report detail where author , title publisher's name and year of publication as well as price will also mentioned. After creating book received report (BRR) purchase bill of only sanctioned books are processeed .Their Accession No. is generated automatically . Then in the cataloguing module we edit the card and enter full details like No. of pages, keywords, contents, series and language etc. thus catalogue card will generate automatically according to AACR2 rules

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and we need not to prepare manually.

We entere Budget with different subject headings and year wise. Currency updation , publishers' detail and supplier detail also added in the Acquisition module. With all these data in the computer it is very easy to get the bibliography, new arrivals list, display list, budget expenditure and balance budget in no time.Publishers sends the new editions of books with other details to the users through the e-mail.

As soon as bookare received in the library we can check the book price on the net by ISBN no. on publishers website or amazon.com website Indiatimes gives bargain offer to buy the book on net. We can send the mail to ask the book detail and place order online.

3 ELECTRONIC MEDIA FOR INTER-LIBRARY LENDING

Part of our everyday life as it may seem, automation in Western libraries has only been developed within the last 10 years.

3.1 Internet

Today Internet is our most common mode of transmitting ILL requests to (and receiving responses from) libraries other than the British Library's Document Supply Centre (BLDSC).
The latter has now introduced ARTEMAIL, which allows for transmission of requests directly into their system without the need for a telnet connection, thus allowing institutions with less advanced telecommunications to contact them with the same facility as the most advanced. Library catalogue is now available for remote searching via the internet - we still allow and receive requests for database requests via email,

3.2 Full text

Within the UK there has been much talk of full text document delivery, but not much progress outside of the academic and commercial sectors. This is for 2 main reasons: full text files can often be very large and thus expensive to download for institutions who are paying for their internet connection by the minute; the cost of access to full text journals is out of reach for most institutions.

3.3 Reference books

We will have noted that Reference books were not listed earlier as

one of the major sources of news information because they tend to be published annually and very quickly become outdated. However, there are a number of books, which no self respecting news library should be without. These ideally should be updated manually between editions.Ideally the Who's Who titles should be updated daily from obituaries, honours lists, new appointments etc. reported in the daily press.

Finally , Reference books are expensive because of the amount of research involved in producing them.

The University of California maintains two regional library facilities, the Northern Regional Library Facility (NRLF) in Richmond and the Southern Regional Library Facility (SRLF) at UCLA. The Berkeley, Davis, San Francisco and Santa Cruz campuses store less frequently needed library materials in all formats, including archival collections and rare books, in the NRLF. The southern UC campuses, including Santa Barbara, Irvine, Riverside, San Diego and UCLA, store little used materials in the SRLF. Selection of materials for storage is at the discretion of the depositing library. Campus libraries may not deposit duplicates of books or journals that are already held in the facility. Multiple copies may not be deposited. All materials deposited must have a machine-readable bibliographic record, must meet UC minimum record standards for monographs and serials, and must be compatible with Melvyl.

The regional library facilities of the University of California:

- Provide compact storage, security and environmental protection for little used and rare library materials;
- Ensure access through accurate bibliographic information and location notes for these materials in on-line catalogs
- Rapidly retrieve materials when requested
- Offer onsite services to UC faculty, staff and students who wish to use materials housed in the facility.

1. Search the Library's resources and reference links by subject.

A. Click on a subject in the left hand column, or
B. Click on "Search All Subjects" (top of column) to search by keyword.

2. Select a database or CD Rom

The Boston Public Library subscribes to many online databases and CD ROMs'. These include databases of magazine articles (some full text, some only abstracts); encyclpedias and other reference

sources; directories and business resources, etc.

Networking and modernization are becoming very important in all types of libraries as they enable the users to have access to the resources of many other libraries in addition to their own ones. The public library are also likely to benefit themselves by participating in networks.

No library can be entirely self sufficient and self reliant. Therefore, libraries in any region have necessarily to develop interdependence and depend on each other. In the matter of acquisition of a collection, it may be appropriate for a library to concentrate on one or more discipline or areas of knowledge by building up a strong and comprensensive collection supported by some books generally recognized required in other areas. Occassionally when need arises one could draw on the book stock of another library strong in another field. Such an arrangement results in available resources being utilized more economically and a larger book stock being used by readers in the region.

4 IMPACT ON REFERENCE SERVICE

The field of reference service is vast and dynamic and many new developments have taken place during the last ten years or so. The rapid developments have occurred in computer technology , telecommunication , printing, reprography,etc.These developments have important implications for the provision of information by libraries / information centers/ documentation centers to their users.

Great advances have been made in the automation of indexing and abstracting services, which are important tools for providing reference service. The application of computer has made it possible to create large databases., leading to efficient and fast access to sources of information for current awareness services as well as retrospective literature search. With the help of keywords all related terms and documents detail will come within a second by computer. Even we can search interrelated books on a particular topics that was time consuming in manual method.

Reference service helps the users to get right kind of documents and information at the right time, thus saving their time. It assists the researchers to avoid duplication of work and helps them in the introduction of new ideas. It makes information available to decision makers to take right decisions.The success of reference service

depends greatly upon the reference librarian.

4.1 Indexing And Abstracting service:

Scientist can not possibly read all the articles published every year of his interest. Thus indexing and abstracting services plays a very imp. role in keeping them well informed. These sevices are very very fast in today's electronic environment.

INSDOC, WRIC, INFORMATICS, DELNET, DIALOG etc. are providing indexing and abstracting services even full text journals also provided.

4.2 User Education:

Reference librarians have been playing an importarit role in initiating fresh users into the library system. With the advent of information age , the need for training the users in the retrieval of information for bibliographical databases, use of online public access catalogue (opac), cd products etc. has become essential. The process of providing information about the library and training in its use is termed as user education.

User education is a programme designed and operated by the library /information personnel to teach the users about the resources , the ways to locate the resources and exploit the resources. The user education programme are to be organized on a regular basis and from time to time. User education range from initiating a fresh user in to the library / information system-teaching about the layout of the lib. , various units and their location , services offered by the lib. and how he/she can take the best advantage of the library & information system to specialised training in the areas of collecting data, analyzing the same, processing and assimilation. An automated library needs further training into the mechanized systems and services.

5 ELECTRONIC DATA COMMUNICATION SERVICES

Several e.data communication services are in used today. Some of them are : E-mail; Videotex; Teletext; Bulletin Boards.

a) E-mail – E-mail is a system in which computer user have e-mail boxes and send messages using computer terminals.

Communication occurs at the convenience of the user without interruption. To receive the message from the mail box the subscriber has to connected to the e-mail service.

b) Video tex : Videotex system needs a telephone line to which a television is connected vis an electronic interface consisting of a control keyboard, modem and an autodialer. When got connected to a videotex system, a direcrtory of a services will be displayed, each one identified by a unique code. The required ones can be selected by using the keyboard or pad.

c) Teletext: This is a non interactive board of videotex. Teletext broadcast centers store data in their computer in the form of frames and transmit them continuously and cyclically on unused portions of the bandwidths.

5.1 CD –ROM Technology-

A single CDROm can contain the textual equivalent of 1,000 books. That means CDROM a powerful medium for certain uses, but does not make it a general replacement for books.

5.2 Bulletin Boards-

E-Books And E-Journals - Today , a variety of e-books are available, such as the Rocket ebook, the soft book, the Class book reader, the Librius Millennium Reader and the RCA e books. E-Books are reality today and will certainly be a part of our future. E-books can hold about 10,000 pages of text, so the user could carry multiple books, for multiple classes without the physical strain. With e-books we can electronically search and cross reference within and outside of the text. Thus we can save the time particularly when course requires the analysis and synthesis of material from multiple text. An electronic journal can be defined as one which is distributed to most of its primary subscribers in electronic form.

Some scientific journals print color plates of a kind that were impossible 15-20 yrs ago, while many mathematics and humanistic journals still print exclusively black and white text and diagrams. Most p-journals are now willing to accept the final form of manuscript in electronic form. As well as some are willing to review that are submitted in electronic form.

5.3 Translation Service:

Software are available in the market to translate the full text into other language, like Japanese to English, French to English etc.

Readers should be computer savy to use all e.informations. In the library number.of Computers or terminals are limited so user prefer to go to stack and search the book. For small piece of information user looks for the encyclopedia instead of CD-ROM.Because books are easily accessible whereas latest technology is required for the electronic information.

6 THE IMPACT OF DIGITAL RESOURCES ON BRITISH LIBRARY READING ROOMS CURRENT STATE OF THE INTERNET

The Internet has grown and evolved rapidly over recent years. Growth and evolution are continuing, and are bringing great uncertainty. It is difficult to make quantitative forecasts about the Internet with any confidence.

The Internet has evolved in recent years from a predominantly academic network into today's increasingly generalised and increasingly commercialised network. Its structures - standards, decision-making processes, and physical infrastructure - mostly evolved to suit the relatively small academic community rather than today's large and growing general commercial network.

There is another, unrelated, factor which serves to cloud predictions: the future of network communications hardware and infrastructures. One of the liveliest unresolved debates in the IT industry at present is over the commercial future of a new workstation concept dubbed the Network Computer (NC). If it is successful, the NC may decrease the cost of the hardware required to connect to the Internet by up to 75%. If this happens, NCs would displace some PCs as Internet workstations and, critically, greatly increase the number of network users. This could lead to market changes which result in cheaper and faster telecommunications; which in turn would encourage more use. Such a spiral of lowering cost and increasing usage could radically change the nature of the Internet. This is an important perspective for this study.

Nevertheless, this clearly demonstrates the rapid growth, to over 10 million host computers at present.

7 ACADEMIC JOURNALS ON THE INTERNET

There is growing commercial interest in using the Internet as a medium for publishing and storing journals. Broadly, journals on the

Internet can be grouped into three categories:

- Collections of back runs of selected periodicals digitised by individual projects (typically based in university libraries);
- Current periodicals published only on the Internet, together with publishers' archives thereof;
- Current periodicals which are published simultaneously (or nearly so) on paper and on the Internet (referred to as *parallel editions*), together with publishers' archives thereof.

The total number of periodical titles currently published on paper has been estimated as around 130,000. This figure, while open to interpretation on definitional grounds, appears to be accepted as a reasonable inclusive limit. Of these, DSC subscribes to some 40,000. The most recent study of quality digital journals dates back to late 1995. Concentrating on the field of STM (science, technology and medicine), it discovered 115 titles. This can be contrasted to the large number of STM titles subscribed to by DSC: approximately 16,000. Since the survey, a number of substantial academic publishers have announced parallel editions, and as referred to above other announcements are numerous. We can therefore estimate that there are on the order of 1,000 quality titles available on the Internet now. In other words, around 1/16 of STM titles are available electronically today; but the proportion will increase rapidly in the short term. For estimating purposes, it seems realistic to suppose that half of the academic STM titles will be available digitally within five years.

7.1 Books/Monographs on the Internet

The concept of a "book" or "monograph" on the Internet is ill-defined; much of the information on the WWW consists of defined text, with defined editions, and all is published. Very little of it is thought of as being books or monographs, however.

There are numerous projects and ongoing initiatives around the world which are engaged in digitising or collecting books The table in Figure 5 shows that over 10,000 books are readily identified. An exact count would be time consuming - especially when other projects/initiatives are included - as the various lists overlap. On this basis, it seems reasonable to suppose that there may be up to 20,000 English language books (as defined above) already available via the Internet. This number is constantly growing, as existing endeavours proceed

and as new projects are announced.

The figure of about 20,000 Internet books can be contrasted with the far larger number of texts deposited or acquired in print form at the British Library annually: some 181,000 monographs last year alone. The entire collection comprises some 12 million volumes of monographs and serials in London, with a further 3 million monographs in DSC

Most of the books available digitally are heritage materials, mostly literature (old texts which are out of copyright), though some modern materials are also available. It is felt that the situation may change in the near future if book publishers choose to publish parallel digital editions, to the academic sector as an example.

7.2 The British Library on the Internet

The British Library currently has a presence on the Internet in the form of its Portico service. This service currently contains some 560 "pages" of information. Portico mostly holds information about the Library rather than displaying holdings. The volume of access to Portico is measured in terms of "raw hits". Portico is receiving on the order of 1/3 million raw hits per month. This apparently high level of interest is typical of the Internet phenomenon; but note that raw hits is a particularly crude measure of interest because of several limitations:

- it is a count of the number of times all pages were viewed (so, for example, one person viewing a page ten times within the month will add ten to the total number of "raw hits" for that month);
- it does not reveal whether or not users viewed a page more than once, nor whether individuals accessed Portico more than once in the month;
- in general, many users will have to call for several pages before reaching the single page they are seeking.

The Library also makes its OPAC available to some universities via the Internet. Finally, the Library recently announced accessibility of its digital catalogues through the Internet (the BLAISE-Web service), with a service providing not only OPAC functionality but also the ability to download fully formatted catalogue records for use in local catalogues.

7.3 The Internet in the British Library

Staff in some reading rooms make use of the Internet for research. Access for readers is currently being introduced on a trial basis. The trial will involve one PC in each of the reading rooms for BLISS, SRIS and DSC.

- A server can be defined in informal terms as a computer which is connected to the Internet to supply information. This contrasts with a PC or workstation connected to the Internet to obtain information from it.

The Commonwealth Educational Media Centre for Asia (CEMCA)

- Established in July 1994
- Based in New Delhi serving Commonwealth Asia
- Co-operation and collaboration in the use of electronic media resources for distance education
- Data-base of over 10,000 radio and television programmes
- Conducts training workshops, provides technical services and publishes a newsletter
- Contact information
- Plans for a similar centre in Africa

The Commonwealth of Learning located CEMCA at the Indira Gandhi National Open University in New Delhi, India, which was chosen as the host institution for the venture. In 1998, the Government of India conveyed full status as an international agency operating in India.

7.4 Services

The following services are available to CEMCA's members:

- access to its database and library of educational media resources
- technical services, including stock footage and translation.
- facilitation of co-production arrangements
- provision of programming for international broadcasting services
- information on technological developments and applications
- newsletter/information exchange
- customised packaging for broadcast and non-broadcast use

- computer software

7.5 Locating information on internet by search engines.

The three big Indian websites i.e. Rediff on the net, Indian Express and Times of India gets between 200 thousand to one million hits a day.

Developments in computer and networking technologies have made it possible to customize curricula and offer flexible alternatives to classroom teaching.The net as a delivery mechanism for educational programmes is being successfully experimented with. The best known e.g. of this is the concept of the African Virtual University (AVU) being promoted by the world bank. Web Based courses offered by AVU are used by several traditional African Universities to enhance the quality of their teaching.

7.6 Reference Sources on CD-ROMs

The internet revolution has changed the physical medium of the traditional sources, and provide alternatives to owing the sources. In some cases the same source may be available in print, on CD-ROM as well as on line e.g. psychological Abstracts.

Oxford Dictionary of 21 volumes available on CD _ROM . Cambridge learners dictionary has come on CD form. Where prounciation of British and English text is also there. In addtion to that small exercise that you can solve and check the answers. National Geographic has come on Cd for 110 years. Even Science Encyclopeadia , Brittanica also on Cd Form.

Now a days most of the important books on Computers, Management, Chemistry & Biology etc.are coming out with CD.

A CDROM catalogue is basically a superior microform catalogue. But a CDROM catalogue do not replace online catalogue effectively; they can only provide current status information through links to an online circulation system and current acquisition and cataloguing through hard disk storage.

For e.g. BCL had brought out library catalogue on CD during 1999. Later on online catalogue is available for search the books. BCL sends new arrivals list and newsletter on users E-Mail also.

8 CIRCULATION SERVICE

With more and more materials available in Electronic format, the reading room has changed in design and outlook. In several University libraries , half of the reading places are provided with a computer. This machine serves as a workstation that can be used to access different resources.

BCL, OCLC is having online database of library catalogue. We can check the title online. The services most affected by the electronic sources are reference and information services. With the development of IT, the scenario has changed in the reference sources used, methods of searching, the delivery techniques.

Web pages- The major part of electronic information , which is available on the internet, is now being presented in the form of Web Pages. The web uses its own terminology to describe the storage, maintenance & dissemination of its information documents. A website is a collection of web pages linked together & which exists on a particular server.

A library website usually includes basic information about the library access to online catalogues, databases & bibliographies, full text resources (E-Journals, papers & other materials), library guides & training manuals, online reference & help desk & links to other sites & resources.

Some of the publishers are giving free e-journals on the subscription of printed version like EPW, RBI Bulletin.

With the development of IT the scenario has changed in the reference sources used methods of searching and the delivery techniques.

9 IMPACT OF ELECTRONIC MEDIA ON PRINT MEDIA

If a user have net connection at home then he will search the information on net itself instead of coming to the library. The information is less expensive in electronic form. Files can be stored in PDF format and that is read only files. In PDF file terms , a GB can hold 200 moderately illustrated college reference books , or 350 legal volumes.

Access: The physical requirement of going to a bookstore or library

to read borrow, or buy a publication limits the number. of books which can be read, borrowed or purchased. We can order the book on e-mail for fast availability of the books in the library.

9.1 Newspaper in Online Medium:

The emergence of personal computers and improvements in telephone technology, including fibre optic communication, opened up the frontier of online communication sevices. Today ten millions of people are inline in businees and education.

Today all the leading newspapers are available online. Newsgroups which are much like e-mail exchanges, permit individuals to ask questions,send e-mail messages, and participate in electronic discussion groups. These groups exchanges messages on electronic boards, which post articles , messages and comments for newsgroup subscribers to read and respond to.

The New York Times operates an online information service called '@times' , available through America Online. Almost all leading newspaper are available online now such as Times of India, India Express, Afternoon, Asian Age, Mid Day, Free Press Journal, Economic Times, Wall Street Journal and Washignton Post.

With all these facilities available still users opt for printed newspaper. He would like to read the paper as soon as he entered in the library. At a time 10-15 readers can read the different paper physically but online is not possible for all because no. of computers may be less specially in India.

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ELECTRONIC INFORMATION: IMPACT ON LIBRARY SERVICES

Madhu Bhargava*

1 INTRODUCTION

It is November 2002 and we have already crossed the threshold of Net Millennium. Net has formed the basic infrastructure of everyday life. When I say 'everyday life' I have an article on my mind published in 'Reader's Digest' December issue. The article reads as 'The world at your fingertips' by John Dyson which goes on to narrate experience of a husband who accidentally has to cook for guests. He decides to Google it! through internet and in less than half a second, Google flicked through 2,469,949,685 pages of the world wide web, selected 4340 containing all three words of ' roast lamb Tuscan' and sent summaries of the first ten to the computer screen with colored pictures. What else!

In the Net of the 21stcentury there will be billion repositories distributed all over the world, where each small community maintains a collection of their own knowledge. Digital libraries have already become the essential part of the information infrastructure.

2 KNOWLEDGE SOCIETY

Knowledge refers to the sum total of what is known to the society whereas information is more user specific and an essential input for generating and developing more knowledge.

Today information is the major input which has become the strategic resource for socio-economic development of knowledge. Library and

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Information professional must possess knowledge of global information resources, information services in problem solving and the system of generating and managing information skills.

Libraries have traditionally been concerned with certain functions and Electronic Information Environment has enforced a tremendous impact on these functions. It has altered the ways of perception and dissemination of information. It is often thought that some or all of these roles become redundant in an era when increasing amounts of information are available directly to users via the Internet. It sounds real threat to the profession!

Conventional functions of a library of paper age would be counted as:

I. Collection Development and Acquisition: Deciding what material to obtain for the user segment, researching the publishers, vendors and procuring them.**ii. Cataloguing and Classification** Arrangement of collection and creation of tools to facilitate search. **iii.Circulation**: Lending, Reserving, Returning and Reshelving of collection. **iv. Reference Work**: Discussing user information needs and guiding them how best to use the library's resources to locate required piece of information.

3 MAGNITUDE OF IMPACT ON LIBRARY SERVICES

Collection development in a traditional paper library consists of deciding which items to provide straight access for users. Institutions have to organize payment for information resources. The Library remains the appropriate structure through which to take decisions about the distribution of budgeted funds for the purchase of Information Resources.

The exponential growth in the volume of published literature , difficulty in retrieving information from libraries due to literature seepage and scattering, the need to control and provide access to ever increasing volume of information etc have resulted in the shift of emphasis from conventional publishing to Electronic Publishing. The fusion of electronic, computer and telecommunication technologies with publishing usually called the electronic publishing, mean any information source published in electronic medium.

There are a growing number of academics and publishers who believe quite firmly that once the transition from print to electronic journal has been made- particularly within the scientific, Medical and Technical Sector of the journal market- There will be no role for the libraries in

the scholarly communication chain. Electronic journals can be delivered directly from the publisher (who may be a small research group, a learned society or a major publishing conglomerate) to the users desktop.

Such a scenario is certainly possible, but it is unlikely for a number of reasons. Even assuming that all academics and researchers had the technical expertise to deal with the range of hardware and software required to access a variety of relevant electronic products, individuals will not wish to purchase, out of their own pockets, the range of titles required for their research, and therefore some form of departmental/ faculty or central purchasing will be required. Moreover, an individual academic will have scant regard that the titles they are interested in having delivered to their desktop may be of interest to other colleagues on campus. They will not want to read and sign a complex license agreement so that the little can be networked across the campus. Even if they did, who would be responsible for implementing the security requirements imposed by most publishers?

Currently libraries perform a valuable service to the academic and research colleagues by facilitating quick and easy access to information. It matters little to the researcher that behind the scenes the librarians are dealing with selection, acquisition, licenses, hardware requirement and software. What really matters is that relevant information is quickly and easily available to support research, teaching and learning. And libraries are currently playing a pivotal role in the process.

In academic and research libraries librarians have always taken guidance from subject experts on purchases: for teaching materials, academic staff provide reading lists to their students and request the library to acquire copies of the publications on their lists; for research journals, departments are often asked to prioritize journals in their field for purchase. The library budget may be allocated, notation ally, or even totally to different departments in order to ensure equity between subject fields in purchasing. Academic Librarian suggests purchases to academic staff inform colleagues about the cost implications of different purchasing decisions and usually control the purchases of general reference resources that cannot sensibly be allocated to one department. They will also be familiar with the mechanics of acquisition.

4 SELECTION AND ACQUISITION IN ELECTRONIC INFORMATION ENVIRONMENT:

Selection and acquisition are far less straight forward and currently require much higher levels of professional involvement and administrative labor. Electronic journals are much more difficult to find out about. Those made freely available on the Internet have little or no marketing budget and rarely find their way in traditional bibliographic sources. Even titles emanating from commercial publishers are currently notoriously difficult to track down. The best and most comprehensive source is the Association of Research Libraries, Directory of Electronic Journals and Newsletters backed up by the electronic announcement service and web-site. Individual publisher's web-sites can sometimes be a useful source and the major subscription agents are slowly beginning to provide electronic journal information to libraries. Once relevant titles have been identified, selection criteria should follow the principles established for printed subscriptions. Freely available electronic service and they are more likely to move www site without notice than their commercial counterparts. The whole question of libraries signing licenses for electronic products- whether they be electronic journals, CD-ROMS or networked databases-is fraught with difficulty. The terms of each license vary considerably and the small print has to be read thoroughly to ensure that institutions are not committed to terms which are unenforceable.

5 CIRCULATION SERVICES:

In an Electronic Environment circulation has no obvious parallel in the Internet. But to replace it there is a new task: User Education. Despite the popularity of the Internet and supposed user friendliness of the www, users need significantly more guidance in using electronic resources than they did in using a library of print materials and most academic libraries have now organized substantial programs Of use training.

6 REFERENCE SERVICE

We must become pivotally involved in providing point-of-need reference services to information seekers at the point where they are when they have a question".

Many organizations conventionally offer face to face assistance to their clientele at an "Information Desk". This service has been adapted

to the web in part via a frame-based service commonly called " Ask A—"Lankes (1998) explains the relationship between "digital", i.e. electronic, reference services and Ask A services.

"Digital reference services are Internet-based question-and-answer services that connect users with individuals who possess specialized subject or skill experience. As opposed to static web pages, digital reference services use the Internet to place people in contact with those individuals who can answer specific questions and instruct users in developing certain skills. Digital reference services are also referred to as ' Ask A' services, because of such service names as ' Ask A Volcanologist', 'Ask a scientist', 'Ask a Librarian'.....etc.

Libraries are an excellent example of organizations which not only have a large body of information that they would wish to digitize but also have as one of their primary roles to match the user's needs with that information. Other examples would include government agencies, academic institutions, professional associations and companies that specialize in a given subject area. These organizations can now offer their users the prospect of access to electronic resources at their convenience temporarily and spatially. Users do not have to be concerned with the physical hours of operation, and users do not have to physically go to it.

The contribution of library and information professionals to reference work has increased, rather than the reverse, as electronic information sources have proliferated. It was probably never true that users could use all of the resources of a library unaided, but many thought that they could. With the great variety of bibliographic databases, numerical databanks, electronic journals and general Internet Resources that exist today, few users can make optimal use of them all. The software needed to search in these files, the command languages, and the facilities available for out put or transfer of ' hits' to other files for further processing are so complex and varied that professional help is very often needed.

7 LEARNING TO USE ELECTRONIC RESOURCES

Over the last decade, however, the number and variety of information sources available, whether locally or remotely via the www, have increased greatly, and users in many cases have not been able to keep up with all of the choices now open to them. Provision of user education, especially as regards electronic sources of information,

to the point where this is now perhaps the dominant activity for professional staff in academic libraries- Circulation duties for example, being delegated to paraprofessionals. This must be seen as an enhancement of the status of library staff, since it renders them more equal partners with teaching staff in educational activity of the university. They now have contact in a training role with both academic staff and students. These areas in which training is given would include not only the use of electronic primary journals from many different publishers, but also the use of abstracts and indexes, databases, databanks, CD-ROM publications, document delivery services and electronic short-loan facilities for reading-list materials. Training may even be given to academic and research staff and research students in authoring for electronic publication.

8 CONCLUSION

An analysis of the emerging electronic publication era leads to the conclusion that it is likely to be a complex and confusing scene, in which staff and students whose major concern is necessarily their own subject field, and not computer and information sciences, will not be able to look after their own information needs without assistance. However there is a wide spread impression that retrieval of information from the internet is both easy and cheap, and a lack of appreciation of the complexities a librarian has to go through may be apprehended. This misconception may give rise to the belief that the librarian will soon be an extinct specie. But on the contrary, the traditional activities of a professional librarians have direct parallels in essential roles in the electronic era, and that the user-education role is growing one which librarians re uniquely qualified to fill.

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EMERGENCE OF INFORMATION TECHNOLOGY IN MODERN LIBRARIES

S. Abbas Raza*
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ABSTRACT

This is the age of Information Technology which is applicable to and very useful for any type of library. Today application of Information Technology in modern libraries is almost as important as existence of oxygen in the air. Information Technology has changed the library scenario and threatened the traditional library and librarianship. It is indispensable and has a lot of potential in modern libraries.

1 INTRODUCTION

The advent of computer and new developments in telecommunication technology made networking a global phenomenon. Library and information institutions are forming networks to achieve better resources sharing and to provide better services to the users. The modern library equipped with modern forms of technology make the resources of the information globally available and consequently the role of libraries is more dynamic and ever changing.

2 E-LIBRARY

Electronic library (E-library) is a closed database of a pre-qualified

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data from reputed publishers. E-library is one-stop research access, subscribers ask questions in plain English and library searches a billion words and thousands of images and quickly returns the information sought. E-library is for anyone who needs to search information quickly and affordably. The service allows the users to determine which resource categories to be searched. IT based library or electronic library is also known as virtual library/library without wall.

E-library is a comprehensive digital archive for information seekers of all ages. Users can do business research, use it for homework, get background materials for term papers, find out about both current and historical events and more, all in one vast database designed for both depth of content and simplicity of interface.

3 E-LIBRARY VS OTHER ONLINE INFORMATION RESOURCES

Only E-library combines features that make it possible for users to find information efficiently and use it effectively. No other online general reference services match its breadth and depth of subject matter, quality of material, convenience and affordability, and no other service makes it so easy for researchers to compare thousands of sources and draw critical conclusions.

4 E-LIBRARY VS WEB ENGINES OR SPIDERS

E-library can be compared to a real world library, which houses a collection of periodicals and books. Web search engines search the web, and then direct the users to other websites, while E-library quickly retrieves information from the extensive resources on its own shelves. After entering a query, E-library delivers specific articles and images relevant to a user's question. With web search engines and Web spiders, all that it returns is a list of web sites that must be researched and investigated further. In a real-life library one can access a wide selection of materials from the worlds most respected publishers, without being charged to use or download each item. Unlike a book store or news stand and professional services on the web, E-library does not require customers to pay incremental charges for information retrieval.

5 LIBRARY NETWORKS

Library networks may be defined as two or more libraries engaged in a common pattern of information exchange through communication, with the purpose to serve the potential user. The network usually consist of a formal arrangement where materials, information and

services provided by the libraries are available to the users. Library may be of different orientation but they agree to serve one another on the same basis as each serves its own constituents. Computers and telecommunications are the link to facilitate the resource sharing and maintaining a network among libraries and information centers. The main purpose of networking is to provide sharing of the resources, saving the time of the users and providing very useful and effective technology for the potential users.

In the field of library science, the term network has been used broadly to mean anything from the organizational resource sharing arrangements established among near by libraries to automated networks such as those operated by bibliographic utilities.

6 NETWORKING IN SPECIAL LIBRARIES

Deep analysis of networking in special libraries reveals the extent of full services by library networks primarily to its potential clientele as well as service users. A complete revitalized scenario of certain specialized libraries is on everlasting and impact full role of networking. A brief diagnosis of historical perspective, characteristics and services of library networks encapsulates the phenomenon of interdependence. As a result harmony development, comprehensive development and serving attitude development occurs side by side. The current need of time evokes some pattern among participating units to follow suggestions. This in turn incorporates the best in them and conserve the best.

Technological development in the past few year have made profound changes in the working atmosphere of various research organizations. CSIR is also one of them. To keep pace with this IT revolution, CSIR libraries also need their innovation, information explosion and rising price of publication were posing great challenges to the libraries. Under such circumstances library networking would be a greatest boon to cope with these emerging problems in changing context. Networking has the objective to computerize the CSIR libraries, creating Union Databases, facilitate resource sharing through networking and to provide speedy access to information.

7 ELRON

Eliron is one of the first E-library developments in UK. It has given the users aspects of the E-library, a high priority in the research programmed. In fact, from the outset it included a user-friendly interface as one of the important selection criteria, on which the E-library system (ELS) could be based.

Basic objective of Eliron is to set-up a large image database of complete books, journals and course materials which can be directly accessed by students and teaching staff via Windows-based IBM and Macintosh PC's. ELIRON ELS employs current graphical user interface (GUI) technology, the basic feature which is WIMP i.e Window, Icon, Mouse and Pull-down menu.

8 APPLICATION OF INTERNET IN MODERN LIBRARIES

It is the world's first digital information utility, and co-operative computer ***network of networks*** that links libraries, schools, governments, corporations, individuals and other to each other and to vast information resources. It has revolutionized the world of information access, storage and retrieval. A new information distribution system without any boundaries. It is aimed at linking business to business, individual to individual and organization to organization irrespective of time and space barriers.

Today computer libraries in 77 countries do not have access to internet. Libraries and information managers (LIMs) are making advantageous uses of many INTERNET offerings like the e-mail; FTP; Gopher; Telnet; Usenet; E-commerce; World Wide Web (WWW), Virtual /Electronic Digital Libraries, on-line journals and Databases, Web Resources etc. in performing almost all of their functions, be they in the area of information "acquisition", "organisation", or "dissemination". Processing of document requests gets exopedited as incomplete or missing bibiliographic parameters of documents (to be acquired), can easily be gathered from a host of sources, available on the net.

The growth of internet has been global & continuous and it is growing at a rapid pace. In 1991the internet was in only 73 countries, 100 countries accessed it in 1993 & in 1995 it reached 148 countries. In North America alone, Internet has over 37 million users. At present with a base of about 6.8 million subscribers, it is expected to reach 20 millions by the turn of century. It has been estimated that at any point of time two million new users try to browse what internet can offer them. Thus INTERNET is heading a new fully wired digital society.

9 ACCESSING INFORMATION ON THE WEB

The web is a subset of the internet using a high level protocol (http) and supports text, graphics, audio- video and multimedia. On the internet today, www is the largest information resource of easily accessible information.

Advertising on the web is one of the best ways to make the world know about an individual and the library. This would enable publicity about the various facilities, services. Universal resources locators on the web like Yahoo and Lycos allow one to enter a web page under an appropriate category.

10 ELECTRONIC JOURNAL

There is considerably difference of opinion on the definition of electronic journal (EJ). McMillan defined it as any serial produced, published and distributed nationally or internationally via electronic networks such as Bitnet and the internet. The Ejs are different from On-line journals. The latter are the electronic counterparts of journals in the print. Internet developments related to the publishing of scholarly journals increase in publishing of electronic and online journals and other primary sources of information

Electronic journal can be defined as a periodically available on-line or in CD-ROM format. Generally Ej in full text delivery system and differs from conventional bibliographic database available on-line.

In libraries electronic publishing is the publication process where the manuscripts are submitted in electronic format, edited, printed and even distributed to readers by employing computers and telecommunications.

11 ELECTRONIC COMMERCE

The internet brought about a new concept called electronic commerce in the marketing and business. The internet probably continue to have an important role in electronic commerce including online ordering by libraries. Books and journals can be ordered through wed-based ordering systems.

Electronic commerce has been, perhaps, one of the most tangible benefits of internet which made the institutions, industries, individual professionals having expertise in various fields and commercial organizations joining internet in a big way contributing to the internet information resources and also gaining by way of increased marketability of their products, services and expertise.

12 ONLINE DATABASE

Today many libraries subscribe to select popular on-line database, having as broad coverage of subject areas like EbscoHost, Proquest Direct, Do Jones international, CQ on congress, Lexis-Nexis, and dialogue. These are also available on CD_ROM for which monthly updates are received. Here, one may very legitimately ask-why on

CD-ROM and also online? Well the answer is – it is cost effective. CD-ROM searches are cheaper than on-line and more suited to the needs of the general user. Barring corporate houses, a general student or researcher would find online searches too expensive for their pockets. But from the point of a professional librarian, the search is not complete without access to on-line resources with daily updates.

13 CONCLUSION

Emergence of IT in modern libraries is helpful to obtain the right information at the right time at the right place and at the right of cost. It improves the status of the library and it reduces the work load of the library professionals. New environment of emergence of IT in libraries plays an important role in promoting the use of information. They are brought about significant improvement over current modes of information publishing and access methods. This will very much benefit and promote the R & D activities in developing countries like India.

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EMERGING ELECTRONIC INFORMATION SERVICES IN A BUSINESS AND MANAGEMENT LIBRARY : AN ANALYSIS

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ABSTRACT

E-Services enhance adequate information to users, avoid the repetitive work, maximize the stock available by holding information and documents in electronic form. This paper focuses on analyses of e-information services with special reference to a management institution library. The architecture of XLRI library e-services, different formats of e-resources explained. It also highlights information audit, role of LIS professionals while providing e-service to the customer. Requirements of budget, evaluating, measuring, and supporting factors of e-services are briefly depicted. Finally, it has suggested the direction for future study.

1 INTRODUCTION

The library and information service professionals are continuously facing many challenges in providing services. In every sector of the information market place, the introduction and use of e-information, new emphasis on value-far-many concepts and timeliness of information coupled with downsizing and flatter management structure in organizations, have brought about significant changes. These professionals have become experts in building and stocking e-libraries. They have a high profile in the profession and many have considerable technical expertise as well as library and information professional skills. The digital library experts are working at the extreme frontier of progress across the world – what we used to call

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the bleeding edge—and are dealing with problems in their own specialist environments.

2 ABOUT XLRI LIBRARY ENVIRONMENT

Sir Jehangir Ghandy Library – XLRI – Jamshedpur is a special type of library in management and labour relations. Independent library building has comfortable air conditioning with good number of resource collection in the area of management and allied subjects, national and international hard bound and electronic journal subscription, CD-ROM network station connected with 400 PCs in the campus, computerization of library house keeping activities with Alice for Windows, Internet Library, Multimedia center and library web page (http://www.xlri.ac.in/library). The calm and peaceful atmosphere of the campus and its green surroundings are highly conducive to study and research.

This library is just beginning to feel comfortable with network computers, CD-ROMs, and text based Internet. The majority of electronic database available to users were accessed via CD-ROM network station (LANBIT with sling shot software). Then, seemingly overnight, everything began to change with the wide acceptance of the WWW and the proliferation of ISPs ready to provide easy access to the Internet. Suddenly there was instantaneous, global access to a wealth of information. Even slow moving organizations like a management library could not help being swept up in the energy of this global information revolution. Every one now realized that the Internet in whatever future form it may take, is here to stay. As a result, XLRI library is now turning its energies toward offering patrons a slue of innovative ways to access information.

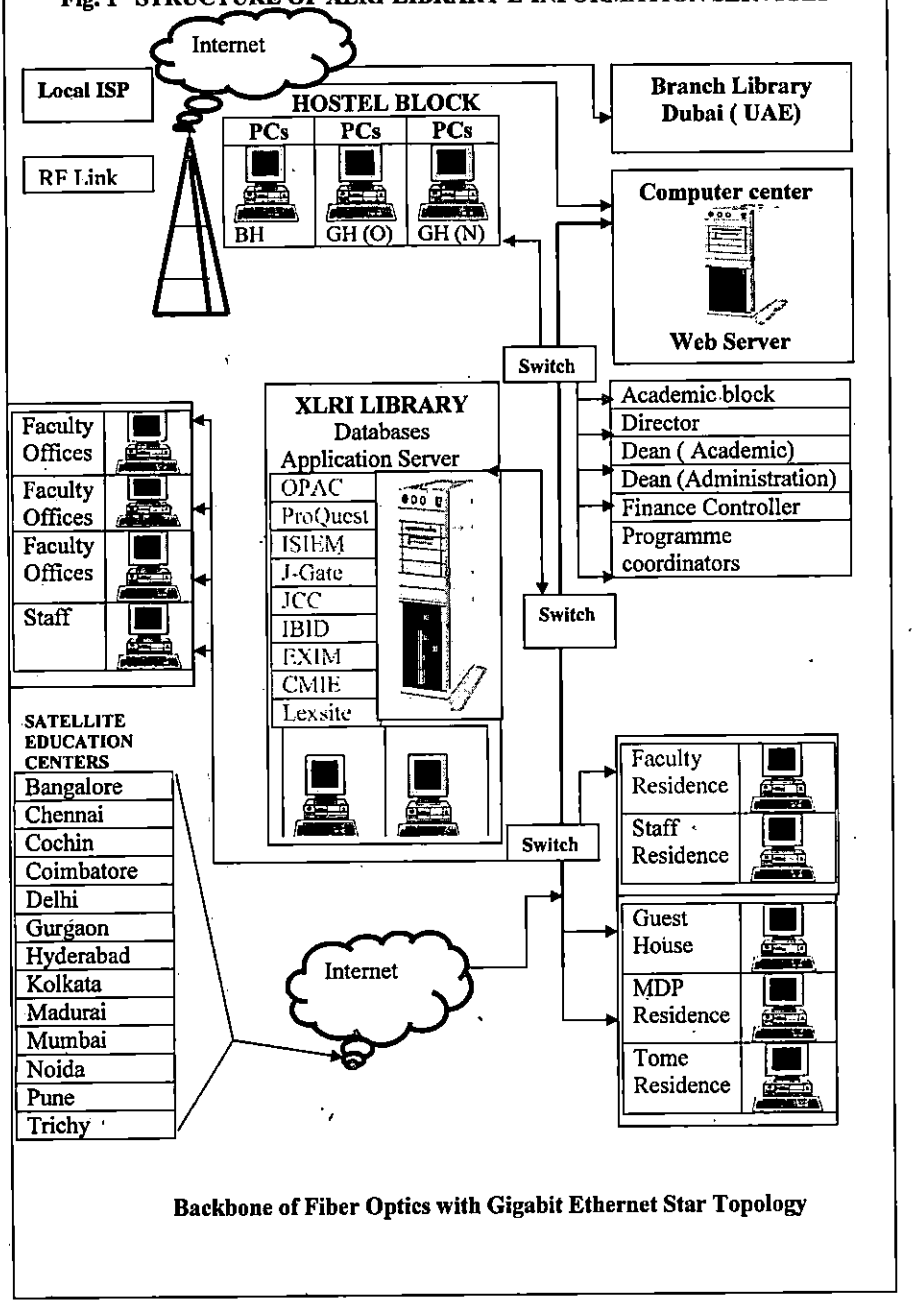
2.1 Electronic Databases

JEHANGIR GHANDY LIBRARY – XLRI – DIGITAL RESOURCES

Source	Nature	Mode of Access
ProQuest	ABI/Inform Global Edition • Titles Abstracting & Indexing • 1520 Titles Abstracting & Indexing • 630 Titles Images • 730 Full Text • B.P.O Research Edition • 1270 Titles Abstract & Indexing • 470 Titles Images	1. Internet Version http://www.bellhowell.infolearning.com/pqdauto 2. CD-ROM Backup through CD-Network Station (LANBIT FISC Http://jglxlri.xlri.ac.in/slingshot

ISI-Emerging Markets	Emerging Market Service (India) • Local News • Company & Industry Information • Financial Market • Macroeconomic Analysis • India Market Specific Information	http://site.securities.com
Prowess	CMIE Database • Indian Industry and Company Information	Local Area Network
IBID	India Business Insight Database • Indian Business and Industry • Information from Business • Magazines and Newspapers	Http://ibid.informindia.co.in
EXIM INDIA	CD-ROM Database on • Government of India: Policies, Rules & Regulations • Foreign Trade Regulations • Procedures, Tariffs, Acts • International Treaties & Conventions • Budget Speech	Local Area Network
Lexsite.com	Legal and Tax Information • Direct Taxes • Indirect Taxes • Corporate Laws • Foreign Exchange	http://www.lexsite.com
J-Gate	• Directory of Journals • Table of Journal Contents • Journal Database • Customer Journal Contents	http://j-ate.infomida.co.in/ MULTIUSERS
JCC	• 300 National and International Journals	http://libserver.xlri.ac.in/jcc/
AFW- Library Database	Online Public Access Catalogue – OPAC (XLRI – Library Database)	http://libserver.xlri.ac.in/scripts/AfWilnq.dll?
Library Home Page	• About XLRI Library • Networking • e-service	http://www.xlri.ac.in/library

Fig. 1 STRUCTURE OF XLRI-LIBRARY E-INFORMATION SERVICES



Backbone of Fiber Optics with Gigabit Ethernet Star Topology

3 CONCEPT OF e-INFORMATION SERVICE

Information services have made increasing use of computers. Electronic services allow the service to: Enhance the service given to users, avoid the repetitive work; maximize the stock available by holding information and documents in electronic form. Digital information technology holds out many tempting possibilities, but to realize the benefits fully LIS professionals should understand the overall context of developing an electronic information service (EIS).

Electronic information services is maximum use in the form of electronically held information. Establishing an electronic information service from scratch may be easier than converting from a traditional print-based service. LIS have wide range of e-resources viz., standalone and network databases, CD-ROMs, e-journals, multimedia products, image collection, encyclopedias, reference material, daily news, business and financial information sources etc

4 FORMATS OF e-INFORMATION SOURCES

Electronic information services typically offer facilities such as those in the following range of resources. The consultation and information audit exercise will indicate what the users would value most.

4.1 Bibliographic Database

Bibliographic Database management contains bibliographic description of documents. Such description is normally based on a catalogue code. The databases are normally built by libraries or secondary information centers. In case of libraries, all operations like design, data entry, generation of indexes, querying, printing etc., are all done in particular library. However in the case of secondary agencies, the design, data entry and index generation are done by the agencies providing database, where as querying and printing is done by the end user. A number of software packages are presently available in India for handling bibliographic databases and library management systems. Considering the importance of computerization and automation XLRI has prepared a database of books and periodicals in different subjects. In-house library activities like acquisition, cataloguing, circulation, serials control, multimedia and web inquiry have been automated by using " Softlink Asia's – Alice for Windows" software.

4.2 Electronic Journals

Increasing number of journals are published simultaneously or even exclusively on the Internet. Many EIS manage their purchase through

one of the several subscription agents that operate nationally and internationally. The services they provide include contents page alert, full text articles, and access to achieve searching for back issues.

4.2.1 Proquest on-line journals

Library has been subscribing to ABI / INFORM and Business periodicals on disc, and online provides extensive material on variety of business topics including , Market conditions and strategy; Management trends and corporate culture; Corporate case studies; Company news and analysis; International trade and investment; Economic conditions and forecasts.

Material is available in the form of full image articles, citations and 25-150 word abstracts. Subscription provides material for the current year and a three-year back-file, with updates provided monthly. The full image capability means users can view and retrieve exact article copies appearing just as they do in the original publication. For casual browsing of popular business magazines to in-depth research of scholarly journals, users will find cover-to-cover reproduction of material they need most.

ABI / INFORM and Business Periodicals On disc (BPO) is available in two editions: i) Global Editions: Abstracting and indexing from around 1,520 titles in ABI/Inform Global edition with page images from over 630 titles and searchable full text from 730 sources in BPO Global editions. This edition was compiled specifically to meet the research needs of international users. By bringing together information from hundreds of key international journals, BPO Global edition enables users to tract business trends and activity in all industry sectors around the world; ii) Research Edition: Abstracting and indexing from over 1,270 titles in ABI/Inform Research edition with page images from 470 titles in BPO Research edition. It will cover subjects: Accounting, Banking, Business, Computers, Economics, Energy, Engineering, Environment, Finance, Healthcare, Human Resources, International Trends, Insurance, Law, Management, Marketing, Medicine, Public Administration, Taxation, Telecommunications.

Searching the Database: BPO uses the popular ProQuest search ware. ProQuest is powerful and easy to use regardless of users computer knowledge or search expertise. There are two ways to search the database: first, is free text searching and second is multiple indexes to help users avoid the trial and error guessing the correct term. Indexed terms are available for – companies, subjects, geographic places, journals, authors, key words and industry sectors.

BPO has the unique opportunity to combine a rapid search across hundreds of journals with immediate delivery of the original documents. Articles can be printed out immediately and the information quest which usually takes hours or days by traditional methods, is completed in less than five minutes. All for a fixed annual fee. It provides organizations with an instant electronic journal collection, including a huge archive. This in turn reduces many costs associated with journal storage and binding. In addition, BPO journals are unaffected by problems of theft and mutilation, nor are there the frustrations and cost of obtaining articles from outside via inter library loans.

4.2.2 J-Gate

J-Gate is an Internet gateway and portal set up nearly two-years ago by Informatics (India) Ltd Bangalore. It offers affordable access to global electronic journal literature. It provides seamless access to journal articles through their massive database interface of 8,500+ e-journals.

4.2.2.1 J-Gate Features and Benefits

- Link to full text are provided from TOC and database interfaces for every article
- Weekly content updating.
- Author email address where available.
- Searchable database by Author, Title word, and subject-words.
- Basic Search module.
- Advanced Search module.
- Author Abstracts where available.
- Every journal is classified at three levels of hierarchical classification.
- Password Management System
- Common customized interface for e-journal consortia of specific client groups.
- Facility to monitor the usage by publishers and libraries
- My TOC - Individual users can create their own TOC service for journals of their choice

4.2.1.2 J-Gate Products and Services

4.2.2.2.1 J-Gate TOC (Table of Contents)

- 8500+ e-Journals (as of November 2002).

- Journals on by Journal title, title word, subject categories and year of publication.
- TOC for all journals in an uniform browsable format.
- Basic bibliographic data with abstract (where available).
- Author Address and email where available.
- Link to full-text.
- Link to Union catalog for finding availability.
- Weekly updating.
- Access by Internet.

4.2.2.2.2 J-Gate Database

- All Journal articles listed in TOC are compiled into Database.
- Classification by two levels of subject category.
- Subject indexing.
- Search by title word, author, subject keywords, year and any combination.
- Basic bibliographic data with abstract (where available).
- Author Address and email where available
- Link to full-text.
- Link to Union cataiog for finding availability (under development).
- Weekly updating with progressive accumulation.
- Access by Internet.

4.2.2.2.3 J-Gate Customer Content (JCC)

- A local intranet solution.
- TOC and Database services customized to all journals "subscribed" by XLRI Jamshedpur.
- Customized J-Gate Software installed at XLRI- Jamshedpur premises.
- Weekly delivery of TOC and Database Content.

4.2.2.2.4 JCC for Consortia (JCC)

- JCC service for a homogeneous group of clients.
- JCC software is installed in each client site.
- Common TOC and Database services for journals subscribed by all the clients forming consortium. Content is mirrored in each participating library.

- Link to union catalog for resource sharing. Email request for article photocopies can be sent directly by users while browsing articles/abstracts, to any chosen library.

4.2.2.2.5 J-gate Infrastructure

- 7-days/24 hours access.
- High-speed in-house internet infrastructure.
- Automated content capturing and conversion system ensuring high quality content aggregation.
- In-house software development team.
- Safe and reliable high-capacity storage system for content storage.
- Data-refreshing system for maintaining the content for all time against technological obsolesce.

4.3 E-books

e-book is becoming a viable means of book publication. The rise in popularity of personal digital assistants has allowed a stable technical platform to be used which allows users to download books or chapters. They can be read away from the office or home.

Collection Development of e-books (2000 – 2002)

Subject	Numbers	Subject	Numbers
Economics	30	Marketing	25
Finance	80	Personnel Management	35
General Management	35	Organizational & Behaviour	
Information Systems	80	Science	80
Logistics	25	Operations Management	30

4.4 CD-ROM Network Station

FISC CDM is the latest breakthrough in the CD/DVD networking and NAS (Network Attached Storage) technology from Allion Computer's FISC CD family. It provides fast network access of a large number of CD/DVD titles with complete multimedia support. It is a cost effective and robust data storage solution for libraries and information centers etc. The library has been providing 1500 CD-ROM services with the help of LANBIT CD-Net work server.

4.4.1 Features of LANBIT FISC CD

- Hosts up to 640 CD images
- Supports single CD Image of up to 4 GB

- Sustain over 20 MPEF-I video playback without gaps and jitters
- Supports multimedia title formats like DVD video, Audio CD and Video CD
- Pumps over 7MB second to network, 3 to 5 times faster than competitors
- Identifies duplicate CD images automatically
- All administration jobs are done via WWW browsers
- Outperforms Jukeboxes
- Designed for Multimedia
- Remotely browse and manage CD servers
- Interactive multimedia education server
- High-performance, Real-time data storage center
- High speed digitized CD library
- Automatic video-on-demand system

4.5 Reference Materials

The EIS can construct a 'reference shelf' of electronic information using a variety of sources such a encyclopedia, dictionaries, hand-book, directories, year-book, bibliographies, biographies, maps, etc.,

4.6 Daily News

Depending upon the needs of the users, links can be made to variety of web-based news services such as, ISI emerging market, VANSCOM, BBC, CNN and other news providers

4.6.1 Business, Industries and financial information

Some of these databases are free while others are fee-based services. Again the consultation and information audit will have revealed what kind of information is needed and how often.

4.6.2 Legal and Taxation information

There are now daily updates for Indian legal and corporate taxation service, which offer the full text of the acts, statuary instruments, directives, decisions and commentary (http: www.lexsite.com) and CD-ROM Supreme court etc., allow rapid location of a range of useful resources.

5 INFORMATION AUDIT

Information professionals is to get a clear understanding of the entire organization in which the service will operate. Irrespective of the subject background the organizations should be identified and captured before work begins on the design and creations of the service or the identification of the electronic components within it. The first step is to carry out an information needs. An information audit provides the organization with a wealth of important data such as:

- What information exists within the organization
- Where it is located
- What information the organization needs and when it is needed
- Who uses it
- What gaps exist where potential users for information are in the organization
- Why users use a particular service or source of information in preference to others
- Why some users use the service frequently or occasionally
- Why some users never use the service
- How to produce the information in the format needed.

With this background the LIS professional can begin to put together the range of services, that will meet the needs of the greatest number of users in the most cost-effective way.

6 USERS OF e-SERVICE

The information user is no longer obliged to visit the service to interact directly, for example by browsing the shelves or meeting the staff face to face. So in theory the users of services could be anyone who has access to a computer or other electronic terminal with the right software to gain entry to the remote information system.

7 ROLE OF THE INFORMATION PROFESSIONALS IN E-SERVICE

With the introduction of e-service new professional skills come into play. For e-service LIS professionals will need to ensure further abilities. They improve working in the hybrid world of print and electronic media and providing the best mix of information resource

in the most appropriate formats for the environments. The information professionals are doing excellent but undervalued work such as

- Evaluating services and certifying the quality of websites
- Providing support and training for users using networked e-services
- Continuing the higher value paid for reference and search services that are not replaced by the new offerings
- Finding new resources for the network
- Understanding the search process and the improved quality their intervention can provide
- Adding metadata to site links and e-documents so that retrieval becomes easier and hits are more relevant
- Making the e-services easier to use what the suppliers have done

The e-service will not happen without adequate training for all involved in the project. The field is moving rapidly, the best training is likely to be in the form of participation at conferences, workshop, awareness sessions, formal training programmes and other exchange of experience etc.

7.1 What kind of e-information user's need

The LIS professionals need a clear understanding of the entire organization in which the service will operate, as without that understanding the information service will not achieve a central role in the user community. Irrespective of the subject background, the organization needs should be identified and captured before work begins on the design and creation of the e-service.

Here are some possible services that can be provided electronically viz., general information, digital reference, standards, round the clock service, scientific and technical, business and financial, legal and educational information.

8 SUPPORTERS

There are a number of interested parties apart from potential users in e-services. The nature of e-service is so radically different from what has gone before, it is important that leader has to carry all interested parties with him/her. They need to understand what the

service consists of and their role in delivering and maintaining it. They need the confidence to use the service successfully and to understand any changing mechanisms that are associated with it. E-service has to take continuing supports from LIS staff, other parts of organizations, internal and external contractors and suppliers, internal and external users, and technical support.

9 BUDGETING FOR e-SERVICE

The provision of e-services should make little difference to the budgeting process for managing library services. Electronic services have a number of characteristics that make it more complex to establish the business case for subscription.

9.1 Hardware cost

In order to run an e-service, the LIS must have equipment that is able to provide fast and full access. This is likely to mean paying for some or all of the following:

- A server
- Terminals
- Printers
- Cabling and access points
- High speed internet access
- Terminal adapters, cable modems and other communication equipments.

9.2 Software Cost

In addition to these hardware cost, you may need to account for:

- Software: even open source software needs installation and the new services may need a higher version of internet explorer / Netscape communicator than your internet does.
- Space to put hardware, and to store software and documentation.
- Connection to campus networks and perhaps the cost of additional modules for the library management system to provide an OPAC
- Technical skills to make the equipment connect to itself, to users and to the internet and technical skills to configure the system
- Additional services such as air-conditioning improvements-although equipment is less sensitive and puts out less heat.

- Additional telecommunication services
- Security, physical or electronic

9.3 Operational Expenses

Many of the costs of operating the service are well known and appear in all libraries. Such costs are:

- Where documents emerge from the electronic system on to paper costs are incurred as with published documents: postage, fax, paper, ink, envelopes, files or other containers.
- Training and publicity costs are significant and must be accounted for
- Cost of out-of-hours support

10 EVALUATING AND MEASURING THE e-SERVICE

Once the services are established you will constantly need to assess, evaluate and monitor them. Services cannot be regarded as set in concrete. Many new and competing services and products are constantly arriving on the scene and you will need to consider them for their potential impact on the service that you are currently offering. Each part of the service should be examined in details and evaluated, asking questions such as these:

- Is this product still needed?
- If so, is it needed in the same format?
- Should it be produced by the same staff member or team?
- Could it be carried out somewhere else in the organization, but outside the e-information center?
- Should it be carried out outside the organization?
- Is there a better way of getting or delivering this product or the information it provides?
- Is it being offered in the most appropriate way? And at the most appropriate price.

You will need to check some questions about any external services that may have potential for being brought into the e-information service, especially where they appear to be replacements for existing services.

Library and information service transaction is difficult for establishing viable measurement of use. One means of assessing the need for a product is of course, to look at the statistics of use. For books this can be done simply enough from loan records and date labels, and for journals there are measures like circulation list and demand for copy articles. But, there are problems for electronic library collections, namely,

- Lack of information of cause makes it more difficult to demonstrate usage in order to establish savings or increased value.
- Difficult to establish whether the length of time of use is related in any way to the value added
- Potential users may be locked out by selfish users because of limits on the number of simultaneous users of a database or a CD-ROM, perhaps leading to demands that a more expensive license be purchased.
- E-suppliers are known to provide statistics of use for many resources, but the complaint remains that they are inconsistent and do not allow proper comparison for the use of services.

11 FUTURE STUDY

Presently more than 900 business and management institution libraries have created their own e-library services to their clients. Those have not integrated as one giant entity. It has suggested to make proper strategy, R&D for avoiding duplication of electronic databases and sharing the different sources under a common umbrella.

12 CONCLUSION

The LIS professionals in the present scenario will need the ability to diagnose the user requirement. In consideration of this view and also to keep pace with the rapid development of web-based reference and e-information services provided by non-library organizations, LIS professionals have now turned their attention to the provision of e-information services.

Indeed this is a time when e-library researchers should think of the best ways and means to make optimum use of the technology and experience and expertise of human intermediaries in improving e-information services from being mere access centers to being information service providers.

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IMPACT OF ELECTRONIC INFORMATION ON REFERENCE SERVICES IN ACADEMIC AND RESEARCH LIBRARIES

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ABSTRACT

The remarkable growth of electronic information (EI) in the last few decades and due to that digital information has become all pervasive Digital information is also available on Internet at a large scales e.g. e-books, e-journals, e-databases (bibliographic and full text) and e-references etc. The academic and research institution awarding degrees, offering research programmes, accepting consultancy assignments and sponsored projects are of prime importance. In order to achieve objectives of the institution, most of the institutive libraries are adopting new technology and new mode of electronic information. The impact of EI on reference services e.g. online dictionaries, directories, and encyclopedias etc. The reference section of Central Library IIT Bombay plays vital role by acquiring different types of books / non-books materials. The paper describes statistics of present holding of the reference section, type of reference services provided and what types of new services are added through Internet and some list of important reference resources by types and subjects are available on the Internet and these references websites are listed in the Central Library, IITB website and hyperlinks were provided under the techno-portal, http://www.library.iitb.ac.in The author is using these sources to provide the reference services to the users.

1 INTRODUCTION

According to Foskett," Reference service is currently humanism in practice because the aim is to help people, in a way or other, to

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secure great happiness through the possession of knowledge." Reference service in libraries is most often defined as direct personal assistance to readers seeking information. Three main functions of the library are acquisition, organization and dissemination. The dissemination function under which primarily directed service is reference service is the core amongst the library service:

In libraries and information centers the objectives of reference service are:

1. Assist users;
2. Develop the role of the library as an educational institution; and
3. Help readers; make the best selections from the universe of recorded information...etc.

Dr. Ranganathan has also said that reference service establish contact between reader and his document in a personal way.

It directly satisfies the needs of the users by providing actual information. Information technology has added much value to the reference service. Integration of technology more prominently, the Internet has resulted in the excellent reference service. It has benefit of reference service due to its dual feature i.e. being the vast reservoir of information and the means of communication.

2 ABOUT IITB REFERENCE SECTION

IITB is an academic and research institution ranked third in Asia pacific region. The objectives of the Institute are: training, leadership, organise educational programmes, interact with industrial national/ international

The Central Library maintains a separate reference collection consisting of encyclopedias, dictionaries, handbooks, technical data, almanacs, atlases, bibliographies, CD -ROMs, Audio and Videocassettes, etc. The Section renders short and long-range reference service. Reference book marked by "R" and rare reference are marked "RR". The collection marked "RR" is kept under lock and key.

Readers may approach the Reference desk for information or any assistance in the use of the Library collections and services. Users may also contact the Reference Division for computerized services, CD ROM-based search services and web-based electronic journals, electronic reference sources etc.

The Reference Section also houses video collection consisting of more than 250 Videocassette's. The video viewing facility is extended to the students, staff and faculty of the Institute from 9.30 a. m. to 5.30 p.m. on all working days.

Presently the section is approximately in possession of:

Reference books	-	12,000+ (active collection)
Rare Reference books	-	620
Compact discs -		
• Received along with print version of journals	-	44
• Received along with print version of books	-	274
• Received along with conference proceedings	-	45
• General	-	63
Bibliographic CDROM databases	-	66
Diskettes	-	300+
Videocassettes	-	250+

3 SERVICES OF REFERENCE SECTION, CL, IITB

1. CD-ROM Service: CDNET server with 56 CD-ROM drives with two towers of 28 each are being use for CDROM networking, demos for the usage of different bibliographic databases has been held regularly for the users, and the databases have been updated. Printing and downloading facilities are also provided in the library to users. The bibliographic databases available are:

   - Chemical Abstract on CD 12th and 13th ed. (1987-96) & online;
   - Dissertation Abstracts (UMI) 1991-96;
   - INSPEC (IEEE) (1990- present) and online also;
   - ISTP (Index to scientific and technical proceedings) 1991-2000;
   - ONDISC (Compendex plus) (1991- present) online also; and
   - PDF- Powder Diffraction File

2. Current Contents on Diskettes (CCOD) workstations: The service CCOD-ALERT is being provided to 165 faculty, scientific staff and research scholars etc. by E-mail through where in the contents with abstracts of the 900 journals from the three disciplines.

   - Engineering, Computing and Technology;
   - Physical, Chemical and Earth Sciences; and
   - Life sciences,

3. Assists readers and provide access to online e-journals, e-databases and web base services through the Internet in the working hours.

4. Electronic Theses Dissertation (ETD): ETD is an efficient medium to preserve, store and make it available online of Ph.D / M.Tech. Theses and dissertations. This service was started from 1999 onwards and the problems related to online submission of full text and one page extended abstract after final defense of student, are dealt with by the reference section.

5. Other services:

   a) Events: readers are kept informed regularly about the forth coming national and International conferences, workshops & seminars etc.

   b) Prospectus of Foreign University. The latest booklets hand outs etc. of foreign universities have been maintained.

   c) Scholarships/Fellowships: Information regarding Scholarships and fellowships offered are maintained.

   d) Employment opportunities, vacancies for different cadres of ports across the country are put up on the notice board regularly.

   e) Display of New books: New books added every week on Monday are regularly displayed in the reference section and also informed to faculty by e-mails.

4 ROLE OF REFERENCE LIBRARIAN

- Approachability;
- Human touch in the e-service in enhancing the quality of the service;
- Intellectually, knowledgeable, ability to search;
- Interest in the problem of the users;
- Librarian is working as a human search engines.
- Listening and inquiring capacity;
- Locate, analyses, interpret, evaluate, reformat and re-organize Information.
- Make most effective use of new technology;
- Remove computer phobia; and
- Self generated questions;

5 INTERNET

Internet, is the world's largest computer network, the network of networks scattered all over the world, it helps in 3 ways:

- To get information;
- To provide information; and
- To compile information.

The following categories of Electronic information are available on the Internet.

- Current events, happenings or hot topics;
- Government information;
- Popular cultural information;
- Sports;
- Directory type - names, addresses, and telephone numbers;
- Science/ Engineering /Social Science; and
- General, etc.

6 TYPES OF REFERENCE SOURCES

Reference books or sources are differs from general books

- Bibliographic;
- Biographical sources;
- Dictionaries;
- Directories;
- Encyclopedias;
- General references sources;
- Geographical resources;
- Handbooks;
- Preprints;
- Standards; and
- Yearbooks and almanacs etc.

Each reference sources has its different identity and distinctive structural variety. Some of the electronic references sources available on Internet are listed in the Central Library, IITB website URL http://www.library.iitb.ac.in is as follows.

7 ELECTRONIC INFORMATION RESOURCES ON INTERNET

7.1 E-Resources by type:

Some examples of e-resources by types are:

- Calculator/converter:
  - Calculator.com (http://www.calculator.com/index.html)
  - FX Converter (Foreign Exchange Currency Converter) http://www.oanda.com/converter/classic
  - Measurement Converter (http://www.microimng.com/science/)
  - Interactive Units Converter (http://www.convert-me.com/en)
  - Database: There are so many databases links;
  - Dictionaries:
  - Academic Press Dictionary of Science and Technology (http://www.harcourt.com/dictionary
  - AllWords - English Dictionary with Multi-Lingual Search (http://www.allwords.com)
  - Cambridge Dictionary http://dictionary.cambridge.org/
  - Directories :
  - EngNet Engineering Directory (http://www.engnetglobal.com)
  - TenLinks.Com: Ultimate Civil Engineering Directory http://www.tenlinks.com/engineering/civil/index.htm
  - Directory of Transportation Resources (http://www.njtide.org/links/index.html)
  - Electronic journals: 1800 links of full text journals;
  - Encyclopedias:
  - Artcyclopedia: Fine Art Search Engine (http://artcyclopedia.com/)
  - Encyclopedia Britannica (http://www.britanica.com)
  - Kirk Othmer Encyclopedia of Chemical Technology http://jws- edck.interscience.wiley.com:8095/index.html
  - Patents:
  - Canadian Patent Database (http://patents1.ic.gc.ca/intro-e.html)
  - Derwent Patents (http://www.darwent.com)

- Krislyn's Favorite Patent, Trademark & Copyright Sites (http://www.krislyn.com/sites/patents.html)
- Patent Alert: Free Online Service (http://www.patentsalert.com)
- Standards: National Information Standards Organization (NISO) http://www.niso.org

7.2 E-resources by subject:

E-resources by subject are:

- business resources;
- biotechnology and bioengineering;
- biomedical sciences;
- chemistry;
- civil engineering;
- computer science and engineering;
- earth science;
- engineering;
- environmental science;
- geographical science;
- humanities and social science;
- laws of India;
- manufacturing;
- material science;
- mathematics;
- physics;
- subject portals; and
- study abroad, etc.

The brief information and so many web site links were provided in the all above electronic information resources.

Considering wide range of features of Internet, education and research activities are benefited to large extent by the reference and information section of the Central Library IITB.

8 CHALLENGES

- Learning new web and electronic database resources.
- Finding the additional time.
- Meeting higher expectations (depth, accuracy, durability)
- Retrieval and speed of the search will depend upon traffic, complexity of search ability of search engine protocols
- In higher education institutions e-mail reference needs a different set of communication skills, non-verbal communication. So careful interpretation and reading between the lines is of at most importance.

9 BENEFITS

- ability to answer a much broader scope of reference questions.
- enabling small libraries to provide more extensive reference service
- finding additional role as navigators and trainees.
- gaining the ability to add reference context to collection using technology.

10 CONCLUSION

Central Library of IITB is fully computerised and has well maintained infrastructure. Computerisation has provided high quality of reproduction, compact storage capacity, speed of communication and online access, more accurate and better services to their users. As the Central Library had access to Internet, the task of reference section became much easier. Internet has become the key term of today's digital age, Reference Section, Central Library, IITB also stepped in to be at par with the latest trends. Digital library, subject gateways, E-reference desk and E-resources are the latest additions on the website of IITB Library. Efforts were made to search these references, and have been added to our website. More such sites will be added in future to provide better services to our users.

[Author is thankful to Prof. Ashok Misra, Director, Prof. S.C.Lakkad, Dy. Director, Dr. Jagdish Arora, Head, Central Library of IITB for Permitting me to write this paper for 48th. All India Library Conference, January 22-25, 2003, NIMHANS, Bangalore].

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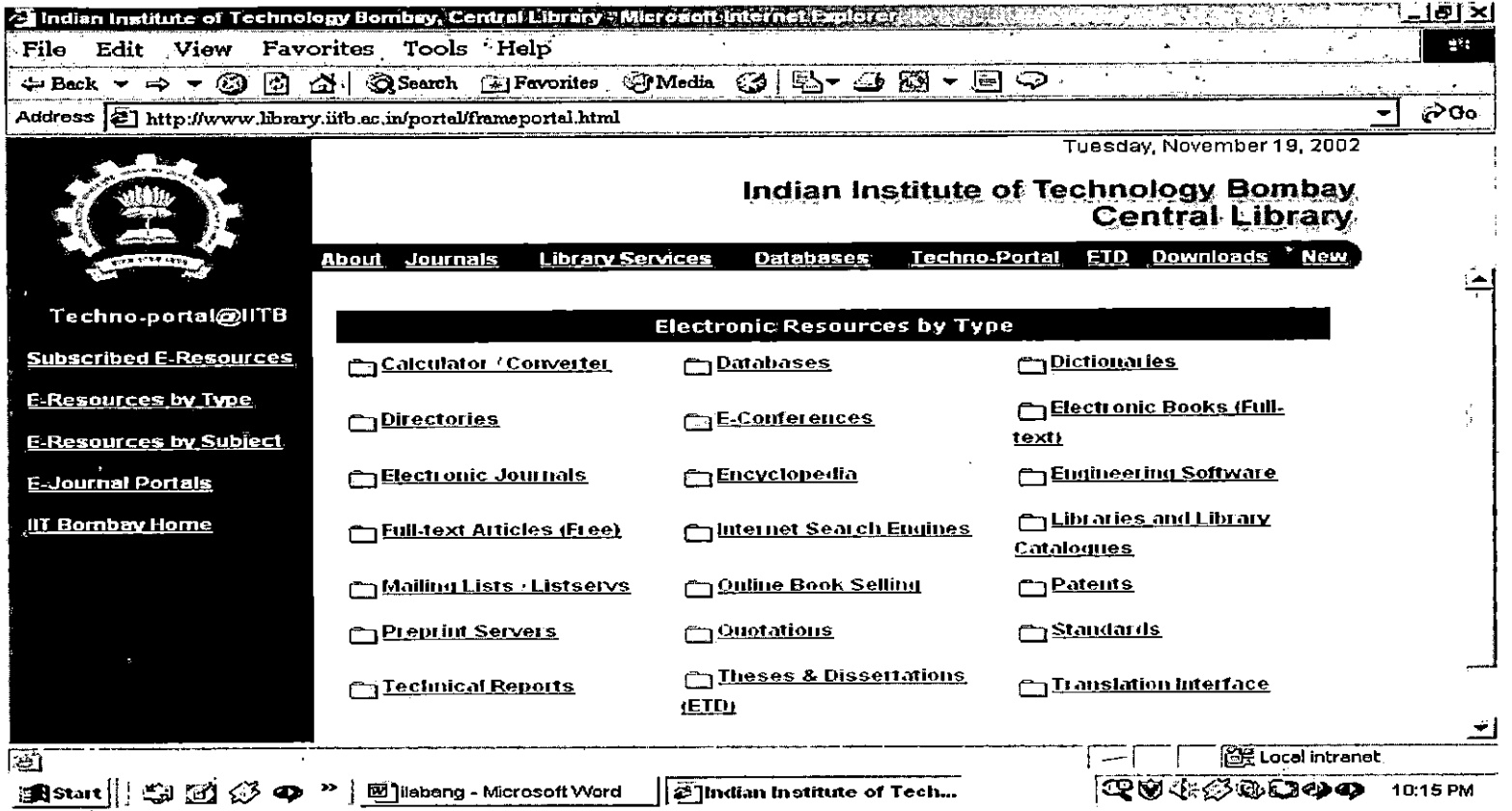
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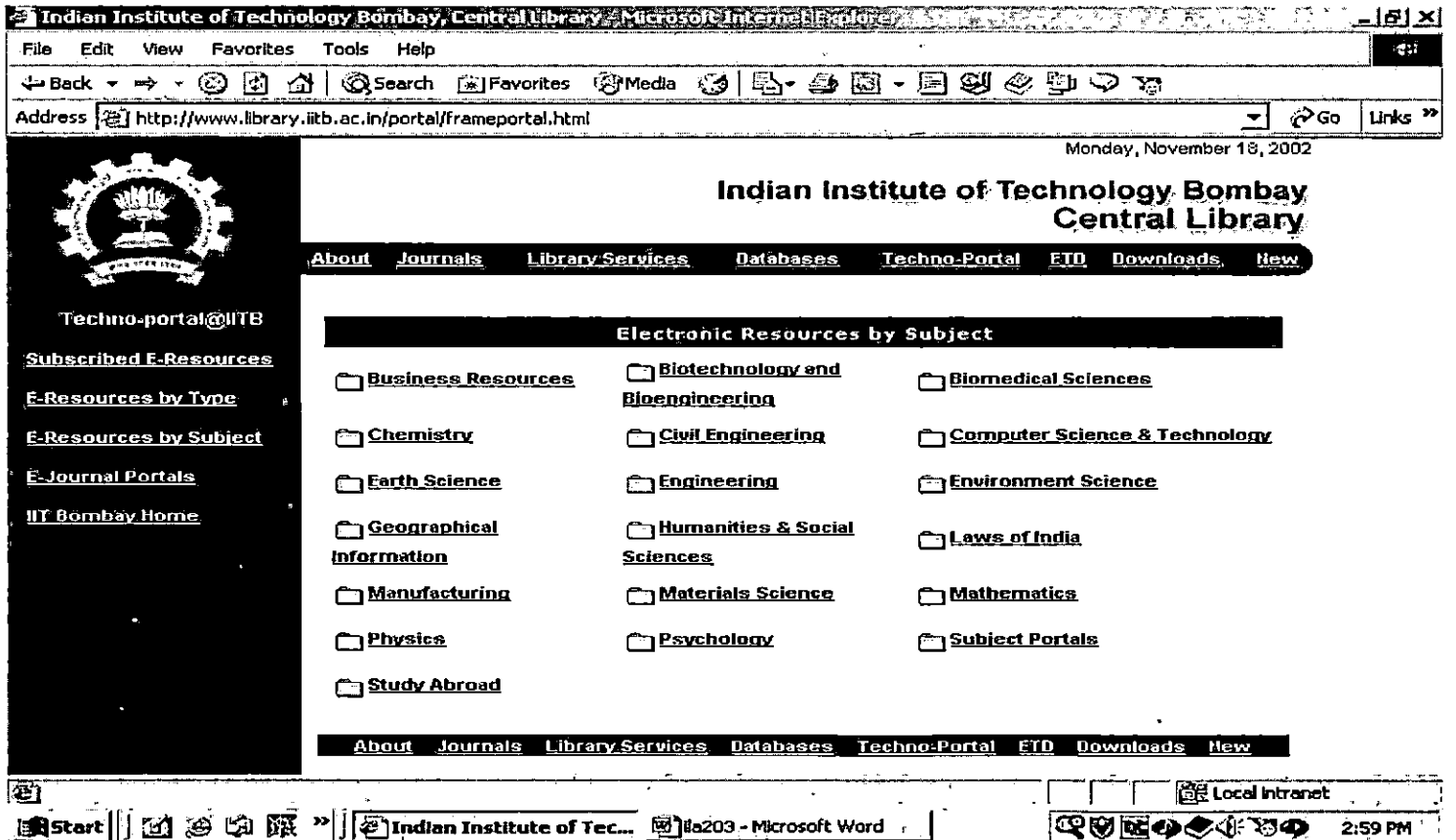
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MANAGING THE DIGITAL RESOURCES AND SERVICES IN ENGINEERING LIBRARIES

A Manimekalai*
Yamini, K A**

ABSTRACT

Due to the information explosion and scientific information thirst, the traditional libraries are forced to work in the digital environment to satisfy their potential users by providing information for their needs. This paper reflects the general background of the Engineering Library, various user types and their needs; the factor which motivates the implementation of the technology based services. Further it defines the infrastructure & Network competencies for implementing a Digital Engineering Library, skilled manpower, outcome expectations & knowledge of information resources available on the Net. Besides, it explains the possible infrastructure needed for implementing ICT facilities and the advantages in creating such digital library environment in the engineering Colleges.

1 INTRODUCTION

The Information & Communication Technology (ICT) have drastically changed the academician's activities in teaching learning and research. So, the libraries also have changed entirely to digital form and the librarians to information scientist with perfect technological knowledge in disseminating the information by automating their libraries. Thus technology plays a vital role for the academic & research oriented users. The invention creates demands and the libraries have to embrace on the new technology based services by understanding the curiosity and the urge of the potential user.

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2 DIGITAL LIBRARY

The process of converting the information in the traditional library in to digital forms with the help of Computer, network, software & other electronic components is known as digitization and obviously the library which provide service digitally is identified as a Digital library.

3 USER TYPES

The Engineering Library user includes Teaching faculty, Students, Research Scholars, Industrialist, Technologist, etc., The users are much impressed by the technology oriented service, since the information retrieval is quiet relevant, quick and easy with special effects like, audio, video, image, and other textual formats. The statisticai inferences can also be retrieved easily in one place with minimum effort.

4 MOTIVATION FOR ICT IMPLEMENTATION IN ENGINEERING LIBRARIES

There are so many criteria, which forced the traditional library to switch over to the Digital library. Some of them are:

- sharing of knowledge instantly via network
- automated software for indexing and abstracting services
- lively search with sound, music, image, text and other 3D effect (Building, bridges, etc.,) pictures
- CDROM Technology with Multimedia effect
- Interactive web search and teleconferencing
- Online chatting forum, discussion with experts of subject specialisation

5 INFRASTRUCTURE FOR IMPLEMENTING THE DIGITAL ENGINEERING LIBRARY

Physical Infrastructure

For implementing a full-fledged Digital environment in a library the following are needed

- cables, wiring,
- power system regulation- current
- UPS & fire prohibition measures, etc.;

6 SYSTEM INFRASTRUCTURE

The system requirements needed for connecting the various points in the library are

- software for LAN
- Hardware - Computer, Hub, Modem/Dish for satellite connectivity, Server

7 MANPOWER INFRASTRUCTURE

For the full fledged electronic library the existing staff members should have trained well to cope up with the emerging technological trends in the library with fully updated knowledge. Some of the factors are

- training to the employees of the library
- administrative people's support
- network engineers and technical people

The employees of the Engineering library should know well about the following while implementing the Digital library concept.

- co- ordinating, planning and operation for the computer Hardware and Software dedicated to library function
- identify the user need
- prepare a website
- knowing how to use the ICT tools & match the query with the available resources on the net
- identify the most relevant using the opt search technique
- communication skill for articulating his/her information needs
- check the e collection for books & journals
- access right provision for various types of the user
- overall management of the digital library service

8 RESOURCES AVAILABLE ON THE NET FOR THE ENGINEERING LIBRARIES

Librarians have to setup their subject based web pages through which they can be provided links to various Internet Information Sources. Web based services include electronic reference service, request for book ordering and Inter library loans, renewals of books, etc., By

preparing the web indexing for the engineering subject by categorising the sub branches and putting this in their web will help all the academic users. They can become a member of various institutional libraries and the resources can be shared electronically on request. The digital resources like Email, & Browsing with Multimedia application, OPAC, E books, E journals, E Business, etc., helps the librarian to serve in a better way.

The librarians are now interested in providing services in the form of a) online presentation with multimedia effect, b) dynamic content generation in the web, c) the integrated facility, d) preparing a learning centre with a decentralised model.

9 TYPES OF ELECTRONICS BOOKS/JOURNALS

The books and journals have been now a days published thro' internet. Some of the types of e-journals and e-books are Online books/ Journals, CDROM books/Journals, Networked books/Journals- Only online, Both online & Hard copy, online abstract & content alone.

10 E- BOOKS

e- books are books in file format in the computer, which can be read with specific software. It is interesting to read with animation, sound etc., they are faster, cheaper, searchable and can print, make a copy, etc., some of the soft ware used for E Book reading are Acrobat e-book reader/ glass book reader, Microsoft reader, Net library e- book reader.

E- Book Providers : a. University of Virginia- e book library, b. NAP open look, c. Netlibrary, d. e- bookpalace, ex: www.free-ebooks.net

11 E-JOURNALS

Online journals are the electronic versions of the existing printed version Ex: The American chemical society, all journals are available through STN International. Another firm called EDUTECH India Pvt Ltd., (ENGINEERING KNOWLEDGE)is a pioneer in bringing a unique collection of the Engineering journals by providing the academics with the following facility

- Full text journals with images
- Search methods available- subject guide, keyword search, relevance search,
- Writing our own search on - screen search hints and descriptions

- Back up files from 1978

12 ENGINEERING E- JOURNALS FOR FREE OF COST

- Journal of research of the National Institute of standards and technology

http://nyl.nist.gov/pub/nistpubs/jres/jres.htm

MRS Internet Journal of Nitride Semiconductor Research

- http://nsr.mij.mrs.org

13 ADVANTAGES OF USING THE ELECTRONIC RESOURCES

The e- sources are minimizing the labour & time of the researcher and other users with the following effect.

- easy and effective retrieval search
- downloading the text, image, audio with the MM concept
- current information
- quick access thro' efficient search engines,
- teaching & learning process in a live manner
- teleconferencing
- retrieval thro' web indexing / meta data
- meet the people of the subject spcialisation
- vast statistical data

14 CONCLUSION

While looking in the above piece of work some of the suggestions are given for the better management of a Digital Engineering Library, since the students, staff members and other industrialists are running after time. The electronic library is a boon to the present and future generation to perform their academic work without any gap. Librarians have an obligation to guide the future of libraries by guiding the technical evolution. So the following should be borne in mind while going for the better service thro' the Digital Library.

- Training & Short term courses (Web Based)
- Use of CD ROM server
- Designing the web for individual library
- Connecting the departments with the library thro' intranet

- Conducting the staff exchange programme
- Prepare a separate web page before connecting thro' LAN
- Conducting demo on interactive method
- Attempt to collect more electronic items (cassetes, CD ROM, etc.,)
- Arrange to access to E Journals & Books
- Permitting staff members to visit more electronic engineering libraries

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PITCHING IN TQM AND IT TOGETHER IN LIBRARY AND INFORMATION SERVICES

Ranjita N. Dash*

1 INTRODUCTION

Library and information services are the core and ultimate objective of any library work. The library associations, library and information science professionals, both in India and abroad are struggling hard to get recognition and status in the upcoming generations. Contemporary library professionals are pondering over how to improve upon the quality of library services in order to provide efficient, pinpointed and exhaustive information services to users. Indian Library Association (ILA) is one of the best examples, which has always been striving for excellence in the profession and professionals are regularly conducting conferences, seminars and meetings covering relevant contemporary issues at regular intervals in different parts of India.

The technological revolution is affecting vigorously all spheres of library and information services in the present times. Globalization of economy and consequential international competitions have been defining the volatile nature of technology. Side by side, users high expectations are demanding forever more sophisticated high quality information products and services. Competition for resources, rising expectations of users, increasing complexity of information and provision from a variety of new providers, escalating costs and increasing fees have enhanced the operational transparency and accountability of libraries. Moreover, increasing awareness and consciousness of staff and users about good and bad, rights and

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privileges have made the situation more grim and complex.

Under the present situation, the libraries of today need to be updated every now and then. This has also made tremendous impact on the way information is stored, processed, retrieved and disseminated. It posses a challenge to the library professionals to catch up with time and calls for drastic changes in their approach in order to provide effective and efficient information services. Prevailing conditions are forcing libraries to adopt the basics of Total Quality Management (TQM) and Information Technology (IT) and if the library does not pay attention to user's need and does not provide content based and value added services, the need of the library would decline in the years ahead.[1] TQM is considered as "a way to improve the effectiveness, efficiency, flexibility and competitiveness of a business as a whole organization getting organized and committed to quality in each section, each function, each activity and each process and each person at each level.[2] Many of the management theories are also synergetic with organization and administration of libraries. The integration of TQM and IT is expected to help us in achieving the desired quality in libraries.

Section 1: An attempt is made here to highlight that IT is essential to get the best of TQM in library and information services. It points out that, to start with, certain specific library activities are to be identified, where the integration of the two is possible and easy to employ. The paper makes some tentative proposals in this direction. However, to achieve the goal, the concept of a resource constrained regime has to be kept in mind and the services offered will have to be made internally efficient and externally effective. The application of TQM in the context of library field seems to be of comparatively recent origin. The father of Indian library science, Dr. S.R. Ranganathan, did of course prescribe in 1931 some measures similar to TQM process. His explanation for the term "Documentation" as pin-pointed, exhaustive and expeditious organization and retrieval of information is what is the sum and substance of the TQM approach in the library context.[3] Similarly IT is also related to the internal efficiency of the library. It fulfills the fourth law of Dr. Ranganathan i.e. "save the time of the reader/staff." It is unique and has become an indispensable tool for every organization to improve its efficiency.

The concept of TQM was developed by Deming[4], Juran[5] and Crossiby[6]. The latter points out that, if people do not believe that zero defects are possible, they will never achieve that goal for quality

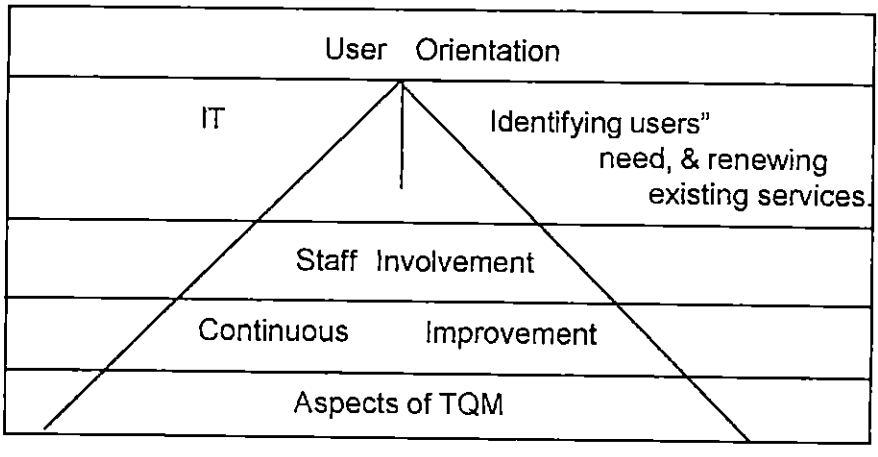
management. He emphasizes on 4 absolutes, which are: (i) Quality is defined as conformance to requirements; (ii) The system for causing quality is prevention; (iii) The quality performance standard is zero defects; and (iv) The measurement of quality is a price of non-conformance. Application of IT can help the librarians not only to solve problems related to information explosion and other specific problems but also to provide effective library service most economically, accurately, promptly and exhaustively.

Although TQM has gained so much of importance, it has no concise definition. According to Feigenbaum, "it is an effective system for integrating the quality development, quality maintenance and quality improvement efforts of various groups in an organization so as to enable production and service at the most economical level which allow for full customer satisfaction"[7]. Banerjee and Narayan[8] have segregated the three components of TQM to bring out its meaning; "By Total-all areas and functions in an organization, all activities, all employees, all time; By Quality-product on service that totally satisfy the customers' needs and expectations in every respect on a continuous basis; By Management-it requires to be planned and managed". Similarly IT is unique to this century and has become an indispensable tool for every organization to improve its efficiency. Today, IT offers a new way of achieving existing task or fulfilling existing functions in library and information activities. UNESCO[9] defines IT as, "scientific, technological and engineering disciplines and the management techniques used in information handling and processing; their applications; computers; and their interaction with man and machines; and associated social, economic and cultural matters".

"TQM is a viable management strategy for delivering high quality service. It is a strategy for Human Resource Development (HRD) as well as Organization Development"[10](OD). IT is also contributing to this change and will have a major impact on the structure, management and mode of delivering the educational system[11]. Basically in libraries, a mere integrating approach is all that is wanted. The TQM elements, such as participative management, staff training and development, and responsive service users are already established concepts in university libraries.[12] As a result of these, libraries are in a position to expand and improve upon principles they already value and employ, while introducing new approaches to planning, problem solving, and envisioning future customer services and needs. TQM is nothing, but an amalgam of quality enhancing

concepts and techniques produced by management thinkers like Deming, Juran and Kaizen, just-in-time, statistical quality control, involving behavioural and attitudinal changes by all concerned,[13] having the characteristics of (a) focus on customer expectations, (b) prevention of problems, (c) building commitment to quality in the workforce, and (d) open decision making.

In Gilbert's words,[14] the aspects of TQM are as such related to IT. The interrelationship between the two is better understood through the following diagram



Source: Chetty, P.R and Kamaih, p.[14]

2 INTEGRATION

The library is a service organization. The fundamental characteristics of services are: (i) Intangibility: services can not be evaluated in advance of use, (ii) perishability: stock of the service element can not be held and services need to deal with demand and capacity directly; (iii) Simultaneity: the customer must be present before the service can take place; (iv) Heterogeneity: there is inherent variability in the services offered.[15] In librarianship, stock, staff, services and users are the four variables. Among them, the size of staff is remaining stable or may be decreasing gradually due to the new technological developments, management techniques, application of IT etc. Now, governments all over the world have started encouraging various organizations to develop easy methods for information collection, storage, organization, processing, analysis, presentation,

communication and dissemination of data. For decision making, use of mechanical or electronic means, such as computer etc. are also being widely used. Hence, the active libraries and librarians should have an eye on not only providing the users up-to-date library services, but also contemplate upon shaping the libraries for the hi-tech generations of the future and adopt modern management approaches to analyse, introspect, extend and enhance the good library services.

3 VIEWPOINTS

A great deal has been written about TQM and IT. But to-date, one finds only a few of it related directly to library and information services. A few selected relevant ones are worth mentioning. Anuradha,[16] discusses the application of TQM in libraries and examines especially from the context of IT and proves that IT is essential for sustainable development in library and information services, such as, activities going on in acquisition section, automation of serials control, computer application for circulation work as well as in cataloguing and indexing work, administrative work. Debas and others[17] make similar contentions but stress more on the potentiality of IT in enhancing the accessibility of information. They have highlighted the impact of several technogical stages of mankind on information

handling activities and categorize the libraries accordingly. Biswas and Kanchan,[18] focus on TQM in libraries. They argue that without quality management, efficient and effective information service is not possible in this new era. Chetty[19] and Raina[20] discuss the impact of TQM techniques, which provide a powerful framework for rendering effective services in all activities in all sections of a library and is the only efficient tool for innovative change in the library. Rattihali[21] has talked in detail about TQM in the context of library and information services. He has said that, there is a dire need to contemplate about acquiring and organizing learning resources and satisfying the ever increasing and complex information needs of the various types of readers.

From the above studies, one can understand that TQM becomes integrated into all aspects of the organization's identity. But, most of the library related works on TQM and IT tend to focus on activities and things rather than on people. Quality in services can not 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. It requires a new attitude of thinking and strong leadership at all levels. Responsibility of the players to pitch the ball at the right pace, and in the right direction to get the best result is analogous to the responsibility of the librarians. Success in a team game lie in the synchronized efforts of all the players. Library and information services are no different. Application of TQM and IT has therefore to be all pervasive.

3 APPLICATION

The most aggressive proponents of quality improvement would argue that every organization irrespective of its purpose, size and number of services and number of users, would benefit from the introduction of TQM or a similar type of technological system of quality improvement. The aim of TQM is to broaden the concept of quality. The staff of any organization, should first understand what TQM is and how it will help to provide better service to the users according to their needs and expectations and its integration with IT for the betterment of the quality in different areas of library work.

Under Indian situation, where initial steps are being taken up in applying TQM and IT, it is contended here that certain specific areas of the services may be identified first, where the application is easy and most urgently required. At the outset, one can visualize an easy integration of TQM and IT together profitably in the library functions; such as technical services and readers services. Practice of course, would bring out the finer nuances of it. The subdivisions of technical services include, acquisition of materials, classification, cataloging, organization, binding, weeding out of reading materials etc., where as, the readers services, include circulation work, reference work, bibliographic service, information service etc. Here the staff is in direct contact with the readers in providing library services. Besides, there are other services such as lending services, bibliographic instruction and library orientation, provision of general and specific information, assistance in the location, searching of documents or readers advisory services, selective dissemination of information, compiling bibliographies, preparation of abstracting and indexing services, reservation of documents, inter-library loan, holding of library exhibitions, including display of new additions, current awareness

services, reprographic services and translation services. All these activities are very much near towards the basic function of the library such as: (1) Acquisition (2) Organization and (3) Dissemination of Information.

An attempt is made here to discuss the activities carried out by these functions of the library and their end results after adoption of the new technology i.e. TQM and IT.

4 ACQUISITION

The process of acquisition involves selection, ordering, receipts and payments, budgeting. Libraries, generally select learning resources on the basis of users requisitions, reviews, subject literature, publishers catalogue, trade literature, bibliographies etc. To carry out these processes 'user survey' should be done to find out the user needs and requirements. Raina and Rattihali[22] stress that, for better library management, besides user survey, proper acquisition policies must be framed to ensure qualitative and well balanced growth of the library collections.

Whatever may be the policy, computerizing the activities in the acquisition section and the processes, help to reduce order backlogs, and acquisition costs, speeds up ordering work, improves fund control, and to achieve compatibility with Resource Sharing and Networking Libraries for healthy collection development. Both TQM and IT are also applicable to periodical section for procuring documents through several operations, such as, subscription, issue management and circulation etc. Their application can facilitate not only speedy and precise operation and flexible presentation of information on varied enquiries but also would fulfill the requirements for processing all the operations to achieve the set goals of automation. The availability of Union Catalogue would also help a lot in this regard.

5 ORGANIZATION

The main activities involved in "organization" are classification, cataloging and subject key word indexing. The traditional schemes of classification, try to confine the multi-dimensional knowledge to a uni-dimensional order. Library automation and creation of databases, establishing local area network(LAN) would lead to quality improvement in the technical services being offered. The catalog

prepared according to the latest codes and making necessary modifications in the existing practices, are also essential. A good catalog serves the multi-dimensional approach of the users.[23] The concept of TQM imbibe maximum convenience for the users of the library. In the present, due to the integration of powerful computer devices and library software, the users can get the document and information quickly.

6 DISSEMINATION OF INFORMATION

The user specific needs in any library should be taken into consideration for a proper resource development and utilization of available services. In fact users are directly related to the library services. Dissemination of information as a function is classified into two types i.e. general type and specific type. Circulation service, instruction and assistance, reference and information services, inter-library loan service, and reprographic services are considered as general, whereas, documentation services including CAS and SDI, and maintenance services are considered as the specific type.

7 CIRCULATION SERVICES

Circulation service as a library function is believed to have started around the middle of the 19th century and it has considerable influence upon the charging and discharging systems. Most of the libraries followed the Browne system and a few adopted the Newark charging system. Circulation of library material is carried out manually. TQM in circulation can provide quick and accurate access to information concerning, (a) where a particular document is at any point of time; (b) when due for return, if issued; (c) how to reserve it; (d) subject-wise/area-wise issue and return statistics etc. – all of which are so essential for judicious and optimum use of the collection. Computer application to circulation work will help to process information in detail, which automatically would save the time of the reader and the staff and help in maintaining quality in charging work.

7.1 Instruction and assistance in the use of learning resources:

TQM in library and information services is a long term and wider process. Initially, it may be expensive to implement, but in the long run will prove economical and the most suitable tool. Due to the

proliferation of information, multidisciplinary nature of subjects, complex nature of information sources and increasing needs of the users, there is an urgent need to identify and understand the expressed, unexpressed and dormant information needs. TQM can fulfill all the requirements in this process. Starting with information gathering to dissemination operation TQM will prove quite helpful and beneficial. Users can continuously and regularly be acquainted and updated with the learning resources held by the library in their respective areas of interest. The user community should be encouraged to approach the library staff for assistance and instruction and make the best use of the library services in hand. IT application demands trained personnel to handle information storage and retrieval in libraries. It is not possible to recruit fresh staff as and when new technology is introduced for quality improvement rather, the staff training programmes at regular intervals would immensely help to achieve TQM in libraries.

7.2 Reference and information services: These type of services, as the name suggests do not mean that they are restricted to the reference section only, rather, give qualitative treatment to reference queries. TQM approach advocates for "better" service rather than "more" service. Hence, IT to be incorporated and integrated with TQM to achieve better quality in collection, storage and retrieval of information.

7.3 Inter-library loan: This is an age old concept. All libraries are not physically able to acquire all type of learning materials. If inter-library loan service works out in a proper way, then it would be a great boon for the library professionals as well as for the users. On-line access to bibliographic and referral databases can most conveniently take in use the developments in the field of computer application in order to process bibliographic information. Networking is also another useful facility which can be used to distribute and share information among the libraries irrespective of their situation.

7.4 Reprographic Services: TQM aims at minimum time and maximum effect in photocopying. Experienced and well-versed staff engaged in handling such services have not only attracted users to the libraries but also minimized document losses, page tearing etc.

7.5 Documentation Services: To provide better service quality, there

is a greater need to improve and strengthen the current awareness services and selective dissemination of information services. Use of modern technology is very helpful in preparation of documentation list and circulation of information without loss of time. It relieves the staff from doing routine jobs in the library such as, circulation of current contents, current additions etc. "Since, the national and international services are selective, they can be compensated by well prepared and up-to date documentation list covering exhaustively the periodicals received in the library and will improve the library user relationship which is the cardinal requirement of the library services".[24] The use of IT has enabled the libraries to assist the free flow of information and ensure every piece of information to its users .Some computer based information services, such as, MEDLARS, INIS, AGRIS, BIOSIS etc. are offering wide range of comprehensive access to information at national, regional and international level.

7.6 Maintenance Services: The quality of library service does not depend only on the intellectual standards of the resources. It depends upon how far they are able to meet the information requirements of the users and how efficiently they are organized. Quick and correct replacement of documents after use and timely adoption of preservation measures help in quick retrieval and longer use of documents and thereby contribute to the efficiency of library service.[25]

8 CONCLUSION

Based on the available current literature, the study makes significant revelation concerning application of TQM and IT to the library and information services. It is observed, in the first section that, although the application of the TQM and IT to library and information services is not very old, of late, many library professionals have started showing keen interest in their application. One comes across several studies advocating strongly in favour of application of TQM and IT in the different areas of library services. What lacks in the prescription of most of these studies is the focus of attention. Rarely one encounters a study which stresses on the human biasness of TQM as far as library services are concerned. Library being a public service, demands on the staff to the positively sensitive towards the requirements of the users and carry this as a professional attitude. TQM does contain it within its framework and for library professionals this aspect of it has to be the basic. This implies that, for successful

application of TQM and also IT in library and information services, the staff should first be trained. This training has to be

different in the context of library and information services because of their characteristic features. The difference lies in highlighting and conveying the staff the professional ethics of the service which is also one of the basic tenets of TQM. The present study makes it quite clear that quality of library services can not be improved simply by high investment of information resources and/ or IT alone. Quality comes from people and is consequential to attitude, value and culture of the people who man a service. In the context of library and information centers, these qualities are to be, therefore, inculcated through professional training of the staff simultaneously with the application of TQM and IT. This can only be achieved with a strong leadership determined to sustain the quality of the service.

Perusal of on going literature on application of TQM and IT in library and information services in the second section, makes their relevance evident. However, simultaneous pitching of the two is rarely stressed in only a few studies. Reference to the understanding of the concepts of TQM and IT, rather very clearly suggest that they are two parts of the same coin. While the former specifies methods and approaches effectively, efficiently and sustainably managing the various processes of an organization stressing on the human resources, the latter does so stressing on the technical resources. Either is therefore, indispensable. Implicitly, for contemporary library and information service centers, sustainability depends absolutely on the harmonic integration of TQM and IT at each and every level. To start with, it is assumed that their application is not only possible but also easy in the acquisition and circulation sections of any library. Even in these sections initiation should be at the grassroot level. Theoretically, at least, the paper makes it clear that in certain areas of library management the pitching in together is feasible. Practice only would enable the library professionals to achieve proficiency and perfection in their application.

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PROSPECTS OF DIGITAL INFORMATION SYSTEM AND SERVICES IN NATIONAL METELLURGICAL LABORATORY (CSIR), JAMSHEDPUR

P N Mishra*
S N Mishra**

ABSTRACT

NML library plays a pivotal role in the development of R&D in particular and society in general by providing information in the field of Metallurgy and Materials Science.It was established on 26th November 1950 at Jamshedpur, Jharkhand (Earst While Bihar). The Library has helped to carry out basic and applied research in the field of Metallurgy, Materials Science and allied discipline. One can find here a bound volume journals of 1891 to latest on-line database pertaining to on going research. The information technology has changed the complexion of library in a big way with the current thrust on availability of the latest information for research and development .In order to make automation, the manual information storage and retrieval system is currently being converted into digitised form by using AURUM-version-4.The secondary source is supposed to be Bible for R&D Library is being currently provided on optical media..To access the database on Internet,the useful World Wide Web has been identified and free information provided by information society has been downloaded on Intranet. The Council of Scientific and Industrial Research started to procure Electronic Journal from Elsevier publication and getting the same in electronic mode. The present paper discusses various factors involved in transformation of traditional libraries into electronic one and the information available on Internet fall in the NML domain.

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1 INTRODUCTION

The National Metallurgical Laboratory (NML), the third in the Council of Scientific and Industrial Research (CSIR) family of 40 Laboratories is a unique 52 years old R&D house of invention and innovation. The fraternity of scientists, managers and engineers has made its presence felt by delivering R&D products and services in the field of minerals, metals and materials sector in India and abroad. The NML has well-equipped Information Centre, rich collection on Materials Science, Metallurgy and Mineralogy. As a supportive service, library has helped the laboratory to develop more then 120 process and carry out basis and applied research pertaining to the specific field (Metallurgy, Materials Science and Mineralogy) of Science and Technology. Library support to R&D activities by providing information through various sources and repackaged in such a way that reader can access without any problem. The secondary source that is supposed to be most essential for R&D activities being currently provided through CD ROM. The bibliographic data base currently being available on Metadex, Compendex and Engineering Index.

The library possess 50,000 documents, which comprises Books, Conference Proceedings, Reports, Standards, Patents, CD-ROM, Microfiche, Audio-Video materials etc. Some periodicals (Bound volume) of 1891 onwards you can find her. The bound volume journal is planned to convert into Microform. On the other hand for the latest on-line journal one has to login on www.sciencedirct.com.

2 REASON OF AUTOMATION

Due to the changing scenario and advancement in science and technology some factors have effected to convert the manual library database into digitised form:

- Increased volume of library activities
- Need for improved control over operation/collections.
- Improved services to users in terms of – quality, user friendliness, regularity, speed.
- Need to prevent duplication of effort.
- Need to operate with existing staffing patterns/conditions.
- Need for co-operation and shared utilisation of information.[1]

3 LIBRARY AUTOMATION

After evaluating various factors like – hardware and operating system, functions, system features, data entry, multiple script acceptance, performance, documentation, customer support and training, system features customer support, security, acquisition, OPAC, circulation, the AURUM is planned to select for library automation. Various libraries in India are currently using the same library software.

AURUM has the following peculiarity:

- User friendly graphical interface
- Online help
- Web Access
- E-mail Integrity
- Compliance to administrative and financial procedures of government
- Personalised correspondence contents for report

4 RETROSPECTIVE CONVERSION

It was decided that Retro-conversion would cover the data entry of fields like. title, author, imprint, collection, series statement, key-words, call no, accession details and copy specific information for the collection classified will have three major groups a) Books, b) Bound Volumes of c) Journals and Specification. The data entry for books was done using library accession register as the source, while bound volume journals and serials were entered from Kardex.

5 EXISTING ELECTRONIC FORM

Besides repackaging of available resource in digitalised form, the library has started to procure e-book and e-journals. The bibliographic database on Metadex, Compendex and Engineering Index currently being provided in electronic form. Last year, library procured ASTM & BIS in optical media, the total numbers. of CD-ROMs is around 400.

a) The information explosion resulting in abundant information in all domains of knowledge

b) Deficit financial status of library discouraging the purchase of

information resource in print medium

c) Reduced shelving space

d) Availability of personal computer and access to telecommunication facilities at reduced cost has enabled most of the libraries to go in for computerisation

e) Availability of information in electronic media such as CD-ROMs. magnetic discs etc.,

f) Access to wealth of information via internet

5.1 Electronic Journal

CSIR E-journal consortium started form June 2002. Being a family of CSIR, NML is taking full advantage by accessing 30 on-line journals of Elsevier and its allied publications in the field of Metallurgy, Materials Science and Mineralogy. It is a web based database, which contains more than 1700 Elsevier Science Journals in life Sciences, Medical Sciences, Physical Sciences, Technical and Social Sciences. It also contains abstract of core journals in the major scientific disciplines. The journals are arranged under subject headings and each subject category expands to many sub-categories. Science Direct is one of the world's powerful research and reference services. Browsing TOC (Table of contents), search lists, current and back issues of specific journals (1995 onward only for full text articles), user's specific alerting subject facilitate to identify new addition to the database. Document delivery services is also available in Science Direct database. In addition to full text journal articles, Science Direct also contains abstract database covering core journals in the major scientific discipliness wherever full text of the article is not available in Science Direct, a link to commercial document delivery service provided.[2]

One can access Abstract, Summary + full text and reference by Login on www.sciencedirect.com. and following feature make user friendly.

Full Text Article Access:'Users will have unlimited access to the full-text of journals subscribed by library simultaneously a number of users can log onto www.sciencedirect.com to have access to the full text articles of the journals.

Unlimited Access: Users can view, print and down load the articles

with no restrictions whatsoever on the numbers.

- Seven-Year back-files: Users can have unlimited access to more than 7 years of back files of articles for the journals subscribed by NML Library.

Flexible Abstract Display Options: With relevance ranked abstracts are based on the occurrence of search terms or chronological listing based on data of publications.

Three Formats for Articles: Summary plus, HTML and PDF.

Powerful Search & Browse functionality across all full text and abstracts on a robust and scalable system users can perform search both basic and advanced and can set up alerts to receive information by e-mail on articles of a researcher's interest.

- Personalised Access Options: Users can customise their access to Science Direct by setting up personal accounts they can set up personal profiles, customise the search features, receive e-mail alerts of new articles etc.

E-mail alerting can save a particular search so that it periodically runs the search automatically and e-mail the results to the research.

Cross linking: You can link from a reference citation at the end of a full text article resident on other publications websites because of the SD gateways such cross reference.

Article In Press: Access to articles that have been accepted for publication enabling access to very latest in research.

- The new electric publishing methods are likely to improve greatly scholarly communication, partially through more rapid publication, but also through wider dissemination and a varity of novel feature that cannot be implemented with the present print system such as reference in a paper to latter paper that cite it.

5.2 Bibliographic database

Following database available on science direct, is supposed to bible for our library.

a) Science Direct Navigator
b) Belistein Abstracts
f) FLUIDEX
g) GEOBASE

c) BIOTECHNOBASE
d) Ei Compendex
e) Elsevier BIOBASE
h) Ocean Base
i) World Textile

6 INTERNET RESOURCES

In order to keep abreast with latest information in the field or Metallurgy, Materials Science Mineralogy, the Internet service is most useful. It is an effluent source of information and has a great impact in changing the role of Information Scientists in the new millennium. The scope of a library is not just with in the four walls of a library. It is much beyond this, as the whole world of information is getting into one fold under the umbrella of Internet. The problem of plenty (of information) acts a barrier in getting the "Right Information at the Right time to the right customer". Design and development of a library service such as "Virtual library" will provide right to the scientists' community in a specialised library.

For designing virtual library (Diagram 1-3), we have identified some categories of information requirements of Metallurgy. The basic purpose of this is to assimilate variety of information required by metallurgist are:

1. Books in Metallurgy
2. Journal in Metallurgy
3. Institution/Organisation
4. Additional E-information source

In connection to information retrieval, the search engines – Altavista, Excite, Hotbot, Infoseek, Lycos, Goggle, Yahoo are used as a base to identify Web sites for variety of electronic, information. The information about books is available in "Excite", Amazon.Com and Yahoo.com.

6.1 Metallurgy Resource

One can find plenty of resource on World Wide Web http:/1 steelynxnet/metallurgy.html. This site equipped with latest research and development in Metallurgy. It provide information on worlds premier Institution, Organisation, Company, Universities Government sites, Archeo Metallurgy site pertaining to the field of Metallurgy and allied

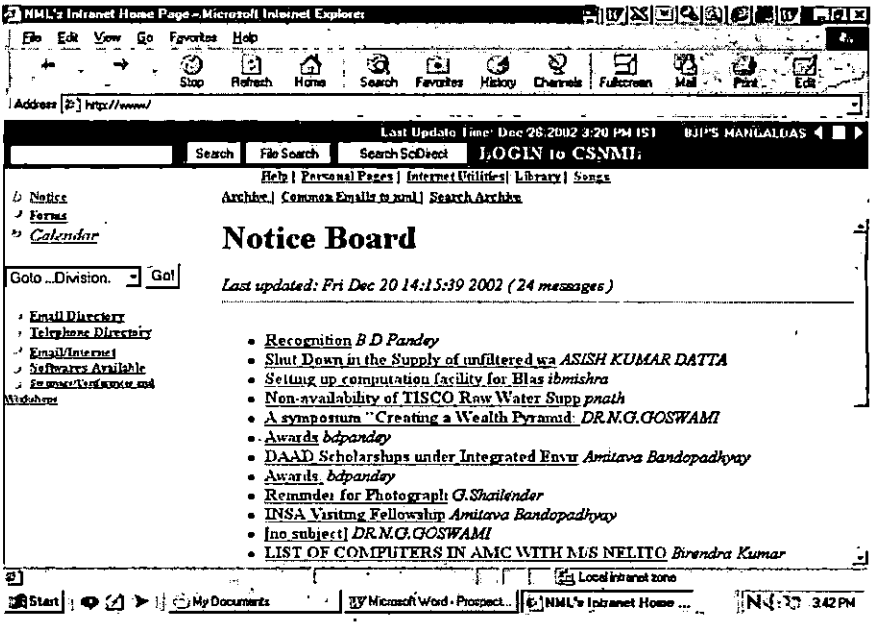


Diagram 1: Depicts NML's Intranet site (Home page)

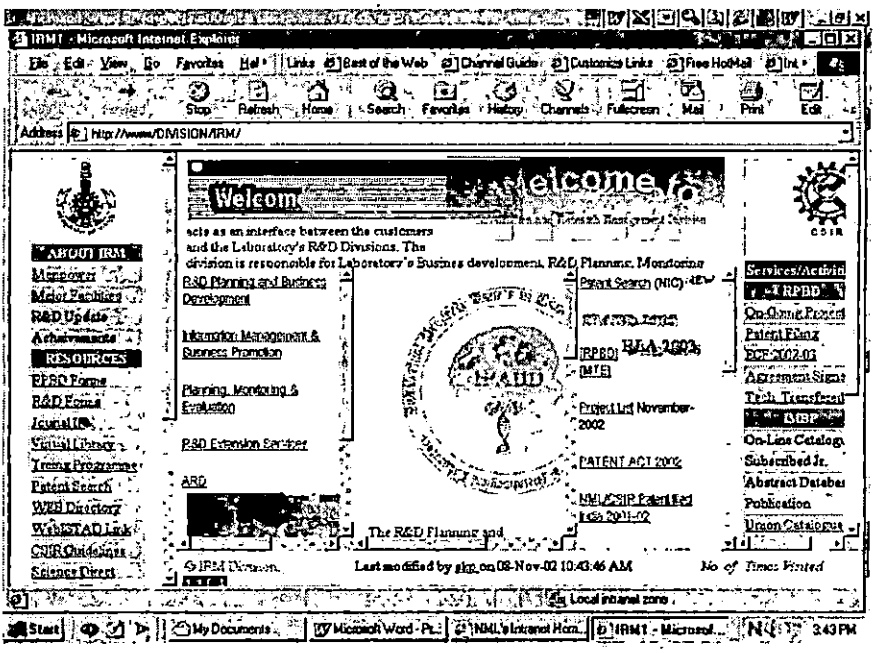


Diagram 2 : Depicts Information research and Management Division

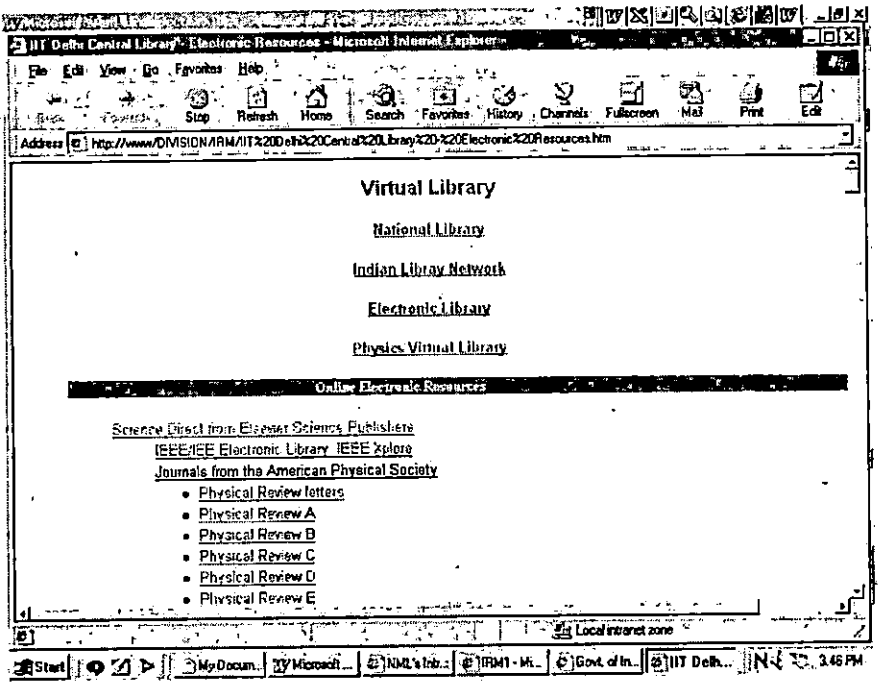


Diagram 3 : Depicts Virtual Library

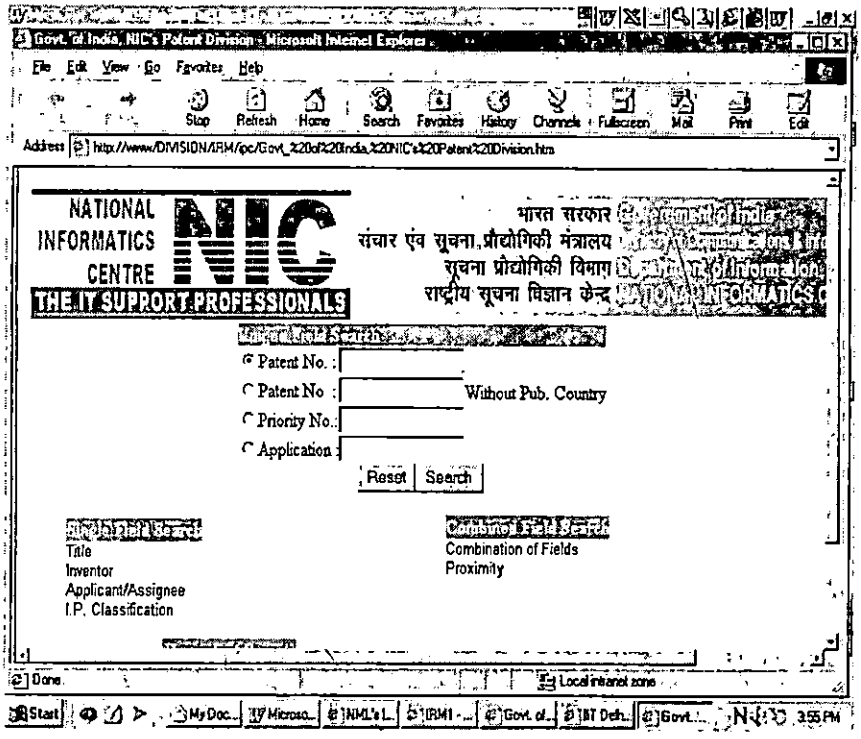


Diagram 4: Depicts Patent Resource site

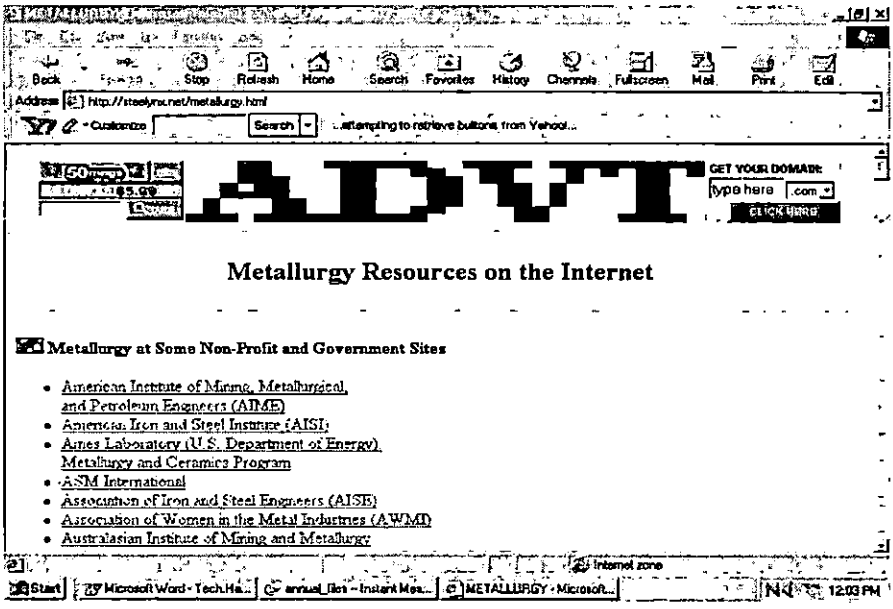


Diagram 5: Metallurgy Resource on the Internet

disciplines. Some on line metallurgy journals are also available on this site Besides these, some meta sites with multiple links to metallurgy makes quite impressive.[3] (Diagram 5)

6.2 Patent Information Service

Patent information on web sites are also available with general information for obtaining patents, list of publications. Offices like USPTO, IP office of Brazil, Hungary and Canadian patent offices provide access to bibliographic data and abstracts of patent's current awareness service from bibliographic database searches are made by inventor's name, applicant's name, classification symbol etc. It is a free access service for the users http:// patent.scnidr.org/ Biotechnology patents, http:/www.inform.umd.edu. 8080 /Ed Res/ Topic/agrev. Biotech patent/Chemical Patent/ from Chemical Abstracts, http:/casweb.cas.org/chempat plus. New patent titles are also obtained on free of costs along with weekly mailing of all patents issued by the patent office. Patent title and patent numbers of mechanical, chemical and electronic patents are available on patents @ world.std.com. (Diagram 4).

6 CONCLUSION

Information Technology has changed the exiting scenario of libraries. To tackle the information explosion, changing needs of users, library budget constraint pave the way to opt new technology. The NML library started its journey from print to electronic from 1994 as availability of secondary source in optical media. Now one can find here on-line journals. It hopes that NML library support R&D to develop new products and services by providing latest literature from primary, secondary and tertiary source.

Arrival of publishers of scientific journals and their access on web site help the management to cut short their budget allocation for subscription of current journals.

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THE ROLE OF DIGITAL INFORMATION SPECIALIST IN REFERENCE SERVICES

K Renuka*

ABSTRACT

"Librarians are more than technicians. They are information therapists who analyse problems as well as find answers.' (Nardi, O'Day, and Valauskas, 1977)

1 INTRODUCTION

Digital reference services, also called "Ask-An-Expert" (or "AskA") services, are Internet-based question and answer services that connect users with individuals who possess specialized subject or skill expertise. As opposed to static Web pages, digital reference services use the Internet to place people in contact with people who can answer specific questions and instruct users on developing certain skills.

The people who serve as digital reference "experts" can be referred to as **information specialists**, because they fulfill a role similar to those in the library and information professions—they match people to resources or direct knowledge to satisfy specific information needs. Some digital reference services are geared toward helping K-12 students with school-related questions (e.g., **KidsConnect**); some are directed at K-12 researchers and educators (e.g., **AskERIC**); and others offer specific subject expertise to audiences of all ages (e.g., **MAD Scientist Network**).

Current digital reference services offer two main types of expertise—

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1. subject matter (providing mostly factual information) and
2. process (providing mostly resource referral and instruction).

2 THE ROLE OF THE DIGITAL INFORMATION SPECIALIST

Most model digital reference services agree that it is not enough for information specialists to simply offer answers. It is a goal of the Virtual Reference Desk to help digital reference services prepare users—students, teachers, parents—to become effective information problem solvers. In other words, information specialists can play a significant role in helping people develop skills for critical thinking and assessment of information resources. It is to design to position digital reference information specialists in that important educational role.

As a digital reference information specialist, it is an experience of several personal and professional benefits. It is to communicate with Internet users from all over the world, put people in touch with requested information, and improve the skills in information problem solving and using the Internet. Some of the electronic mail reference services are highlighted in this paper, to take a look at how the physical libraries of today are actually moving their services out into the networked world.

3 THINK ABOUT POSSIBLE SOURCES

The range of possible sources varies according to the type of digital reference service. The information specialists, besides relying heavily on their own subject knowledge will have to consult a variety of resources in order to answer a question or referring a patron to information (e.g., Internet, print or electronic reference tools, other people). All information specialists should be familiar with a variety of sources that support the service's subject area; this can include Internet resources (e.g., service archives or Frequently Asked Questions, external sites, etc.), printed texts, journal articles, and subject-specific databases or indexes. Information specialists should also consider referring users to other digital reference services that can answer a particular question more appropriately or with a different type of expertise. (Digital reference services can be searched using the Virtual Reference Desk's **AskA+ Locator).**

4 DETERMINE THE MOST APPROPRIATE SOURCE(S)

The decision regarding which source to pursue becomes easier with experience and is guided largely by common sense. For example, an information specialist might determine that an encyclopedia is the best source for a student asking for background on a well-known

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Kids and Teens - Fun | Health | Homework | Net Safety | Parents | Teachers
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Law - Copyright | Crime | Forms | more...
Libraries - Librarians | more...
Literature - Authors | Genres | Publishers | more...
Media - News | Newspapers | Periodicals | Radio | TV
Medicine - Diseases | more...
Men - Health
Music - Jazz | Lyrics | Rock | more...
Organizations - Associations | Nonprofits
People - Collected Biographies
Politics - Elections | more...
Recreation - Games | Gardening | Movies | Outdoor | Pets | more...
Reference Desk - Almanacs | Dictionaries | Holidays | Phone Books | Statistics | more...
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Science - Animals | Astronomy | Environment | Math | Technology | more...
Searching the Internet - more...
Seniors - Health | Retirement | Services | more...
Sports - Baseball | Olympics | Tennis | more...
Travel - Lodgings | Places | Transportation | more...
Weather - Tides | more...
Women - Health | History | Politics | Studies

topic like the brown bear or World War II, while the **VolcanoWorld**. Web site is a good source for current information on erupting volcanoes.

As previously mentioned, the best source for a particular question may be the actual information specialist who relies on his/her own expert knowledge. It is important for all information specialists to recognize the limitations of their expertise and to identify when it is appropriate to refer users to other sources including different digital reference services.

5 DIGITAL REFERENCE : HOW LIBRARIES CAN COMPETE WITH ASKa SERVICES

Reference service has long been a cornerstone of the library profession. When users approach the reference desk in their library of choice, they come armed with a set of expectations and assumptions. These positive and negative mental models about the library and the professionals who attempt to answer their queries are, for better or worse, ingrained in our culture, and carry over into the digital age. Few would argue that the era of research performed exclusively using print sources is long over. But users now expect librarians to search a combination of print and electronic sources to find the information they crave. Therefore, though the era of reference service provided only through the traditional physical setting may be on its way out the door, librarians now have the unique opportunity to create mental models of reference in the digital paradigm.

The growth of digital reference service is organic. The Internet brings libraries new modes of communication and outreach. It allows librarians to furnish information and services in a whole new setting. Reference is merely one of the services users can hope to find in the digital branches of libraries in the future. Currently librarians are experimenting with the implementation of reference service via e-mail, query forms found on their Web sites, and through chat sessions where users have the ability to ask and receive answers to questions in some semblance of real-time.

Librarians, however, are not the only ones attempting to assist users with their information needs in the electronic environment. There are also "Aska" services. These corporate-sponsored web sites allow users to ask questions and receive answers for free from public information located mainly on the World Wide Web or from proprietary databases and networks of field experts. Aska services exist on the

frontier of cyberspace, where libraries should make their mark as well.

Libraries provide quality information to targeted audiences while operating with less funding and marketing. Librarians have a distinct advantage of knowing how to perform reference; they are knowledgeable mediators who need only to modify their methods and give their services a facelift for the digital setting. For example, librarians know the difference between a biased and an unbiased source; they just need to share that information with the consumer. They need to learn to share it in a graphically palatable way to their electronic clientele.

Proper presentation of online reference service is essential as are explanatory materials that point out the differences in these services and why the library provides the proper one for users with scholarly interests. To create this format and prefatory material one must first understand what users want and need.

Users want high quality material as quickly as possible. They need to be guided along the pathway to gather that material. This includes making the library available to provide reference service through a multitude of communication devices at times that are convenient to its' clientele, and providing instruction about how to access reference service and how to phrase questions in answerable form, and about the value of the reference service librarians provide. In their physical locations, librarians already provide much of what users want and need: structure, service, human intermediation, and bibliographic instruction. The challenge before librarians today is to migrate these services into the digital environment.

Users of traditional reference anticipate getting personal service and vast knowledge held by a librarian when standing before the reference desk. They describe successful reference encounters as those in which the librarian is courteous and interested in assisting the patron. Users respect the queue but will not wait forever. Once it is his or her turn, the user expects the librarian's undivided attention and assumes the person helping him or her will be non-judgmental and interested in the question presented. Interestingly, in the traditional library setting, users seem to understand that no one person can answer every question, and will often return to the same librarian for assistance if they left the encounter with good feelings, even their questions were not successfully answered.

So how can librarians meet these needs for content and interaction?

Create policies for digital reference as one would do for traditional reference services. Personalize the digital service so that users can identify with the library from remote locations as they do in person. Remember that the usefulness of a tool is determined by the person wielding it.

Most likely the goal of digital reference service will be to supplement, not to replace, traditional reference service, but consider the users and collection, as well as the scope and limits of questions that can be answered online. Determine hours of online operation, create partnerships with similar institutions to extend hours, and outline management issues of the service. Set policies identify a minimum standard of quality and procedure to help ensure that all questions are handled in the same manner.

Web forms or other standardized query mechanisms could be designed to gather information the librarian needs in order to answer the user's question. Study online reference models already in use and brainstorm possible models of one's own to ensure the best interface for the specific population the library serves.

Creating a personalized environment should also be a priority. With Web pages already in place at many libraries, the reference department should build upon the strengths of what users are already familiar with. Portraying the librarian's helpful demeanor can be established by giving the reference staff a "face" on the site. This could include a group photo, description of skills, or other personalizing features. By showcasing the librarian's knowledge and reference service abilities on the web site, it is possible to engender trust and make connections. Take the time to look at Aska models. See what style of intermediary people respond to. Create one appropriate for the library.

Aska services assume the user will know where to find them but not how to use them. Should librarians proceed from the same premise? It is up to librarians to design effective systems that enable long distance reference interviews. The system must also provide service when it cannot provide answers, and must create a willingness on the part of patrons to return to the site if it is to be considered successful by traditional reference evaluation standards. Once the service is live, periodic evaluative processes and service upgrades should be established.

Digital and traditional reference services are not completely different

animals. In each setting librarians are needed to assist users in the definition of queries and to put them into searchable terms. Users need someone to teach them how to think about the search, how to carry out the search, and occasionally someone to perform the search.

Librarians should hold themselves to the same high standards in the digital environment as they do in the physical environment. Users should expect transparent, authoritative, complete, and timely digital reference service carried out by trained professionals whenever possible. Librarians should teach users how to form queries, how to utilize resources, and what information is reasonably within their grasp.

It is not enough to change what services the library will provide in the future; libraries must also address how to provide the service and why it is what users have been waiting for. By studying benchmarking criteria used to evaluate in-person, physical reference service in conjunction with examples culled from Aska services, librarians can create policies to implement the best possible models for digital reference service as provided by librarians. Librarians can take advantage of systems they created previously and alter them to fit the needs of the digital paradigm. If librarians create standards for how and when quality information will be delivered to patrons educated with the knowledge of what information to accept and from whom, libraries will no longer be beholden to the standards set by Aska services. Instead Aska services will find it necessary to keep up with libraries.

6 EXAMPLES OF A REFERENCE INTERVIEW

Librarians use what is called a reference interview to learn about and assess a client's needs. The reference interview is often an iterative process with much back and forth between librarian and client as they work together to refine the information need. This process can be quite delicate: many clients are unclear about their needs and a skilled librarian can help them specify and communicate their need. The goal of the interview is the disambiguation of the client's need. The librarian works for relevance feedback during the interview, asking the client "Is this what you mean?" and "More like this?" The librarian must learn about the user's context: knowledge of client's situation, history, and preferences, providing a context for the inquiry.

The following examples have been adapted from previously-answered questions of exemplary digital reference services. They contain

resource referral and/or factual information, instructional guidance (e.g., path to resources, tips on using information), and clear and effective language.

- General Reference - Science
- Educational Practice – Teaching
- Subject – Math
- Physician – Medical Librarian

1. General Reference - Science

Dear Geny,

We are studying biomes in science next week. My group is doing a project on tropical rain forests. Can you help us find Web sites?

Thank you very much,Glen, 5th grade

Dear Glen,

Thanks for your question. I have a couple good Web sites saved in my "bookmarks" file on

Netscape:

BIOMES

http://www.pacific-academy.surrey.bc.ca/ms/biomes.html

This site contains links to other sites with information on wetlands, temperate forests, tundra, savanna and grasslands, tropical rain forests, and deserts. Click on any of the links (highlighted terms) under "Tropical Rainforests".

TROPICAL RAIN FOREST BIOME

http://www.chicojr.chico.k12.ca.us/student/RainForest/Rainforest.html

This Web page describes the Tropical Rain Forest and explains the types of plants and animals that can be found there. You can take notes on the information that looks the most interesting to you.

I also did a search on Alta Vista <http://altavista.digital.com> using this search term:

+taiga +diciduous +biome

I found this good site:

Tour of Biomes

http://www.cotf.edu/ETE/scen/MSESE/earthsysflr/biomes.html

This site was created for middle school students. Pages are about the tropical rain forest, tropical savannah, mid-latitude deciduous forest, desert, subarctic taiga, and polar tundra. Click on the highlighted term "Tropical Rainforest" to read some interesting questions and answers.

I hope these will help your group. When you do your project, don't forget to write your own ideas and to cite your sources. Good luck!

Geny, Environmental Scientist.

2. Educational Practice - Teaching

I'm an elementary teacher interested in motivating girls to study technology. Do you have any information or research in this area?

Hello,

Thank you for your question regarding research on girls and technology.

In response to your request, I conducted a sample search of the ERIC database using the phrase: girls and technology. Below I have appended my search strategy, citations with abstracts, and directions for accessing the full-text. These citations may represent an introductory, rather than exhaustive, search for information on your topic.

If you would like to conduct your own free ERIC database searches via the Internet, please send a request for directions to askeric@askeric.org or go directly to http://www.askeric.org.

In addition, I have included Internet sites and listservs below. I found many of these sites using AltaVista (http://www.altavista.digital.com/) and the advanced search phrase (including all punctuation):

"girls and technology" | (girls ~ technology)

INTERNET SITES

* Center for Gender Equity in Technology, Science, and Mathematics Education http://weber.u.washington.edu/~cgetsme/temp.html

* Society of Women Engineers http://www.swe.org

LISTSERV DISCUSSION GROUPS

* GENED Discussion of gender and education, with K-12 emphasis. To subscribe, address an e-mail message in the following manner: To: majordomo@acpub.duke.edu subscribe gened

* FYI-For Your Information Discussion of K-12 education ideas using technology. For K-12 teachers, or those who provide instructional support for them. To subscribe, address an email message in the following manner: To: Listserv@ocmvm.cnyric.org subscribe fyi firstname lastname

ERIC DATABASE CITATIONS (1995 - September 1997):

- ERIC_NO- EJ541344 -TITLE- Girls + Technology = Turnoff? -AUTHOR- Valenza, Joyce Kasman -JOURNAL_CITATION- Technology Connection; v3 n10 p20-21,29 Feb 1997

- ERIC_NO- EJ541443 -TITLE- Girls and Computer Technology: Barrier or Key? -AUTHOR- Gipson, Joella - JOURNAL_CITATION- Educational Technology; v37 n2 p41-43 Mar-Apr 1997

If you have any questions or would like further assistance, please write again.

Den, Information Specialist

3. Subject - Math

Dear MathMasters,

If a red blood cell lives about 120 days, about how many times a year is each cell replaced?

Susan T.

Dear Susan,

To answer this question, you will first have to know how many days are in a year. If you don't know this number, you can find it by looking in an encyclopedia under the term "year". Ask your library media specialist to help you find an encyclopedia in print, on CD-ROM, or the Internet that will have this answer.

To find out how many times a blood cell is replaced during a year, divide the number of days in a year by 120 days (life of a red blood cell):

days in a year/120 days = number of times a red blood cell is replaced in one year

Good luck finding an answer and thanks for asking MathMasters!

Mary, B., Math Specialist.

4. Physician – Medical Librarian

In this example, a physician identifies an information need and approaches one of the medical librarians in his organization. The physician has a patient who is taking an herb the physician does not know much about. Here's a typical telephone dialogue between the physician and a medical librarian:

Physician: *Would you do a search on a specific herb taken for depression?*

The physician is well-aware of the availability of this service (and is able to search for the information himself, but prefers - due to lack of familiarity with the subject - that the professional librarian do it), having used the service before, and requests a search of the journal literature. The physician phrases his information need vaguely.

Librarian: *Are you looking for information for you or for information to give a patient?*

The librarian begins the process of defining the information need: if the information is for the physician, she knows that he will want articles from peer-reviewed clinical journals; if the information is to be handed to the patient, it will need to be in lay language and come from quality consumer health information sources. The librarian is eliminating uncertainty, defining the context of the information need, and establishing a profile of the information consumer.

Physician: *I have a patient who is taking some herb or other; she thinks that it will help with her depression. It's called St. something ...*

Librarian: *So you want information for you? So that you can advise her on taking this herb?*

The librarian continues to clarify and confirm the context of the information need.

Physician: *Yes. What do you have? When can I get that?*

Librarian: *OK, I will identify the herb and find general articles on its applicability to depression. How many years do you want me to cover: one, five, twenty?*

The librarian confirms the topic and begins to obtain specific limits on the need.

Physician: *Just the last five years. Can you fax that to me?*

The librarian obtains the physician's name, phone number, fax number, and e-mail address and the conversation ends. As she obtained the information from the physician, she filled in the blanks of an existing literature search request form.

7 CREATING A REPRESENTATION OF THE PROBLEM

The next step the librarian takes is to use this information to form the question in her mind.

"The librarian contributes to the client's activity and to do so effectively, creates a representation of the activity that guides and focuses the search. This representation goes beyond understanding the client's task, simplistically conceived, to a broader contextual sketch of the client, including the client's preferences, constraints, and environment." (Nardi and O'Day, 1996. "What We Learned at the Library," p. 75).

The librarian may sketch the search steps on paper, choosing databases, search terms, and operators or she may just form this representation mentally. She considers the cost of the search, the quality of the databases at her disposal, the customer profile, and the ultimate use of the information requested.

8 CLASSIFYING INFORMATION

The librarian's search depends upon the work of other librarians: librarians who classify information by indexing and abstracting the articles included in the MEDLINE database, the pre-eminent peer-reviewed clinical database, produced by the U.S. NATIONAL LIBRARY of MEDICINE. The articles in MEDLINE have been classified by extracting key concepts and assigning subject terms or matching subject terms to an existing controlled vocabulary, called MeSH (Medical Subject Headings). Many MEDLINE search engines automatically map a user's input term to the appropriate MeSH term (e.g., the user inputs "ear infection" and the system maps to "otitis media"). This expert classification scheme organizes the clinical

information into a database, so that a librarian skilled at searching can find the most relevant articles quickly and efficiently.

If the data were not so carefully organized, the librarian's work would be even more complicated. The World Wide Web, for example, is not well-organized: even the best indexing programs and search engines are inefficient when compared to the careful, standardized classification scheme applied to the MEDLINE data set. Indeed, the Web has been compared to a library with all the books pulled off the shelves and thrown in a heap on the floor. The classification of information that has taken place behind the scene is critical to the efficient work of the librarian in our example.

Finding Information

Once the representation of the problem is established, the librarian chooses which database(s) to search. Since this information will be for the physician's consumption, she chooses the MEDLINE database. Since the physician asked for the most recent articles, the librarian selects the segment of MEDLINE that covers 1996 to the present. Her next step is to choose search terms. Knowing that MEDLINE is based upon a controlled vocabulary, she enters the term "herbs" and then searches separately on "depression." She combines these two separate search sets with the Boolean operator *and*; resulting in one citation. She looks at this citation and judges it to be irrelevant; her search strategy must be reworked. Searching the broader term "alternative medicine" results in 5,847 hits; this set is *anded* together with the herbs set, resulting in ten hits. The librarian takes a look at these ten and finds a couple of them mention St. John's wort. One of the articles gives the botanical name of St. John's wort; she searches on that term; this search results in eight hits. She takes a look at these eight and sees that they map to the MeSH heading anti-depressive agents. She searches on this term, ands it with the alternative medicine set, resulting in nineteen hits. She limits these nineteen to the English language and to studies on humans; this narrows the set to fifteen. She takes a close look at the fifteen and weeds out three that are not applicable. She downloads these twelve to her hard drive. Knowing that the physician practices Evidence-Based Medicine (EBM, defined as "an effort to bring the principles of continuous quality improvement to bear on the patient care process instead of viewing practice as an art form, where each patient is treated as an experiment with an n of one" - Stead, 1998; p. 26), she reruns the same search in a database of EBM-evaluated articles (Cochrane Database of Systematic Reviews). This turns up

one article, which she looks at and then downloads. The librarian now has a total of thirteen relevant citations on the subject.

Once into the search, if she had felt that she needed more guidance from the physician, she would have contacted him and asked in which specific direction he would like her to proceed. For example, if her search had resulted in extremely high recall, she might have asked the physician how he would like the results narrowed; if she knew him well, she might know that limiting the set to review articles would be acceptable to him and therefore, she would not need to call him. Past experience with the client and knowledge of the client's context for each particular information request guides the librarian in her search: if this had been a first request from this particular physician, the librarian might have spent a little more time learning his specialties and preferences.

The best searchers feel their way through a search, using past searching experience and knowledge of the particular client, the subject domain, and the idiosyncrasies of the resource to balance recall (the percentage of hits found of relevant hits available) and precision (the percentage of hits retrieved that are pertinent) and to ensure relevance (the hits' fit to the need). This balance is delicate and dynamic and illustrates the real art of effective searching. The librarian also knows, from formal education, past experience, and a familiarly with the databases she is using, when to cut off the search. A search could go on indefinitely, database after database, if the librarian did not possess the expertise to know when to be satisfied with her results. This is a big problem in a medical setting, especially, when the searcher is tempted to think that if he or she keeps searching, they may just find that one article that saves a life. The cut-off decision is usually an intuitive one and an important one that maximizes the temporal, computational, and financial constraints a librarian must always balance with the desire for completeness of results.

9 FILTERING INFORMATION

"Information filtering is a process in which a filtering agent reads every document in an information stream and compares it to a set of interest profiles. If the document matches a profile, the filter sends it to the appropriate user's inbox or stores it somewhere for the user. The rest of the documents are filtered out." (Williams, 1996; p. 174)

The librarian filtered information in three key ways: first, the act of selecting a database or databases to search was a filtering activity. This choice established the constraints on the results and defined the search space, including the depth and breadth of the search. The second way the librarian filtered information occurred in the act of choosing search terms and operators (which also effects the depth and breadth of the search). Finally, when she eliminated false drops (noise) from the results, she was filtering the results the end user would see. Using her knowledge of the context of the information need and the profile she had constructed of the user, she was able to identify applicable results for the physician, relevant to the specific context of this particular information need.

10 PACKAGING INFORMATION

Librarians do more than connect people to raw information: they use their expertise to help clients make sense of information. Librarians usually arrange search results and other information products into customized sets for their clients. The librarian in our example used her selected citations to create an aggregated report for the physician. She probably added a cover sheet with the contact information for her library, cleaned up the citations so that the fields the physician needed were present and deleted any he would not need. She may have sorted the results by relevance, and she may have indicated on the report which articles were available in her files

11 CONCLUSION

Librarians can be seen as distributed, cooperative agents. Librarians inform and negotiate with each other; cooperation is built into the fabric of library work. It is not too far-fetched to say that there is no such thing as a librarian who works truly alone: one-person libraries certainly exist, but that lone librarian works within a library community. Indeed, there is a real international community of librarians. For example, a librarian can connect to a library system called **World Cat** and tell a client, within a couple of minutes, what libraries in the world own a certain book. Further, a librarian can, with a few key strokes, send a request to any one of those libraries asking to borrow that book for the client.

Librarians rely on each other in other activities: many librarians practice cooperative collection development. No one medical library, for instance, can afford to subscribe to all published medical journals. When considering a purchase, acquisitions staff check to see if that

title is owned by a nearby library with whom they have a cooperative arrangement.

Libraries communicate and share information to an amazing degree. Librarians are great users of Internet mailing lists; some of the highest volume lists are those run by and for librarians. Librarians are communicating all the time: via e-mail, phone, fax, and in person.

By the very nature of our work, librarians are collaborative creatures who communicate extensively and constantly. We distribute information, share documents, strategies, and innovations with each other. Those of us with expertise in the domain of medicine query librarians with expertise in the domain of law, for example. A single library can even be seen as a distributed system of agents: the reference librarian fields this inquiry, passes that one to the acquisitions staff; the systems librarian consults the clinical librarian ... Each librarian acts autonomously with the frequently used option of consulting another librarian-agent. Within the library field, librarians efficiently share specialized knowledge and skills.

Librarians are thinking hard about the future of librarianship. Are we redundant? Can we be replaced by intelligent systems? What do we have to offer that machines cannot replicate? One article on the subject suggest the following as "Critical Characteristics of the New Information Professional" -

- Guide in the face of an uncertain future
- Collaborate
- Prioritize and maintain agility and flexibility in the face of changing goals
- Empower
- Understand the core capabilities of one's organization, work group, and colleagues (Griffiths,1998, p.8)

These suggestions are almost identical to the goals of the development of intelligent software agents: disambiguation, collaboration among agents, the empowerment of the user, and the customization of information for a particular user. Librarians and intelligent software agents must work together to efficiently balance workloads in the most optimal way for a particular user and in that particular user's specific context. Librarians need to resist feeling defensive about our jobs and our value and keep our focus on which

technologies and which methods make the most sense for our clients. Once we decide upon methods, we need to do the best job possible to obtain those technologies, instruct our users as need be, distribute the highest quality content via our methods. Overly optimistic views of a technological future must also be avoided. The promise of easy solutions based on new technologies must be fact-based and proven. Who does the work is not as important as the fact that the work gets done in the best way for the client.

"Librarians are becoming more important in this information-centric universe. Intelligent agents will act as catalysts to enhance the role of librarians as the next century dawns, heralding a renaissance in information science and librarianship. Librarians have to fulfil the new roles as content providers, search strategists, digital catalogers, and information mechanics. These roles will only grow, and new opportunities will flourish, with the development of truly 'intelligent agents' that build upon the experience of librarians and information professionals." (Valauskas, 1997)

Our users are more overloaded every day and only a connectionist approach of intelligent work practices will best serve them.

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USERS' PERCEPTION OF QUALITY LIBRARY SERVICES IN DIGITAL ERA

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ABSTRACT

The paper highlights the difference that has occurred in digital & non-digital era. In the non-digital era the reference librarian acted like a contact person between print material & users; sieving through their demand & providing at times online (short range) and at others offline (long range) reference service. His role was more personal than technology dependent .For more than four decades now, information universe has changed along with fundamental changes in the technology he uses to process, store and retrieve information. Electronic, magnetic & optical devices like computers, CD ROMs, optical scanners, discs & networking have revolutionised the library spectrum. The computerization of library records and other bibliographical information and their networking has led to the development of OPAC (Online Public Access Catalogue). Access to ***ONLINE*** *information contained in electronic media has became the focal point of quality library service Further, even in the delivery of electronic information, the mode of delivery has undergone tremendous change from emphasis on single user through data base holders like* ***DIALOG*** *to direct service to the end user on single/ multiple use basis through CD ROM data bases and to the world wide* ***ONLINE*** *access to users through internet and networking of computers. New methods of access to electronic information as* ***Licensing of access*** *by publishers to their databases e.g. Elseviers' Science Direct; Springer Verlags' Link Service;* ***access on Consortia basis*** *&* ***Linking access*** *of Web of Science are emerging. In such a scenario users' perception of quality library services could be :*

- *Librarians to have good knowledge of the information needs, sources, trends & technology.*

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- *Imparting information skills to users to make use of the electronic information.*
- *Proper authorisation and authentication for use.*
- *Protection & privacy of personal data o users.*
- *Providing for networked learning needs of distant learning students.*
- *To provide for life long learning needs of users other than students and researchers.*

The difficulties faced by Librarian in fulfilling their expectations may be : To see through the technological change and to constantly keep on devising strategies of track the flux in the current scientific industry. To keep track of fluid data posted on Web Sites. Digital content may dynamically change when Websites are updated or moved to another site. The information may be effectively lost. Arriving at mutually satisfying negotiations while negotiating for consortia purchases or access. Physical deterioration of medium in which information is stored.In the knowledge universe, on one hand new micro areas like environmental science& energy studies are emerging as independent spheres of knowledge, on the other hand, multidisciplinary sciences like Bio-medical engineering Bio-technology are emerging to provide a common approach for solving an identifiable social issue. To meet the challenges of change in the universe of knowledge, technology and at publishing end, he Librarian needs to build a long term vision, however vague that vision may be towards which the organisation can strive.

1 INTRODUCTION

Users have always been the focal point of Library services. Way back in 1931, when Dr. S. R. Ranganathan enunciated his famous Five Laws of library science, the spirit behind was to carry knowledge to the door steps of those who lack it. His first Four laws are directly oriented towards satisfying users demand without any loss of time. The simple statement of 'Books are for use' makes them precious things, for unused things become useless and their existence meaningless. The essence of Second law 'Every reader its book' is in fact a statement of rights of people to have access to information and to enable them to play their role in society. In the same way 'Every book its reader' can be interpreted to convey that every thought or information should find its reader (1). The Fourth law 'Save the time of reader' highlights the fact that information as a precious commodity should be delivered without much loss of time. Such interpretations of documents /information contained in them remain the same in digital and non-digital era. In the digital era, the difference has occurred in the material handled and mode of delivery of service by the libraries. In the non-digital environment, the reference librarian

acted like a contact person between books (print material) and the users, sieving through their demands and providing, at times online (short range) and at other times, off line (long range) reference service. His role was more personal than technology dependant. Even then, to fulfil their urgent research needs, the librarian has to resort to non-print material like microfilms and micro- fiche etc.

2 CHANGING UNIVERSE OF INFORMATION, INFORMATION TECHNOLOGY AND MODE OF DELIVERY

2.1 Universe of Information

For more than four decades now, the information universe has changed at a rapid speed. In 1961, the doubling period for total scientific information was 12 to 15 years, by 1990 it was down to 6 years. Now there is a feeling that it may be as short as 2 years., although proving this for science is difficult now that the internet is a major publishing point.(2)

2.2 Emergence of Information Technology

Simultaneously, library automation procedures were following evolutionary process. Initially, during the 1970s the library systems were designed to replace cumbersome manual in-house library functions such as circulation of documents, serial control and cataloguing. The input of cataloguing data in Machine- Readable form has led to the growth of many bibliographic and other databases. The Eighties saw the evolution of these mundane system into online public access catalogues (3). Access to databases in electronic media and online information became the focal point of quality library services.

2.3 Change in Mode of Delivery of Service

Even in electronic media mode of information delivery has undergone several changes. In the Seventies, when there were limited number of database service providers, mode of information retrieval was through service providers like Dialog and Medline on single user basis. The cost of service was on the basis of access time which was quite high and on an average came to around Rs. 1000/- per query. Moreover, service from these databases were provided only through select libraries which have the capability to sieve through the users' demand and hook to relevant database to minimise wastage of time and thus limit the cost of service. The reference librarian had to spend a great deal of time with every library user refining his information need prior to connection to the database. This expert guidance meant that the user got the best possible answer to his

query.

2.4 Emergence of CD ROM Technology & Changing Users' Service Models

In the Eighties when reference works and abstracting journals began to appear on CD ROM these were still used by the librarian on behalf of users. The dictionaries, encyclopaedias and abstracting journals were the most suited reference works for electronic delivery. Oxford University Press was one of the first publishers to make its dictionary available on CD ROM. But the CD ROM technology was a different economic and technical model. Here the library could acquire the data base in CD ROM and provide the service to the users on its own end. It was almost a free service to the user at the end point. However, the provision of service through CD Rom databases has also seen many changes in service models, from single user stand alone model to CD networking on single/multiple users basis to Electronic Reference Library (ERL model). Through the Electronic Reference Library the access to information available on CD ROM and other magnetic media is easier and faster as the contents of CD ROM databases are transferred to a hard disk of ERL server. ERL server searches and retrieves information as well controls users access to the system.

2.5 Online Access

Access to online databases is provided through networks of computers and telecommunication systems. There may be local area networks (LAN) providing access within a limited area or wide area networks (VAN) extending access to information at distant places. The Internet termed as world wide web (WWW) has several URLs representing sites on which data is stored under different broad Headings used for classifying universe of knowledge. The Librarian in digital era is expected to provide access to relevant sites and also to cull out information from them relating to the field of interest to the researcher. Emergence of subject gateways or portals that provide structured guide to Internet based electronic information resources has been a very recent phenomenon. The subject gateways restrict their operations providing linkages to third party sources.

3 CHANGING USERS' PERCEPECTIVES

The key concept in users' perception of Quality Information is that they are increasingly seeking a one-stop shop to satisfy their information needs. In a digital world, surfing may be fun, but it is also time consuming. The users will expect the librarian to guide them to

access the resources within the library as well as outside its physical or virtual bounds to satisfy his demand for authentic information.

3.1 Proper Authentication/Authorisation

For providing access to online information to the users within and outside the four walls of the library, the users have to be given authorization to access the sources of information. They have to be given the range of IP addresses and passwords as provided by the publishers for accessing online information provided by them. The user identification numbers are to be assigned for bar coded issue of documents from within the library. The **students' enrolment number** can be used as ID number, as has been done at IIT Delhi Central Library.

3.2 Users' Orientation

The library users, especially, the new entrants are to be initiated to the use of digital information as some of them may not be exposed to these facilities earlier. The users expect that library conducts some kind of orientation programme for them giving preliminary introduction to the facilities available and how to go about making use of them.

3.3 Librarian's Awareness of Users' Information Need

Before a user is guided to online access, it is expected the librarian is aware which information is available online and on what basis. The scenario for information available online is also changing very fast. For an example, in 1994 only 39 journals were available in electronic form, two to three times of that number two years later, and over 1000 became available in 1997(4). By 2002, most of major publishers of scientific journals are offering online access to hundreds of journals published by them. In 2001-02 the IIT Delhi library signed licence agreement with the following Electronic Publishers for enabling the library users web based access to more then 1600 electronic journals (5).

1 Science Direct
(http://www.sciencedirect.com/)

2. IEEE/IEE Electronic library: IEEE Xplore
(http://www.ieee.org/ieeexplore/)

3. American Physical Society (APS)
(http://www.aps.org/)

4. American Institute o Physics(AIP)
(http://ojps.aip.org/)

5. ACM Digital Conference Library
   (http://portal.acm.org/dl/)
6. American Society of Civil Engineers
   (http://www.pubs.asce.org/journals/jrns.html)
7. Link Information Service (SpringerVerlag)
   (http://www.link.springer.de)
8. Nature Magazine
   (http://www.nature.com/nature/)

Most publishers offer electronic journals along side print version with free access (sometimes) for a trial period of few months to initiate the users into the service. The print plus online subscription to a journal would cost roughly 10% extra as a licence fee to the library. Many publishers licence electronic journals as a package deal of subject sets. For example, Science Direct of Elsevier Science offers over 1200 online journals with around 80 journals subscribed in print by the IIT Delhi Library.

3.4 Security of Personal Data

While enrolling or being a member of a library, the students/faculty provides important personal data to the library. Security of such personal data needs to be maintained by the library. The users expects that the personal data should not be used for purposes other than official needs like reservation of books or sending book arrival notices or mailing important information to them. Tempering with personal data can be eliminated by the library by allotting job specific identifiable user ID numbers and passwords to the staff performing the relevant functions. In UK the data protection legislation is in force since 1984.

3.5 Personalised Services To the Users

Since library membership may comprise of users of different categories and age, the users may expect personalised services according to their specific requirements. An academic library providing services to the undergraduate, postgraduate, research scholars and faculty members can visualise areas where personalised services can be extended. For example, a video collection of lectures delivered by the faculty in the classroom can be maintained for the undergraduate students. A database of all research articles published and Ph.D. theses submitted by the scholars and faculty can be maintained for the benefit of researchers. Users of specific subject areas like chemistry and textile can be

guided to subject specific services like Sc. Finder scholar of chemical abstract.

3.6 Networked Learning Needs

In an online environment, users demand simultaneous access to resources giving scope for networking information through LAN/WAN. In earlier times, an Abstract could be used by single user at a time. Their CD ROM version allowed multi user access and now, when the same information is downloaded to a hard disk under Electronic Reference Library facilities of Silver Platter, almost unlimited access could be provided to users through local area network. Such options of service by a library could be explored depending upon the availability of hardware and financial resources. The libraries of open universities have to concentrate much more on networked learning needs. Under Open university courses learners profile are quite different. Many adult learners taking different mode of courses on or off campus, manage multiple life roles. Their criteria for satisfaction from library services would include academic advice and support that is just in time, most relevant respectful and accurate.(6).

3.7 Online Enquiry Service

In an online environment the users may expect that their queries for information are answered online by the library to which they are attached. Providing facilities for 'Chat' between users and librarian during a particular period of time to answer their queries may be very satisfying service from users perspective (7). This kind of service enables librarian to conduct a kind of reference interview – expanding the query, drawing out the key points and offering alternative avenues in seeking a solution. Users can be referred to commercial Governmental, educational discipline specific websites and personal Homepages.

3.8 Hybrid Library Services

Even amidst all talks of digitisation of information contents, the books in print form continue to be in demand. Our experience at IIT Delhi Library shows that undergraduate level students concentrate mainly on textbooks rather than periodical articles or other kind of research materials. Books in print form remain in hot demand even in foreign countries even among efforts for popularising e-books. Richmond Public Library in British Columbia has piloted a project to deliver e-books to its users. The e-book readers preloaded with 13 popular titles were kept and demand was satisfied on reservation basis. But the fact that e-books are designed to be used with specialised readers

like Gemstar reader or Every book reader which are dedicated machines (with no other functionality than reading process) costing $ 299 to 600, put a question mark on their ability to replace printed books.(8). Moreover the membership of a library generally comprises of users of different age and interest and as such hybrid libraries will remain in demand. What these users want is the source and information and not exactly the format. The libraries have to find a shortest path to satisfy the expressed need for document/information.

4 EMERGING TRENDS

4.1 Print Plus Online Subscription

Publishers like Blackwell, Elsevier Science Springer Verlag offer a range of options through synergy of plus online and print journal system to ease transition from print to online (www.blackwell-science.com/online/default.htm).

Option 1 Combined subscription (print & online) 110% of subscription

Option 2 Only Online subscription 90% of print cost

Option 3: collection – one year deal for subscription on consortium mode, providing access to complete collection of journal titles to participating libraries.

Depending on the mission and its subject base a library has to judiciously decide about the suitable option, keeping in mind its present and future needs.

4.2 JSTOR

Besides deciding for online access mode for current information, the librarian may have to take decision regarding back period information, whether the readers interest are better served on having back files in digital form. An important example is JSTORwhich has the back run of 117 journals mainly in the disciplines of Humanities & Social Sciences. Current journals are not available with JSTOR, in some cases back files are made available after five years of print publication, and in other cases it may be only two years (www.jstor.org). The JSTOR was brainchild of William Bowen president of A.W. Mellen Foundation, and was originally conceived to solve space problems of libraries.(9)

4.3 Linking Access : Web of Science

It has been explained earlier that there are some portals that provide links to electronic information resources, but the information can be accessed only if the library subscribes to that particular site of the

publisher. The ISI WEB OF SCIENCE marketed by INFORMATICS INDIA LTD. is an example of this kind. It permits a scholar to explore and gain an overview of research area by providing multidisciplinary search facilities on keywords, authors and addresses for the journals covered in ISI citation indexes. It provides linkages to publishers full text electronic databases (presently 2400), but site can be referred only if the library subscribes to electronic journals of that particular publisher(10).

4.4 Electronic Resources Subscription On Consortium Basis

A recent trend among libraries is resorting to electronic subscription on consortium basis to secure better bargaining from the publishers and to have advantage of networking converted into monetary savings. Under consortium subscriptions the publisher offer better terms for subscribing full text journals/abstracts or for providing value added online information services to a group of libraries. It would be worth while to note that a consortium of Dutch libraries formed in 1997 recommended that subscription to print and electronic version should not cost more than 7.5% than the print alone subscription and subscription to electronic version should cost no more than 80% of print rate (11). Recently, the MHRD in India has taken steps to order full text online journals of a few leading publishers and seven online databases on behalf of consortia of IITs & IISc.

4.5 Open Archives Initiative/self Archiving by Author

Along with increasing trend of online publications, opinions were being expressed in academic circles that commercial publishers who earn a lot of money out of the intellectual output of academicians are now devising means of extracting more in name of electronic publishing of the same information. Some of the academic institutions abroad such as International Consortium of Alternative Publishing (ICAAP www.icaap.org) and Scholarly Publishing & Academic Resources Coalition (SPARC www.arc.org/sparc/) have been established to create more competitive market place for academic publishing throughout the world. There has been attempt at self publishing/ archiving by authors & modalities of such initiatives were discussed at 1st & 2nd workshop on Open Archive Initiative (http:// www.openarchives.org/) hosted at Cern in 2000 & 2002 respectively. The 2nd workshop took up for discussion technical(inter-operatability between author's self archiving efforts), economical, sociological & legal issues. The OAI Protocol for Meta data Harvesting (OAI –PMH) having been released as a stable specification, the workshop addressed the matters such as exchange of citations made in e-

prints, right statement & usage of information.(12) It was felt that there was need to increase the awareness regarding open archiving on the part of contributing scholars& for fundamental shift in evaluation of scholars by funding agencies. There is another advocacy group, ie Public Library of Science(www.publiclibraryofscience.org/) which has called on scientific community to hand over all research articles free after six months of publication to public online archives. This measure has found support in 155 countries & among 20,000 scientists.(13)

5 CHALLENGES

In imparting information from electronic sources or guiding readers to them, the librarian and information scientists are faced with many challenges.

1. To keep pace with emerging trends and see through the technological change.
2. To constantly keep on devising strategies to face the flux in the current scientific industry.
3. Simultaneously to update his own skills for handling new technology and changes in the universe knowledge.
4 To keep track of fluid data posted on Websites & Open Archives. Digital content may dynamically change when data is updated or if data is moved to another site, it may be effectively lost to the information searcher.
5. Arriving at mutually satisfying negotiations while negotiating for consortia or deciding among different online access options. Possess enough bargaining and management skills to handle interpersonal relations at peer superior & exterior levels
6. Physical deterioration of medium in which information is stored.
7. Update techniques relating to processing & preservation of electronic data

6 CONCLUSION

In the knowledge universe, on one hand, new micro subject fields like Environmental science, Nono- technology Genetics & Energy are emerging as independent sphere of knowledge, on the other hand, multi-disciplinary sciences like Bio-medical engineering, Bio-technology are emerging to provide a common approach for solving an identifiable issue. To cope up with the changes taking place and

in the universe of knowledge, publishing industry &information technology, the librarian has to build a long term vision, however vague that vision may be ,towards which the organisation can strive. Further, he has to prepare himself for multiple roles as knowledge navigator, information architect and the hybrid librarian. For meeting users' need for quality library services, a librarian has to develop a deep knowledge and understanding of users' themselves, besides having technical concerns like authentication, authorisation and safety of data.

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BIOINFORMATICS: A RECENT ADDITION TO THE UNIVERSE OF SUBJECTS (UOS)

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ABSTRACT

Bioinformatics represents a new and growing area of science that makes extensive use of computer techniques to answer biological questions. It is the science of data management system in genomics and proteomics of life forms. In the last two decades, storage of biological data in public/private databases has become increasingly common and these databases have grown very fast. At present a number of databases on specific genes and proteins pertaining to human, animals, plants, bacteria and other life forms are being enriched and updated through research in biology with the practice of bioinformatics. The new inventions in biotechnology that are useful to mankind have greatly been influenced by the proliferation of these databases. This paper describes about the origin and development of bioinformatics and also gives an overview of bioinformatics tools such as software packages including specialized noncommercial software, databases and other resources available as part of the World Wide Web.

1 INTRODUCTION

Biology is one of the earliest branches of scientific study. The focus of biology as a science has been living beings. As a result of striding and continuous research and diligent study in biology, a vast amount of data poured in essentially requiring sophisticated means of analysis. The developments in modern biology have their roots in the

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interdisciplinary work of scientists from many fields. This was a crucial element in the breaking of the code of life. To mention, it was the physicist Erwin Schrodinger who in "What is Life" was the first to suggest the "gene" that could be viewed as an information carrier whose physical structure corresponds to a succession of elements in a hereditary code script."[1] In molecular biology this later turned out to be the DNA, one of the two types of molecules (DNA and Proteins) on which the life is built.

The rapid strides in molecular biology and restless applications of technology have resulted the means of reading genes almost like barcodes. This poses complicated problems as the code to describe even the smallest of the creatures would fill many books and lead to information chaos. To have any meaningful understanding related to these molecules, then naturally the biological questions should be – what do they mean? How do they function? How do they compare with others? And for instance when we get the sequence of a DNA molecule obviously our question pertaining to that would be that which part of this code is for amino-acids? How does this sequence compare with their seemingly similar molecules from another source. Similarly in proteins also the questions should be - how does new protein function? When we know the sequence, can we predict its structure? Whether two peptide chains with a similar sequence will have a similar structure, etc?

The answer to all these questions definitely do not come quickly and accurately through the conventional techniques in biology. The necessity for fast, accurate and logical analysis of data positively required the usage of computers which have revolutionized the automation of data collection, storage, retrieval, comparison and analysis, and thus a new subject "BIOINFORMATICS" was formed.

2 WHAT IS BIONFORMATICS?

Generally, bioinformatics describes any use of computers to handle biological information. Practically, "Bioinformatics is a computer-assisted interface discipline dealing with the acquisition, storage, management, access and processing of molecular data."[2] The narrower definition of bioinformatics by most of the people is a synonym for "computational molecular biology" i.e. the use of computers to characterize the molecular components of living things.

According to Fredj Tekaia, "Bioinformatics is the mathematical,

statistical and computing methods that aim to solve biological problems using DNA and amino-acid sequences and related information."[3]

It is analysed that bioinformatics is the symbiotic relationship between computational and biological sciences. The ability to sort and extricate genetic codes from a human genomic database of about 3 billion basic pairs of DNA in a meaningful way is perhaps the simplest form of bioinformatics.

Further it concludes that bioinformatics is an interdisciplinary scientific tool without barriers among various disciplines of science like biology, mathematics, statistics and computer science. This discipline helps us to collect, compile, analyse, process and represent the information in order to understand processes of life in healthy or betterand diseased states and find new processes, drugs and delivery systems of genes, drugs and other genetic components for life improvement and to educate oneself.

3 ORIGIN AND DEVELOPMENT OF BIOINFORMATICS:

Bioinformatics essentially represents a new and growing area of science that uses computational approaches to answer biological questions. It is the new niche in biotechnology. According to T.K.Attwood and D.J.Parry-Smith, "The term bioinformatics is used to encompass almost all computer applications in biological sciences, but originally coined in he mid 1980s for analysis of biological sequence data."[4] But Mark S. Boguski in the "Trends Guide to Bioinformatics" remarks that "the term bioinformatics is relatively recent invention, not appearing in the literature until 1991 and then only in the context of emergence of electronic publishing."[5]

It is valid to state here that bioinfomatics is still a young discipline and its origin may be traced back to the 1970s when automated DNA and protein sequencing became possible and biotechnologists started generating large amount of data on various parameters of genes and proteins. The real development of bioinformatics started with the networking of computers and accumulation of data on genes and proteins in biotechnology. "The mid 198's further paved the developments in bioinformatics with the popularity of the usage of computers for data storage and access by users locally and remotely. During this period various tools of computers for storage, managing, accessing the information were developed. Simultaneously their use

in biomedical sciences took pace to assist researchers in experimental data recording, analyzing, storing, browsing technical literature and modeling of proteinsand genes."[6]

It was during 1980's that a software package called "PC/GENE" which could translate a given sequence of gene to its protein and product with predictions of its secondary structure was first introduced by Intelli-Genetics from California."[7] This achievement gave a boost to the field of bionformatics and a number of new software packages floated to cater to the contemporary information needs of the biotechnologists of the day. These software packages were the first of the kind having characteristics of integrated programming with a graphic-oriented environment capable of storing data, comparing DNA and protein sequences, manipulating and analyzing data of molecular structure and graphical presentation with molecular biology. "Staden Package for DNA sequences and PROPHET for data management and analysis in life sciences are examples of the early efforts with regard to such attempts."[7]

The major achievement of bioinformatics methods is the "Human Genome Project for short HPG." [8]With the publication of sequence of first complete human chromosome, the World Wide Web (WWW) became a useful and the most effective media for the researchers and health professionals to submit and search for the resources by providing links to gene sequence databases. The period of 1980s and 1990s witnessed the establishment of some important bioinformatics networks and centers. "The European Molecular Biology network (EMBnet) which was established in 1988, to link European Loboratories that used biocomputing and bioinformatics in molecular biology research operates on date 34 nodes"[9]. Of these 20 are designated National nodes. These are appointed by the respective national governments and have a mandate to provide databases, software and online services (including sequence analysis, protein modeling, genetic mapping, etc.); to offer support and training; and to undertake research and development such as the design of Sequence Retrieval System (SRS), etc.There are eight EMBnet nodes as 'Specialised Sites' these are academic ,industrial or research centers that are considered to have particular knowledge of specific areas of bioinformatics. They are largely responsible for the maintenance of biological databases and software e.g. the EBI (UK) maintains the EMBL nucleotide database, the ICGEB (Italy) maintains SBASE annotated domain database and so on.

Further six sites have been accepted within EMBnet as 'Associate Nodes'. Of these an EMBnet node has been considered for India and mirrored at Centre for DNA Finger printing and Diagnostics (CDFD), hyderabad. Complete list of all the nodes of EMBnet nodes-National, Specialist and associate is given as:

EMBnet National Nodes:

Node	Country	Website
Vienna Biocentre	Austria	http://www.at.embnet.org/
BEN	Belgium	http://www.be.embnet.org/
Biobase	Denmark	http://bibase.dk/
CSC	Finland	http://www.fi.embnet.org/
INFOBIOGEN	France	http://www.infobiogen.fr/
GENIUSnet	Germany	http://www.genome.dkfz-heidelberg.de/biounit/
IMBB	Greece	http://www.imbb.forth.gr/
HEN	Hungary	http://www.hu.embnet.org/
INCBI	reland	http://.acer.gen.tcd.ie/
INN	Israel	http://dapsas.weizmann.ac.il/bcd/inn.html
IEN-ADR	Italy	http://bio-www.ba.cnr.it:8000/bioWWW/bio-WWW.htm
CAOS/CAMM	Netherlands	http://www.caos.kun.nl/
Bio	Norway	http://no.embnet.org/
IBB	Poland	http://www.ibb.waw.pl/
PEN	Portugal	http://www.pen.gulbenkian.pt/
Genebee	Russia	http://www.genebee.msu.su/
CNB-CSIC	Spain	http://www.es.embnet.org/
BMC	Sweden	http://www.embnet.se/
SIB	Switzerland	http://www.ch.embnet.org/
SEQNET	UK	http://www.seqnet.dl.ac.uk/

EMBnet Specialist Nodes:

MIPS	Germany	http://www.mips.biochem.mpg.de/
ICGEB	Italy	http://www.icgeb.trieste.it/
Pharmacia Upjohn	Sweden	http://www.pnu.com/
F.Hoffmann-La Roche	Switzerland	http://www.roche.com/
EBI	UK	http://www.ebi.ac.uk/
HGMP-RC	UK	http://www.hgmp.mrc.ac.uk/
Sanger	UK	http://www.sanger.ac.uk/

UCL	UK	http://www.biochem.ucl.ac.uk/bsm/dbrowser/embnet/

EMBnet Associate Nodes:

IBBM	Argentina	http://sol.biol.unlp.edu.ar/
ANGIS	Australia	http://www.angis.su.oz.au/
CBI	China	http://www.cbi.pku.edu.cu.cn/
CIB	Cuba	http://bio.cigb.edu.cu/
CDFD	India	http://www.cdfd.dbt.in/
SANBI	South Africa	http://www.sanbi.ac.sa/

In India the Biotechnology Information System network (BITSnet is the premier S&T network in biotechnology comprising about 55 bioinformatics centers. Of these 1 is Apex Centre; ten Distributed Information Centres DICs; and 44 sub-DICs) These are networked through satellite and terrestrial links provided by National Informatics Centres Network (NICNET). This network was established to handle and manage biological data including its origin, control, linkages and analysis, etc. It provides communication among people, projects and institutions engaged in biological research and applications in the country and abroad. The communication includes e-mail, file transfer, remote login, computer conference, e-bulletin boards or establishment of Web-based information resources.

In USA the National Center for Biotechnology Information (NCBI) is the leading information provider. It was established in 1988 as division of National Library of Medicine (NLM) and is located on the campus of the National Institutes of Health in Bethesda, Maryland. The NCBI plays a crucial role to develop new information technologies to aid the understanding of the molecular and genetic processes that underlie health and disease. The main objectives of the NCBI are the creation of automated systems for storing and analyzing biological information the development of advanced methods of computer-based information processing; the facilitation of user access to databases and software; and the coordination of efforts to gather biotechnology information globally.

The NCBI has been performing a marvelous bioinformatics service. Since 1992, its one of the major tasks is the maintenance of GenBank, the NIH DNA sequence database. The Entrez facility at NCBI is an efficient information retrieval system which typically provides access to DNA sequences from GenBank, EMBL and DDBJ; protein

sequences from SWISS-PROT, PIR, PRF, SEQDB, PDB; genome and chromosome mapping data; 3D protein structures from PDB; and PubMed bibliographic databases.

At present many countries of the world are investing remarkably to bring about developments in the tremendously growing subject of bioinformatics to view its capabilities for managing biological information that has exploded because of the diligent and untiring efforts of the scientists. It has become very fast growing area. The WWW has revolutionized the database searching to greater extent and the researchers are optimistic that "the Web tools being developed will have more impact on the development of bioinfomatics"[10]

In India, the Department of Biotechnology, Ministry of Science and Technology has played a key role in the advent of bioinformatics by establishing bioinformatics centers. The Biotechnology Information Centre (BTIC) of the BITSnet at New Delhi is mainly responsible for coordinating, organizing and providing information services at national level covering wide range of subjects on large sectors of national endeavours in biotechnology. It also coordinates linkages and cooperation with external sources in bioinformatics including international documentation and information centers. The BITSnet has endeavoured in establishing national databases in the country in collaboration with several national and international agencies and has encouraged bilateral and international collaboration in bioinformatics, e.g. with EMBnet, DDBJ and NCBI, etc.

4 BIOLOGICAL DATABASES BIOINFORMATICS TECHNOLOGY

In the present era of Information Technology (IT), a lot of bioinformatics work is concerned with the technology of databases. A database is any collection of meaningfuldata relevant to some aspects of the real world and determining can be defined as extraction of hidden predictive information from large databases. Currently, biological research is becoming increasingly database driven, motivated partly by the advent of large-scale functional genomics and proteomics experiments of gene expression. These databases provide a wealth of information on each of thousands proteins encoded by genome. Data in biology are becoming very diverse and abundant essentially requiring computer-based databases for managing similar kind of data and developing network to access them across the globe. These

databases include both "public" repositories of gene data like GenBank (http://www.ncbi.nlm.nih.gov/genbank/query from html) or the Protein DataBank (http://www.rcsb.org/pdb), and "private" databases like those used by research groups involved in gene mapping projects or those held by biotech companies.

Public domain databases play a crucial role in bioinformatics. These databases give free access to data as data deposited by scientists is for mutual usage for all of them. Under bioinformatics the following classification of the databases may be observed on the basis of nature/characteristics of the data being stored:

(a) Sequence Databases
(b) Structural Databases
(c) Motif Databases
(d) Genome Databases
(e) Proteome Databases
(f) RNA Expression
(g) Bibliographic Dtabases

In the context of bioinformatics, these types of databases further correspond to Genome information resources and Protein information resources.

(a) Sequence Databases: Sequence databases are very common databases that almost all molecular biologists are familiar with. These databases further mainly include three types:

(a.1) Annotated Sequence Databases: Annotation is just a note or an additional information added to the record. Such an information/ note includes keywords that assist in searching the relevant information in a database rapidly and pin-pointedly. In annotated sequence database the information retrieval becomes very easy and efficient. The databases such as GenBank, EMBL and SWISS-PROT are successfully annotated sequence databases.

(a.2) Low-Annotation Sequence Databases: The newly discovered sequences generally with minimal annotations are contained in these databases as many of these sequences are uncharacterized. These databases can be very useful source of new gene sequences. Example - Expressed Sequence Tags (EST) databases.

(a.3)Specialised or Boutique Databases: he biologists working on

specialized area require sequences of specific type annotated and formatted in a database in a specific manner. Examples:

(i) "Protein Kinases"[11] - It is a specialized compilation that includes sequences, structures, functional information, laboratory procedures, lists of interested scientists, tools for analysis, a bulletin board, and links.

(ii) "HIV Protease Database"[12] – It archives structures of Human Immuno -defficiency Virus1proteinases, Human Immuno-defficiency Virus2 proteinases and Simian Immuno-defficiency proteinases and their compexes, and provides tools for their analysis and links to other sites with AIDS related information. This database contains some crystal structures not deposited in PDB.

(iii) "IMGT"[13] – International ImmunoGene Tics is a big quality integrated database specializing in Immunoglobulins (Ig), T-cell Receptors (TcR) and Major Histocompatibility Complex (MHC) molecules of vertebrate species.

(iv) "KABAT"[14]- It is database of sequences of proteins of Immunological interest- North-Western University (USA).

(v) "MHCPEP"[15] Major Histocompatibility Complex Binding Peptides database- Walter and Eliza Hall Institute (Melbourne, Australia).

(a.a) Major Nucleic Acid Sequences Databases:

The principal three Nucleic Acid/DNA Sequence databases in the world are – GenBank of the National Center for Biotechnology Information (NCBI, USA); EMBL (European Molecular Biology Laboratories) database of European Bioinformatics Institute, UK (EBI); and DDBJ (DNA Database of Japan). These databases exchange data on daily basis to ensure comprehensive coverage of sequence information at each of the sites.

GenBank:- GenBank, the DNA database from NCBI, a division of National Library of Medicine located at NIH in Bethesda, Maryland incorporates sequences from publicly available sources, primarily from direct author submission and large- scale sequencing projects. The growth of GenBank in terms of both the number of nucleotides and entries has been logarithmic over the times –"there are approximately 20,550,000,000 bases in 18,570,320 (of more than 120,000 organisms) sequence records as on August 2002."[16] Collaborations and exchange of data exist with the member of the International Nucleotide Sequence database collaboration which include the EMBL and DNA Data Base of Japan (DDBJ).

Arrangements with the National Agricultural Library (NAL) and the US Patent and Trademark Office enable the incorporation of plant and patent sequence data.

GenBank has been conveniently split into divisions (numbering to about 17) to cope up with the diversity of the data sources and its own increasing size. The three-letter codes for the respective divisions are for example:

Division	Sequence
PRI	Primates
ROD	Rodents
MAM	Other Mammalians
.....	and so on.

GenBank database can be accessed in several different ways, via e-mail using list servers, ftp, and through WWW using most available Web browsers. The Web interface allows one to submit genetic information, and perform a variety of queries on both the nucleotide sequences and the annotations found within the entries. Sequin, a local program is used to submit the data to GenBank. This is a PC-based program and allows one to annotate a sequence, perform some analysis and submit it to GenBank. Sequin generated files/ output files can be sent to GenBank by e-mail to gb-sb@ncbi.nlm.nih.gov. The Web-based document delivery is via an online service called Bankit which can be found by clicking on "Bankit" from the NCBI home page (http://ww.ncbi.nlm.nih.gov/Bankit/Index.html).

GenBank uses a popular user-friendly tool – BLAST (Basic Local alignment Search Tool) for searching. It is a useful search tool to rapidly compare an amino acid or nucleotide query sequence to databases of sequences.

EMBL:- "A nucleotide sequence database from the Europe, maintained by the European Molecular Biology Laboratories, or specifically, the European Bioinformatics Institute (EBI) at Hinxton hall, UK, includes sequences both from direct author submissions and genome sequencing groups, and from the scientific literature and patent applications."[17] It is a central activity of the EBI. It was first established in 1980 to collect, organize, and distribute a database of nucleotide sequence data and related information. Since 1982, this work has been done in collaboration with GenBank (NCBI, Bethesda)

and DDBJ (Mishima, Japan). Data are collected, updated at each center, exchanged between the three groups on daily basis. This database is divided into sections based mainly on taxonomy, e.g. viruses (VRL), Rodents (ROD), etc. Special sections of EMBL EST (Expressed Sequences Tags), HTG (High Thorough-put Genome), etc. "Because of the high thorough-put sequencing technology used in many centers, sequences are being deposited currently in the EMBL database at a rate of one sequence per minute."[18]

The EBI provides number of ways to submit new sequence data:

WEBin- It is the WWW sequence submission tool. It is available at URL http://www.ebi.ac.uk/submission/webin.html.
Sequin- It is a tool developed by the NCBI for submitting entries to the EMBL, GenBank or DDBJ databases. This tool is available from the EBI anonymous ftp server at ftp://ftp.ebi.ac.uk/pub/software/sequin/

A data submission form is also available for users whose only access is the Internet by e-mail. This form solicits all the information needed to create a database entry. This form is available by electronic mail via the EBI file server. The user should send e-mail to netserv@ebi.ac.uk with the words: "GET DOC: DATASUB.TxT" in the body of the message.

Information can be retrieved from EMBL using the SRS (Sequence Retrieval System). This links the principal DNA and protein databases with motif, structure, mapping and other specialist databases, and includes links to MEDLINE facility.

DDBJ:- "DDBJ is the DNA Data Bank of Japan, which began in 1986 as a collaboration with EMBL and GenBank."[19] The database is produced, maintained and distributed at the National Institute of Genetics in Mishima, Japan. The sequences may be submitted to it from all corners of the world by means of Web-based data-submission tool. The Web is also used to provide standard search tools, such as FASTA and BLAST.

GSDB:- The Genome Sequence Data Base is produced by the national Center for Genome Resources at Santa Fe, New Mexico. GSDB creates, maintains and distributes a complete collection of DNA sequences and related information to meet need of major genome sequencing laboratories. The resource operates as an

online, client-server relation database,offering facilities for large-scale producers to submit sequence data to it remotely.

The GSDB is accessible either via the Web or using relational database client-server facilities; in both cases familiarity with the database access language, SQL (Structured Query Language) is useful.

(a.b) Major Protein Sequence Database:

Most amino acid sequence data now arise by translation of nucleic acid sequences. The principal public protein sequence databases are as:

SWISS-PROT:- It is an annotated protein sequence database, produced in 1986 in collaboration between the Department of Medical Biochemistry of the University of Geneva (Switzerland) and the EMBL. "After1994, the collaboration moved to EMBL's outstation , the EBI.. At present the database is maintained, jointly by Swiss Institute of Bioinformatics (SIB) and EBI/EMBL."[20] It contains high-quality annotated data. It is non-redundant and cross-referenced to many other databases. This database includes descriptions of the function of protein, and of the structure of its domain, its post-translational modifications, variants, and so on. In SWISS-PORT minimal redundancy is achieved by merging different sequences corresponding to different literature reports. It is currently cross-referenced with 30 different databases.
To submit new sequence data or update entries in SWISS-PROT users should contact the following e-mail address at the EBI: datasubs@ebi.ac.uk.

In 1997, the TrEMBL (Translation of EMBL nucleotide sequence database) was introduced as a database of computer annotated entries in SWISS-PROT format derived from the translation of all Coding Sequences (CDS) in EMBL, excluding CDS already included in SWISS-PROT. Entries in TrEMBL are progressively merged with SWISS-PROT entries.

SWISS-PROT and TrEMBL are both distributed quarterly on CD-ROM. The full release of each database is available from the EBI anonymous ftp server at URL : ftp://ftp.ebi.ac.uk/pub/databases/swiss-prot and ftp://ftp.ebi.ac.uk/pub/databases/trembl.

PIR:- In 1960s, the Protein Sequence Database was introduced at the National Biomedical Research Foundation (NBRF) by Margaret Day Hoff as a collection of sequences for investigating evolutionary relationships among proteins. "Since 1988, the Protein Sequence Database has been maintained jointly by PIR (Protein Information Resource)-International, an association of macromolecular sequence data collection centers."[21] The consortium includes the PIR at the NBRF, the Protein Information Database of Japan (JIPID), and the Martinsried Institute for Protein Sequences (MIPS).

At present the PIR database is split into four distinct sections, designated as PIR1 to PIR4. All these sections differ in terms of quality of data and level of annotation provided, e.g. PIR1 contains fully classified and annotated entries; PIR2 includes preliminary entries, which have not been thoroughly reviewed and may contain redundancy; PIR3 contains unverified entries which have not been reviewed , and PIR4 entries fall into one of four categories- (i) conceptual translations of arte factual sequences, (ii) conceptual translations of sequences that are not transcribed or translated, (iii) protein sequences or conceptual translations that are extensively genetically engineered, or (iv) sequences that are not genetically encoded and not produced on ribonsomes.

The Web server of the PIR (http://pir.georgetown.edu) provides efficient information retrieval tools for retrieval of entries of database selected according to sequence similarity, text fields in sequence or annotations, motifs, structure or functional classifications or appearance in a specified genome. These tools assist in statistical analysis of classification of entries, gene family classification, launching of calculations, including pair-wise search and provision of extensive links to other databases including bibliographic databases.

There are several other databases maintained by PIR. They include PIR-PSD, iProClass, ASDB, etc.

(b) Structural Databases/Databases of Structure: Structural databases archive, annotate and distribute sets of atomic coordinates. The major databases of structure are as:
PDB (Protein Data Bank):- The PDB is the best established database for biological macromolecular structures. It contains structures of proteins, nucleic acids and a few carbohydrates. This is the first bioinformatics database that stores 3D atomic coordinates of proteins

nucleic acids where the data is obtained by experimental methods like X-ray crystallography, NMR (Nuclear Magnetic Resonance) techniques and computer modeling.

The PDB, originally developed and housed at the Brookhaven National Laboratories is now managed and maintained by the Research Collaboratory for Structural Bioinformatics (RCSB). RCSB is a collaborative effort involving scientists at the San Diego Supercomputing Center, Rutgers University, and the National Institute of Standards and Technology.

The collection of PDB mainly contains all publicly available 3D structures of proteins, nucleic acids, carbohydrates and a variety of other complexes experimentally determined by X-ray crystallographers and NMR spectroscopists.

The WWW site (http://www.rcsb.org) of PDB at the RCSB offers a number of services for submitting and retrieving 3D structure data. The homepage of the RCSB site provides links to services for depositing 3D structures, information on how to obtain the status of structures undergoing processing for submission, ways to download the PDB database, and links to other relevant sites and software.

SCOP (Structural Classification Of Proteins):- "SCOP"[22]is maintained by the MRC Laboratory of Molecular Biology at Cambridge, UK. It classifies proteins according to structural similarity and evolutionary relationships. SCOP is a simple, relatively low-tech resource composed of a hierarchy of HTML pages with links to still pictures of individual proteins and folds, as well as embeded links to structure files to be opened with RasMol or Chime plugins (Browsers)and links back to the PDB to down load structures.

CATH (Class, Architecture, Topology, Homology):- The "CATH"[23] database is hierarchical domain classification of protein structures maintained at UCL. It is Similar to SCOP in concept, but divides up the PDB a little differently. In this database the proteins are classified at the level of Class, Architecture, Topology, and Homologuos super-family. The CATH interface is easily navigated, and it is an excellent resource for examining the variety of known protein structures.

(c) Motif Databases: A motif is a pattern of conservation in a group of sequences, which reflects a common function or structure in these sequences. As a result motif databases contain representations of conserved sequences shared by a sequence family. Today, their

primary use is in annotation of unknown sequences.

TRANSFAC and PROSITE along with many are the major Motif databases.

TRANSFAC is a best known nucleotide sequence database maintained in Germany by Edgar Wingender's grouup. This database stores information of transcription factors and motifs corresponding to transcription binding sites. TRANSFAC is used to study gene regulation and identify potential control signals in sequences.

PROSITE is an expert-curated database of patterns hosted by the SIB since 1997. It is one of the best known protein motif databases. It contains pattern as well as position-specific scoring matrices that can detect new instances of pattern.

(d) Genome Databases: These databases concentrate on information about one particular organisms genome or group of organism. Almost every genome project has a genome database which allows to access and modify the data. The kind of data stored depends upon the particular genome project and the methods used to study the genome. Examples: "GDB (Human)"[24], "Flybase (Drosophila)"[25], etc.

(e) Proteome Databases: The Swiss Institute of Bioinformatics maintains Proteome databases. For example"SWISS-2D PAGE"[26] is a database of reference gel maps that are fully searchable and integrated with other protein information. It is a rapidly growing proteome database.

(f) Bibliographic Databases: MEDLINE is the principal facility, hosted a the US National Library of Medicines (NLM) which integrates the medical literature, including very many papers dealing with subjects in molecular biology not overtly clinical in content. It is the most accessible and useful source for searching biomedical literature. It is included in the PubMed, a bibliographic database offering abstracts of scientific articles, integrated with other information retrieval tools of the NCBI within the NCBI (http://www.ncbi.nlm.nih.gov/PubMed)

The present era of Information Technology (IT) has remarkably influenced the developments in bioinformatics. It is because of the impact of IT on this discipline that there is growing economic importance of bioinformatics which presently has greater implications

on medicine and agriculture and on science in general. The advent of Internet and especially the WWW has added to the developments in bioinformatics enormously. The large sequencing project like HPG are yielding an enormous amount of DNA and protein sequence data now available through several public and private databanks. This has been shifting research activity in molecular biology and genetics from purely experimental approach to one in which experiments can be planned in front of computers.

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E-INFORMATION SERVICES (IS) & KNOWLEDGE MANAGEMENT (KM) EFFORTS IN LARSEN & TOUBRO LTD. ECC DIVISION, CHENNAI

S Vaithiyanathan*

ABSTRACT

This article deals with Electronic Information Services & Knowledge Management efforts being implemented by the Engineering Construction and Contracts (ECC) Division of Larsen & Toubro Limited (L&T) - Library and Documentation Centre (LDC), Chennai, the facilities available and services offered. Internet, Intranet & Extranet facilities are available and are extensively used for the effective dissemination of information / knowledge by the Centre and users. Various national and international standards and other information resources are made available in e-format (pdf) also. The Centre has the most widely referred information resources in the print format as well as e-format for providing e-information services to the user community of about 9,000 comprising 75% Engineers via LAN & WAN environment. E-mail facility is also extensively used for effective dissemination and sharing of information and knowledge. Various e-information services are being provided by the Center viz., Technology Update, Management Update, Business Information Service, Trend Reports, Economic Indices, etc., Knowledge Management efforts like Projects Profiles Database, Techno-economic Data of Projects, etc., are collected and organised in e-environment for Organisational Learning. Future plans for enhancing the web-based services are also outlined in this article.

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1 INTRODUCTION

Globalisation (in the Information Age) and increased competition have made many business organisations more sensitive to the need to increase both efficiency and effectiveness through organisational learning for enhancing the Core Competencies, the Competitive Intelligence and shareholders value to sustain, grow in this dynamic environment. Rapid changes in the environment, technologies and customer demands have also led to organisations to implement new systems to move up the learning curve quickly and effectively. The truly revolutionary impact of the Information revolution and the advancement in Technology, Communication and Networking technologies and the adaptation of Internet technology in organisational networks has given the Library and Documentation Centres (LDC) ample opportunities to expand and improve the information services to the users in more effective ways.

2 INFORMATION TECHNOLOGY (IT)

IT is redefining the way ideas grow and business organisation work. Three fundamental changes are foreseen in the wake of this technology revolution

- Information is going to become knowledge.
- The digital will replace the physical.
- Everyone and everything will get connected, eventually.

Information and knowledge are the key assets of an organisation, which gives sustainable competitive advantage. The e-information services and knowledge management is bringing more transparency in organisation culture and operations. This results in continuous innovation in services. It is now widely recognised that organisations need to become *Learning Organisations* in their bid to become *Adaptive Organisations. The innovative Organisations* of the future needs to do two things to be on the cutting edge in terms of Learning / Knowledge and to be able to generate creative ideas, thus using the former to generate value from the later. This aptly reminds the importance of both perspiration and inspiration concepts of the famous scientist Sir Thomas Alva Edition's '99 to 1' perspective.

Information and knowledge are the fundamental basis of competition and organisations having quick access to information and superior knowledge are able to achieve excellence and world class performance. This article deals with the e-information services and

knowledge management efforts being rendered in Larsen & Toubro Limited (L&T), ECC Division by its Library & Documentation Centre (LDC).

3 KNOWLEDGE MANAGEMENT (KM)

KM is defined as "management of organisational Knowledge for creating business value and generating competitive advantage". It consists of processes that facilitate generating, processing, sharing, using and storing knowledge.

Search-and-retrieval facility, data warehousing and the proliferation of Intranets have revolutionised the ability of organisations to find, accumulate, organise and access information and knowledge. It is an organisation-wide effort for capturing and synthesising information from which knowledge can be created, stored and shared. The objective is to enable the human resources to work together more effectively and respond to customer needs quickly.

4 L&T ECC DIVISION – KNOWLEDGE DRIVEN ORGANISATION

Larsen & Toubro Limited is India's largest professionally managed engineering and construction conglomerate with additional interests in IT, cement and electrical business for over six decades. L&T believes and practices that progress must necessarily be achieved through continuous learning and putting the knowledge gained into action in harmony with the environment. A commitment to continuous *learning* is an integral part of the corporate vision statement (http://www.larsentoubro.com). A key element of such an approach is stress on information and knowledge sharing which can convert individual expertise, skills, experience and insights into organisational knowledge.

ECC Division (ECCD) – is the construction arm of the Company rendering EPC construction services in India and abroad.

LDC - Human Capital Development

Library & Documentation Centre (LDC) is one among the vital departments of L&T ECC Division. LDC role is to enable development of employees through value added information services and knowledge sharing efforts. Its prime responsibilities explicitly include "Conceptualise, Plan & Develop a World-Class Library & Documentation Centre – a Corporate Learning Centre for information and knowledge management in the field of Construction Industry with all types of Information Resources and facilities to access and

disseminate information and knowledge using Information Technology, to enhance the Individual Competencies and there by the Core Competencies of the Organisation. Develop a data bank of all techno-economic information for learning quickly from past experience and excel. *Contribute for Building a Learning Orgnisation and Living Company".*

LDC is a reflection of the organisation's commitment to learning and research. It is the central depository of information and knowledge access for all the Strategic Business Units (SBU) and service departments user community of about 9,000 comprising 75% Engineers. LDC also acts as a nodal point for about 7 Regional Offices and about 250 Projects job sites spread all over the country and abroad. All the employees are able to access the Information and Knowledge repository using their desktops and laptops in the LAN, WAN & WWW. They are being considered as vital work enabler.

5 INFORMATION RESOURCES

LDC has a rich collection of over 9500 Books, 28,000 Technical Standards, 2500 Periodicals back volumes, 1800 Microfilms, 25 Microfiche, on specialised fields of civil, electrical, mechanical, instrumentation, architecture, safety, construction management, personnel & HRD, Law, management, accounting, computer science.... The Library subscribes to 278 periodicals and 19 newspapers. It has a good collection of Self-Learning Packages comprising of 225 CD-ROMs, 9 CBTs., 250 Video Cassettes, 125 Audio Cassettes, 2700 Slides and 30 Computer Software Packages relevant to the needs of the organisation. Access to various databases through the *Internet* is also available. The organisation invests about Rs. 50,00,000 yearly on updating and replenishing its information resources. LDC started its development from its humble beginning in 1982 with a collection of about 90 Books, 250 Technical Standards, 20 Periodicals and 10 Memberships with annual expenditure of about Rs. 10,000. It is a continuous process and journey in itself. The system will capture and reuse both explicit and tacit knowledge and Identification of best practices in the field.

LDC follows the famous Dewey Decimal Classification System and ISBD for creating the Bibliographic Databases of all information resources, widely practiced though out the world. The entire operations of the LDC are regulated by the in-house developed on-line integrated Library & Information Software System.

6 NETWORKING

The Organisation is member of about 90 national and international professional / Trade organisations, Institutions, societies and all these memberships are processed through LDC. As a result of this an effective networking is prevailing between these organisations and the Company. About 90% of these communication and information services are being received through e-format and disseminated widely through network to the concerned users on a continuous basis.

e-environment: All the SBUs, Departments and the Projects Job sites are well connected by **Intranet URL: http://172.31.19.101** for accessing the web-based services of the LDC. Intranet, Internet, Extranet and e-mail facilities are available and extensively used for the effective dissemination / sharing of information and knowledge by LDC and the employees. This promotes a culture and faster transfer of best proven practices and insights and helps to learn quickly from past experience.

7 INFORMATION RESOURCES: E-COLLECTIONS (DIGITAL LIBRARY)

E-collections at LDC form the basic building blocks for the Digital Library. E-Collections refers to the digitized documents that are available for on-line access to the users. The various types of e-collections at LDC are:

E-Databases

E-Standards

E-Journals

E-Reports

E-Articles (Technical / Management)

E-Project Profiles

E-Business Information Service (Sales Leads)

E-Self-Learning Packages (CD-ROMs, CBTs, Video & Audio Tapes and Slides)

8 E-DATABASES

The bibliographic details of the entire information resources (Books, Standards, Self-Learning Packages, Periodicals - Back Volumes, Journal Articles, New Projects Information, Project Reports, Design Documents, Soil Investigation Reports, etc.,) of the LDC are

accessible by the users through on-line Integrated Information System Intranet Web site URL: **http://172.31.19.101.** The Intranet web-site is accessible in Head Quarters, Seven Regional Offices and about 250 Project Job Sites spread across the country and abroad where VSAT facility is available.

9 E-STANDARDS

National and International Technical standards collection in LDC is about 28,000. Among these over 750 numbers of widely referred standards are available in full-text format (IS, IRC, BS, DIN, ACI, ASME, ANSI, Dutsch, ISO, API, ANSI, AWWA, OISD) for on-line access through network by the users.

10 E-REPORTS

Business and technical reports received from various organisations and from In-house - projects designed by EDRC are made available in e-format. They are organised by subject category wise for easy access.

11 E-JOURNALS

LDC subscribes about 278 periodicals on core subjects – Engineering, Management, Law, Finance, etc.; the users can access about 50 Journals in e-format. They are mostly received against memberships from ASCE, ASCC, IEEE, IABSE, Switzerland, News papers, free on-line periodicals and In-house Journals like ECC Concord, etc., The full-text of articles are viewed as Portable Document Format (PDF) files as well as in html format. The users can view them in their desktops and the outputs can be printed or e-mailed to other users. Journal articles can also be searched using ID No., Journal Name, Title, Author/s, and Keywords.

12 E-ARTICLES – TECHNICAL / MANAGEMENT UPDATES

As and when the Periodical issues are received, LDC selects articles of interest to the organisation keeping the user interest profile and are digitised. The full-text articles are disseminated through e-mail. They are also made available in print format.

13 ONE-ENGINEER – ONE JOURNAL

LDC in association with SBUs and department heads introduced the one-Engineer – One Journal review system. Under this a team of engineers have been identified. An engineer adopts a journal and review the issues depending on the periodicity. Selects articles of the interest to the organisation keeping the strategic planning and

the technology requirements. The bibliographic details along with abstracts are made available for on-line access through Intranet by subject wise. This system besides converting the individual learning into team learning also helps in optimum use of IT resources. Monthly compilation of these selected articles is also disseminated through e-mail by specialised services – Technology Update & Management Update. This system of scanning / review helps in capturing the relevant articles that are useful to the orgnisation and incorporated in the on-line database for wider access.

14 IN-HOUSE E-ARTICLES

Articles that are published in In-house publication like ECC Concord – the technical magazine since 1978 are made available in e-format for on-line full-text access through Intranet. The articles can be searched by title, author/s, keywords, and subject wise. The articles are organised by SBUs core sector operations wise for easy access.

15 E-PROJECT PROFILES

The profiles of the completed projects serve as a useful reference material for pre-qualification purposes, when the company bid for new projects. The profiles contain the data pertaining to new technologies adopted, improvements made in the existing methods, cost control measures adopted, etc., which are valuable tools during the execution of similar projects in future. They are created in standard e-format with complete details captured under 16 headings and are available for easy access and retrieval via Intranet.

Keeping the above in view more than 250 **Soil Investigation reports** of various projects executed in the country and abroad are made available in the e-format and organised by country wise. They serve as a valuable source to know the soil conditions of the particular place while taking up the new projects.

16 NEW PROJECTS INFORMATION SERVICE

LDC is compiling and circulating information on new projects in the offing, government policies and moves, economic, political and socio trends from information resources like news papers, periodicals and internet and are digitised and disseminated though e-mail to all the SBUs and Dept. Heads. This is a daily service. This value added information service helps the top management to know the market potential in each core sector and to take strategic policy decisions accordingly in targeting the potential areas of business in tune with the changing environment. These informations are stored in the

Enterprise Information Portal (EIP) of the company **URL: http:// www.Intecc.com** by core sectors wise and subject wise for on-line access.

17 SELF-LEARNING PACKAGES

LDC has separate facility for self-learning packages and is extensively used. A good collection of self-learning packages - CD-ROMs, CBITs, Computer Software, Video tapes and Audio tapes on a wide a range of subjects – Leadership, Finance, Team Building, Communication, Time Management, Stress Management, Project Management, Empowerment, ISO 9000, TQM, Civil, Electrical & Mechanical Engg. are available. These e-information resources have distinct learning advantages by the users leading to self-development and benchmarking. Some of these CD-ROMs are also accessible though network.

18 INFORMATION SERVICES

The Centre provides timely, qualitative, need based value added e-information service of various kinds to the human resources. This helps them to keep abreast of new technology, new product, new market, etc. in their fields of activity to cope with emerging marketing competition and fast changes in environment and technological evolution, thereby to perform better in their operating areas.

1. New Projects Information Service – Daily
2. Press-Clippings of L&T ECC Division – Daily
3. New Additions List – Books – Monthly
4. New Additions List – Standards – Monthly
5. Management Update – Monthly
6. Technology Update – Monthly
7. Economic Indices – Monthly
8. Overseas Tender Information Service – Need Based
9. Technical Information and International Standards support services to Projects Job sites – Need Based

All these information services are well utilised and appreciated by the users.

19 CONCLUSION

Benchmarking

LDC practices concepts like Kaizen (Continuous improvement), TQM in all its operations for achieving excellence and meeting user information requirements. LDC is working towards benchmarking

its practices against world class Organisations. An organisation that benchmarks and learns from others, soon becomes a benchmark organisation for others. In LDC Information and knowledge sharing efforts is a continuous journey. They are directed towards helping the employees to keep abreast of latest developments that are taking place in their fields of interest, contributing their best in their assignments leading to self-development (Individual), organisational development. Family development, country's development and the whole of humanity, there by the competitive intelligence of the individuals, company, Industry and the nation.

IT has made access to information easier, in the sense that all digital information such as databases, journals, reports, project profiles, standards, can be accessed through network. The concept of e-library, information services and knowledge management gives a new dimension to library and documentation centers operations. LIS professionals should take this change in environment and update their skills, knowledge with positive attitude and benefit themselves and the organisation.

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HRD AGENDA FOR UNIVERSITY LIBRARIES IN THE ELECTRONIC INFORMATION ENVIRONMENT

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ABSTRACT

The paper attempts to review and audit the present scenario of human resources and their development in university libraries in the background of yesteryears and expected future. Highlights the meaning, need, objectives and domain of human resource development (HRD). Focuses on important HRD interventions for hard and soft skills and competencies. Also raises vital issues of concern and tries to provide solutions. Emphasises that HRD instruments lead to the generation of processes, e.g., role clarity, role analysis, innovation, teamwork, human resource management, empowerment, etc. The paper reviews the role of a library professional in the changed environment and suggests skill development areas to be taken seriously. Suggests that all developments start from personal development. The paper forecasts what the future libraries will be and what type of human resources would be required. Also presents solutions to the problems HRD problems faced by the university libraries. The scope of the paper is limited to the Librarians, deputy librarians, and assistant librarians. However, librarian can select a team of senior professionals to work as HRD professional for the university library. Paper concludes that quality in libraries comes from quality personnel, therefore, every effort should be made to improve the quality, competencies, and skills of professional staff in university libraries

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1 INTRODUCTION

During the last two decades Human Resource Development(HRD) has become focus of attention because of its increasing link with performance and quality. On the basis of the outcome of various reports and studies, it is admitted fact that human resource development approaches seek involvement of employees at work and they are linked to growth and development of individuals and organizations. Many references have appeared on the subject of human resource development in mainstream management as well as in library management about the challenging task of HRD.

Among the five M's of Management, i.e., man, money, machine, material and methods, man is the most important resource which has multiplier effect on the optimum utilization of all other resources. People equipped with knowledge and creativity are the greatest assets to any organisation. It is they who give strategic advantage to an organisation. Effective implementation of strategy is possible only with motivated people. It is obvious that HRD will assume a distinctive role since employees will make major contributions in productivity, efficiency and customer satisfaction. Closer association of employees with management has been acknowledged world wide in order to build organisational capability.

Human resources are the most primary and most crucial factors in determining quality management and quality level of a library. The major defect of the scientific management was to give more importance to management than employees for all purposes. This moved the employees away from the basic responsibility for the quality of the work. W. Edward Deming found this point to be the real villain. Deming (1986) 1 and Juran felt that Taylor's methods were degrading to human spirit and counter productive to the interest of the employees, management and the organisation.

In Total Quality Management (TQM) framework Human Resource Development shapes capabilities to perform present and expected future roles, enhances general capabilities for the development and exploitation of inner potential for personal and professional development and development of organisational culture. It inculcates right attitude towards customers, equips with the knowledge of all the processes, procedures, practices and other aspects of the job and develops the competency, capability, responsibility and accountability for higher work. In the definition of TQM the needs of the customer and the community, and the objectives of the organisations are satisfied in the most efficient and cost-effective

way by maximising the potential of all employees in a continuing drive for improvement. If staff is not developed and utilized in an optimum way then it is also the most expensive element in library service. The size, structure, variety, quality, skills, competencies, and effective organisation, development and motivation of library staff have much to do with quality and performance of a library.

Librarianship was declared as a profession in 1880 at Annual Library Association Conference. Library profession has not only undergone change in the operational plane but also a continuous change in the roles performed. Libraries have also changed drastically in constitution and functioning that changed the professionals operating in different sphere of library activities. The library as a unit is comprised of collection, services, users, and staff. The libraries started their journey from warehouse, depository and storehouses of hand written and printed material and reached to the stage of information centres. Changing forms of library collection, i.e., from clay tablets to printed material and printed to electronic, and mono-media to multi-media are indicators of change. In the matter of services, libraries first started circulation services and later on started providing reference, photocopying, inter library loan, referral, bibliographic, and literature search service as per demand, i.e., reactive in nature. Than started proactive services in the form of CAS, SDI, indexing, abstracting, etc. Today libraries are expected to provide active information services, which combine reactive and proactive functions.

2 NEED AND IMPORTANCE FOR HRD INTERVENTION

Libraries have changed from mere static storehouse of knowledge to dynamic service centres. The media of information has also changed. There is a paradigm shift from print culture to digital culture, from ownership of documents to access to information, intermediary to end user model of services, specific libraries to virtual libraries. The information technology has resulted in reengineering of the libraries to face the challenges. In such a scenario the existing professionals could not compete with information resource managers, consultants, data base managers, record managers, etc. The environmental changes made the information seeking very demanding and dynamic and have enhanced the expectations of user for timely, relevant, complete, assured, secured, easily accessible, filtered, and tangible information services, products and consultation to the right user, in the right format, at the right cost and as per ease, convenience, comfort, interest, excitement and expectation of the user.

The fundamental concept of classroom learning is changing to e-learning and tele-learning. In this media of learning renowned subject specialists will be available on the net. Various universities will conduct courses through the Internet. Interactive learning will be possible through the 'chat' facility available in the Internet. They can visit any virtual library available on the net to acquire any kind of information they want from around the world. In accordance with the emerging educational scenario, the library and library professional role is also subject to dramatic changes. Today the words 'Library' and 'Librarian' are being replaced by the term 'information centre' and information professional. Blaise Cronin, in his model called the librarians as electronic librarians, and had suggested a three level model for the library works. The top level is called the strategists, and is concerned with planning, trend analysis, etc. Netwok manager is the middle level and is concerned with system design, its implementation, networking, staff and user training, etc. The third level is that of operative level which is concerned with database searching, cataloguing, organizing, and dissemination.

3 CHANGE MANAGEMENT

Today the single most important issue for university libraries is managing change and at the same time retain their identity. Change is nothing but a transformation of today's requirements to tomorrow's performance. (Pandya 2002)1 stated that change takes place in libraries due to internal and external factors and it is the only thing that has brought progress in libraries. She described quality, marketing, technology, and costs as the contents of change. In order to bring changes in these four areas, libraries need to change three other aspects viz. strategy, structure, and human resource management. These three aspects determine the process of change and finally, change need to be driven by value based and competent leadership. The eight major levers of change described by author constitute the goals, techniques and elements of TQM, in which HRD intervention play key role. TQM is considered by many authors as a planned organisational change. Strategic planning and TQM also go together like hand in glove.

Personal change is most important. In order to address the issue of personal change Total Quality People (TQP) is the need of hour. Because customer cares, marketing skills, communication skills, strategic planning and other strategies and techniques would not help unless right foundation is there. Total Quality People are the right foundation and these are people with character, integrity, good values, and a positive attitude and mindset. There has to be

substance over form not form over substance. If there is a desire to serve then "please", "thank you", "smiles", "handshake", etc., comes a lot easier. HRD interventions in the form of education, training, continuous professional development and personal competencies are essential for the growth and survival of librarianship in this information age.

4 SCOPE OF THE STUDY

The scope of the study is limited to application of TQM to the university libraries in Punjab, Haryana and Chandigarh. The study includes as its population 9 university librarians, 27 Deputy Librarians and 60 Assistant Librarians of all the nine university libraries in Punjab, Haryana and Chandigarh, namely: Guru Nanak Dev University Library, Amritsar (GNDUL); Punjab Agricultural University Library, Ludhiana (PAUL); Punjabi University Library, Patiala (PULP); Thapar Institute of Engineering and Technology, Patiala (TIETL); Kurukshetra University Library, Kurukshetra (KULK); Maharshi Dayanand University Library, Rohtak (MDUL); Chaudhary Charan Singh Haryana Agricultural University Library, Hisar (HAUL); Guru Jambeshwar University Library, Hisar (GJUL); and Panjab University Library, Chandigarh (PULC).

5 SAMPLE SIZE OF THE STAFF IN THE UNIVERSITY LIBRARIES

Table 1 shows that Questionnaire-I meant for university librarians were distributed personally by the investigator to all the nine university librarians, and Questionnaire-II meant for Deputy and Assistant Librarians were also distributed personally to all the 27 Deputy Librarians and 60 Assistant Librarians of all the nine university libraries in Punjab, Haryana and Chandigarh to investigate the level and status of HRD intervention in university libraries and also to know the importance given to human resources in the university library settings.

TABLE 1: SAMPLE SIZE OF THE STAFF IN THE UNIVERSITY LIBRARIES

Position	GNDUL	PAUL	PULP	TIETL	KULK	HAUL	MDUL	GJUL	PULC	Total
Librarian	1	1	1	1	1	1	1	1	1	9
Deputy Librarian	2	2	2	-	8	1	-	1	11	27
Assistant Librarian	11	9	8	1	1	7	13	2	8	60
Total	14	12	12	2	11	9	14	4	20	96

Source: Attendance Register of the Concerned University Library.

TABLE 2: STAFF PROFILE

Although the scope of this paper is limited to the librarians, deputy librarians and assistant librarians, however complete staff profile of

university libraries is essential to know the place of prominence the library is having in respective parent university. For HRD point of view people are the most primary and most crucial factors in success or failure of a library. They are also the most expensive element in library service. The size, structure, variety, quality and effective organization and motivation of library staff have much to do with quality and performance of a library.

TABLE 2: STAFF PROFILES

Designation	GNDUL	MDUL	PAUL	HAUL	PULP	KULK	TIETL	GJUL	PULC
Librarian	(Adhoc)	vacant	1	1	1	1	Vacant	vacant	1
Dy. Librarian	2	Vacant	2	1	2	8	1	1	11
Asstt. Librarian	11	13	9	7	8	1	1	2	8
Prof. Asstt	16	-	-	8	7	-	1	-	16
Semi Prof. Asstt.	-	-	16	15	18	9	1	-	-
Programmer	2	-	1	-	1	1	-	-	1
Xerox Operator	2	2	2	-	2	1	-	-	2
Library Restorer	18	3	2	-	22	-	-	4	6
Library Atten.	-	11	21	13	2	6	1	3	-
Library Cleaner	1	2	-	4	-	4	-	-	2
Data Entry Operator2	-	-	1	1	1	2	2	4	
Technicians	3	-	4	3	1	-	-	-	4
Clerical Staff	8	10	14	12	8	5	4	4	8
Peons	3	4	3	3	5	2	6	2	9
Sweepers	5	4	5	5	6	4	2	1	5
Chowkidar	5	-	3	4	4	4	2	1	6
Binders	4	-	3	4	4	-	1	-	-
Foreman	-	-	1	1	-	-	-	-	-
Others	-	-	2	-	2	4	-	-	8
TOTAL STAFF IN CEN.L LIBRARY.	82	50	88	92	94	59	21	21	87
LIBRARY SYSTEM									
Professional	49	17	12	18	26	15	5	4	55
Semi Prof.	31	2	41	15	23	34	4	-	-
Official	11	11	18	14	9	4	8	4	5
Miscellaneous	17	58	35	55	48	38	18	13	96
TOTAL STAFF IN LIB. SYSTEM	108	88	106	102	105	90	35	21	156

Table 2 presents the staff profile of respective university libraries in tabular form. It shows that except GNDUL, MDUL, GJUL and TIETL all the other university libraries have full-time librarians. PULC has the largest numbers of deputy librarians (i.e., 11) followed by KULK (8), PULP (2), GNDUL (2), PAUL (2), HAUL (1) and GJUL (1).

The strength of assistant librarians is maximum in MDUL (i.e., 13), closely followed by GNDUL (11), whereas TIETL and KULK have only one assistant librarian respectively. With regard to professional

assistant, GNDUL and PULC have the largest number (i.e., 16 each), followed by HAUL (8), and PULP (7). While TIETL has only one professional assistant, but MDUL, PAUL, KULK, and GJUL have no professional assistant. PULP has the largest strength of semi-professional assistants (i.e. 18), closely followed by PAUL (16), and HAUL (15). While KULK has 9 semi-professionals and TIETL has one, whereas GNDUL, MDUL, and GJUL have not even a single semi professional assistant respectively.

GNDUL has programmer as well as information scientist, and PAUL, PULP, KULK, and PULC, have only information scientist respectively, whereas MDUL, HAUL, TIETL, and GJUL have neither of them.With regard to data entry operators, PULC has the maximum (i.e., 4), followed by GNDUL, TIETL, and GJUL, (i.e.,2 each), whereas MDUL and PAUL do not have even a single data entry operator.

Table further clarifies that the strength of total staff in the central library is maximum in PULP (i.e. 94), closely followed by HAUL (92), PAUL(88), PULC (87), GNDUL (82), KULK (59) , MDUL (50), and TIETL and GJUL (21 each). Where PULC system is the largest system with 156 staff, followed by GNDUL (108), PAUL and PULP (106 each), HAUL (102), KULK (91), MDUL (88), and TIETL (35), whereas GJUL has the smallest system with 21 employees. It further reveals that the strength of professional staff in departmental libraries is maximum in PULC (i.e. 20), followed by GNDUL (19), PULP (8), KULK and MDUL (4 each), TIETL (3), HAUL (2) and PAUL (1), whereas GJUL has no departmental library.

The four university libraries, i.e., GNDUL, GJUL, MDUL and TIETL are operating without full time librarians. The strength and position of professional staff in MDUL, TIETL and GJUL is also not sufficient as compared to other six university libraries. The librarian and deputy librarian are the key movers in a university library. No other member of academic community can take their place. The shortage of staff, as well as the absence of a line of control not only adversely affect the services and moral of the staff but also affect quality, total quality, and TQM application.

6 EDUCATION AND TRAINING

Education and training are considered important dimensions and intervention of HRD. Education is the development of the general and special abilities of mind, which involves a process of learning to enhance the level of theoretical knowledge in one's mind.; whereas training is practical education, which involves a process of learning to enhance the level of practical knowledge in one's mind.

The scores with regard to education and training of library staff are presented in table 4. To derive opinions on these two aspects, six statements, i.e., considering staff an asset rather commodity, qualifications improved after joining the library, promotion during service in the library, encouragement of library staff for academic achievements, weightage for number of conferences attended, and staff manual and staff orientation were included in the questionnaire. It further shows the results of all statements.

TABLE 4: EDUCATION AND TRAINING LEVEL IN UNIVERSITY LIBRARIES

Statements	GNDUL	MDUL	PAUL	HAUL	PULP	KULK	TIETL	GJUL	PULC
Library staff is being considered as an asset to be developed rather commodity to be used	2.080	1.300	3.700	3.620	1.750	3.500	3.000	3.000	3.430
Educational qualification improved after joining the library	2.750	1.690	0.900	2.870	2.580	2.800	3.000	1.330	1.920
Promotion during service tenure	2.500	2.000	2.100	3.000	2.160	3.500	2.000	0.330	2.710
Library Staff is encouraged to write papers, attend workshop, seminars and conferences etc.	1.750	1.580	2.500	4.000	1.660	3.500	3.000	2.000	2.210
Conferences/ Seminars/work-Shops attended	1.580	1.380	1.500	3.250	2.160	3.200	3.000	2.000	2.710
Staff orientation and staff manual regular feature	2.700	0.850	2.600	3.100	1.700	2.600	3.000	2.660	3.320
Total Score	13.360	8.800	13.300	19.840	12.010	19.100	17.000	11.320	16.300
Mean score	2.226	1.466	2.216	3.306	2.001	3.183	2.833	1.886	2.716

Table reveals that the mean score is highest (i.e., 3.306) in the case of Haul, closely followed by KULK (3.183). PULC and TIETL slided further and got the 3rd and 4th position with the score of 2.716 and 2.833 respectively. Paul and Gndul got the 5th and 6th position with their respective scores of 2.216 and 2.226. The last three positions are occupied by PULP, Gjul, and MDUL with their respective scores of 2.001, 1.886, and 1.466. The analyses shows that HAUL, PULC,

and TIETL considered human resources as the most important assets and have adopted HRD policy that is very crucial for TQM.

7 ORGANISATIONAL LEARNING

Organisational learning is a process linked to knowledge acquisition and improved performance. (Senge 1994) 3 described the learning organization as a place "where people continually expand their capacity to create the results they truly desire, where new and expensive pattern of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together." Organisational learning refers to learning at the system rather then at individual level.

TQM is not simply a means of quantifying quality; it is a means of expanding organisational thinking and learning capabilities. Learning helps to understand the "latent needs" of the customer, i.e., the needs and expectations for products and services that the customer may truly value but may have never requested. In order to achieve innovations require organisational flexibility and adaptability, that is, the ability to learn. Full understanding of an organisation requires profound knowledge as advocated by Deming (1986). Likewise sensitivity to environment, analysis of the changes and assimilation are the prerequisites for a learning organization. Learning is essential to continuous quality improvement because new information helps to create new products, processes, services and visions. The employee who stops learning becomes a mindless consumer of goods; with obsolete skills. New information changes our thinking, our goals and the way we do things.

Clair[4] (1997) stated that there is no organization more poised to become a learning organization than an information delivery facility. Senge[5] (1990) differentiates the leader's roles in learning organization from charismatic decision-makers. He said that in order to become leaders as designers, teachers and stewards, require new skills. Leaders in learning organization are responsible for building organizations where people are continually expanding their capabilities to shape their future. He added that continuous improvement and learning are two sides of the same coin. Pearson6 (1993) stated that organisational learning helps to know four essentials: (1) lack of quotas in TQM does not mean lack of standards; (2) quality is not over design; (3) more is not always better; and (4) poor quality is the result of poorly treated employees. Hence TQM should be implemented to enhance the learning capability of the organization.

Chakraborty[7] (1996) stated that the three pillars of TQM, i.e., customer focus, process improvement, and organizational effectiveness are all out come of double loop learning, i.e., relevance loop and performance loop. He said that organisational learning provides the framework and TQM provides the detailed methodology to put the framework in action.

8 REENGINEERING

Innovation is the act of innovating or to effect a change in the established order. TQM is an employee-focused approach that uses the creative energy of employees and acts as a tool for innovative changes and problem solving activities. Johannsen8 (1995) considered TQM as a new type of planned organisational change.

Reengineering is fundamental rethinking and radical redesign. Reengineering academic library requires a user-centered approach, customer care programmes, and radical changes in the processes, state-of-the-art information technology, team-based work groups and collaboration with computing professionals. But successful innovation within an existing organization cannot occur without systematic abandonment of obsolete practices and products. Computerisation of library housekeeping operations and networking are the innovation for university libraries.

The human reengineering approach focuses on changing people's attitudes towards change and encouraging them to be creative. Everything about business comes down to people and human care, human creativity, human commitment, human frustration and human despair have the greatest impact. Therefore, people must be at the heart of any change. The fundamental aspect of reengineering is to articulate client needs, in some cases before they have. It is understanding what will help them to do their job more efficiently and satisfactorily (Jambekar 2000)9. This is the essence of service quality, marketing, and customer relationship management (CRM).

9 COMPETENCIES

Competency is the interplay of knowledge, understanding, skills and attitudes required to do a job effectively from the point of view of both the performer and the observer. Librarian must develop training skills, presentation skills, and teamwork skills.

Professional and personal competencies are essential for successful librarians. In reengineering focus is on the processes, which ultimately render value to the customer, reduce costs, and eliminate non-value

adding activities. To bring change newer competencies and skills are required.

10 QUALITY TRAINING

Quality is neither mind nor matter-quality is a perception. Easier to sense than to define. Environmental forces which the librarians will confront in the future demand organizational excellence. Employee competence and creativity are the precondition for achieving organizational excellence. HRD's role must be refined and restructured in accordance with the pace of changes. In the last century, the librarian's duty was mainly to preserve the library materials in his charge and make them available under proper safeguards whenever requested. The last part of the 20th century has seen a dramatic growth of technological development in various fields.

Library and library professionals cannot run away from this change. They have to accept the challenge they face in the new millennium. Hence, it is absolutely necessary to update the skills and professional ethics of the library professionals. LIS professionals are expected to adapt the changes in collection formats within four walls, information access and services without walls, and proficiency among professional for quality service. The onus lies on the professionals to make the profession more competent and viable. Mahapatra (2000)10. Training will take care of employees' perceptions, conceptual clarity, data collection and analysis. Creating a learning environment is prerequisite for empowerment to happen. When people stop learning they stop growing. Librarian needs to identify the training needs of the staff. He should work as a facilitator, coach, sponsor, promoter, communicator, sharer of knowledge and experiences.

11 INTERNSHIP

Internship gives a better understanding of library procedures and allows testing of theories and questioning of procedures to a much better and greater extent than would be expected of a new librarian on the job. In addition to important guidance from librarians and their colleagues, students get chance to work with modern means of information storage and retrieval. Junior staff members having library science education should be given chance to learn and practiced all library processes and procedures.

12 DATA AND INFORMATION

Deming's Plan-Do-Check-Act (P.D.C.A.) cycle, known as profound knowledge is based on data and information. This loop of feedback

and action provides data and information. Thus complete knowledge, understanding, and insight about library system is based on data and information. Data and information provide feedback about the relevancy, performances, quantity, and quality of HRD intervention in the libraries.

12.1 Application of Information Technology (IT)

Application of IT in libraries enhances efficiency and effectiveness of services. All the nine libraries under study have been using IT for managing their functions and services. But their priorities in the IT applications differ from library to library. In respect of IT application level in libraries it can be inferred both from comparing the data and observing the same at actual settings, that GNDUL emerged as the leader in the list, PULC comes next, closely followed by, TIETL, KULK, and PULP. The level of IT applications at MDUL, HAUL, PAUL, and GJUL is on lower side. High level of IT application at GNDU shows that there are both programmer and information scientist. With the result most of the staff members help in computer application. Moreover the technology available in libraries is far ahead of the users' IT literacy level so despite sophisticated user interface user needs help from staff in retrieving information and other applications.

12.2 Quality of working

Quality of working life is strategic architecture in TQM and HRD framework. But insignificant work, insufficient knowledge, lack of respect and appreciation for good work, exclusion from academic community, lack of authority, lack of participation, and lack of ownership help in further degrading the quality of working life. Moreover, the denial of academic status to the professional staff and indifferent attitude of funding agencies has further affected the quality of working life.

The present day librarians are the future generation of a line that has had the privilege of being the keepers of the key to this storehouse of knowledge. Librarians are not mere catalyst but are the agents of change to transform the libraries of the future from a mere warehouse to a creative laboratory. As a mediator between knowledge and the seeker of knowledge, the librarian has to remain one step ahead being able to predict today, and tomorrow. Librarians have to go out to seek, acquire, stimulate, and disseminate the newly acquired information. It is necessary for librarians to keep abreast not just of books but of all branches of knowledge to able to justify their role as mediators and to find ample satisfaction in it. Librarian should be able to market their information sources, services, and products more

vigorously. A good start would be to look closely at the list of members who use the library and who do not. Despite use statistics, librarians should pay attention to books sitting pretty on the shelves. Technological advances are not everything. The need for personalised service and human contact is paramount in this field. Dialogue with users is essential for understanding their needs (Balachandran 2000)11. With appropriate experience and training in information technology he should acquire the skills to convert the threat of IT into a golden opportunity for the advancement of the profession. The ideal librarian would be a man of universal knowledge, unlimited sympathies, inexhaustible patience, and tact, and an accomplished administrator. The information technology has greatly influenced the development of the profession. This necessitates the restructuring of LIS education to avoid mismatching between the manpower generated and the actual manpower requirements. Subsidiary and vulnerable to allow or diffuse this great profession to any Para profession.

13 LEARNING CULTURE

Librarians have to create learning culture in order to keep pace with speed and quantum of change. The learning culture is the culture where people are interested in acquiring information, knowledge, skills, insight, and foresight. Without these aspects there is no HRD. Openness brings new ideas, approaches, skills, and talent to the libraries. Openness combined with pro-activity gives rise to discovery of new approaches, methods and competencies and thus pave the way for growth. Colaboration and teamwork create new feeling among employees which gives courage to people to face turbulent environment and solve problems. Trust and authenticity make life enjoyable and help in emerging human dignity. Empowerment provide opportunities for people to create organizational spaces for themselves and make an impact in their own ways in each of the jobs they perform.

14 WHOLESOME DEVELOPMENT

The ultimate aim of HRD is to develop the whole person as an individual and as a member of society and work place. Development must include the spiritual, moral, cultural, social, economic and political dimensions. Wholesome development happens when the material and spiritual aspects of life are seen as one unitary process.

14.1 Training : Training may be of several kinds: Orientation course in-service training, workshops in specific areas, short term courses

in areas and continuing education programs. Training entails the deliberate and structured presentation of experience, which may be considered in aiding to change the knowledge, attitude and behaviour of a person.

In India, the frontier institutions in coordinating training and development programs for information professionals include some institutions of national importance like INSDOC, NISSAT, DRTC, NIC, DELNET, along with professional organizations like ILA, IASLIC, SIS, etc. The UGC also organizes refresher courses through university departments and institutions for library professionals. INSDOC has been organizing HRD programs since 1964 and is the best laboratory to train and prepare library, information and documentation professionals for meeting the challenges of the new millennium. INSDOC's HRD programs include Barcode technology, Bibliometrics, Computer applications to library and information activities, E-commerce fundamentals, Electronic publishing, Internet for librarians, Internet and web design, Internet access and online information retrieval, Library automation and resource sharing, Technical writing, WINISIS, Windows, MS-Office, Visual foxpro and MS-Access. NISSAT has been organizing CDS/ISIS, TQM, Scientometrics and bibliometrics, WINISIS and advanced course, Common communication format, Scientific and technical communication, Internet, HTML, Web design, Marketing, Patent and IPR information, etc. UGC organizes training pogrammes through information and library network (INFLIBNET). This programme is directed towards modernization of libraries. The following training programmes for library and information personnel are being organized by INFLIBNET.

Computer application to library and information services , workshop on automation and networking of university libraries, Onsite training is provided to implementation of the programme at the site and also solve the problems. Application of library software prepared by INFLIBNET is also provided to professionals.

DRTC also organizes training programme in the areas of INTERNET, library automation and programs supported by NISSAT.

15 CONCLUSION

The deep-rooted impact of IT on information professionals has kept them confronted with the great challenges, which can be faced successfully only if the information professionals become careful about their skills and abilities and try to improve themselves through continuous involvement in various programmes of education and

training.

About 50% posts of librarians are lying vacant in the universities and the gap is generally filled up by appointing professors as Incharge who have no practical experience of working of the libraries. Teachers are assigned the work of looking after the faculty and departmental libraries even if qualified and competent library staff are available. Of course changes in library and Information Science schools curricula is drastic but no good results are possible in university libraries unless the staff engaged there is exposed to the modern theories and practice of library profession. University library should function as lab for fresh library professionals and senior staff of university libraries should take active interest in instructional programmes (Das and Dutta 2002)12. Human resources of the university libraries are willing and potent enough to act in line with this agenda.

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INTERNATIONAL ORGANIZATIONS ENGAGED IN THE DEVELOPMENT OF LIBRARY AND INFORMATION SERVICES

Joshi Hema Navinchandı

ABSTRACT

Information is an international resource. At the same time being a marketable commodity and the right of every man, the smooth and rapid flow of information among world continents is advocated for balanced and sustainable development. Although developed countries or say industrialized countries are information-rich and the developing countries are information-poor, the former however can not claim sufficiency of information in all the areas. The case in the point is of scientific and technological information. The widening gap between the south block and north block need to be bridged. Widespread use of Computers and Communication Technologies in Information Retrieval and Dissemination would require the proper mechanism and trained manpower for information exchange. For all these international cooperation takes a driving seat. There are many international organizations, systems and centers contributing towards promotion, co-ordination and development of library and information services. This article deals with the role played by FID, IFLA and UNESCO in the development of library and information services.

1 INTRODUCTION

The word "International" means relating to or affecting two or m nations at once [1]. Cooperation being an essential ingredient of lib and information management, at both national and international lev the international organizations like FID, IFLA and UNESCO toge share the responsibility of promotion and development of library

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information services by designing catalyst actions, rendering tech assistance, setting standardization, imparting training, promo computer applications and carrying out regional projects. The pre article therefore has chosen-

1. To introduce the International Organizations engaged i development of library and information services.
2. To explain programmes and activities that are b undertaken by such organizations in the promotion ordination and development of library and information ser
3. To describe specifically the role-played by Internat Federation for information and Documentation International Federation of Library Associations and Institu -IFLA and United Nations Educational, Scientific and Cu Organization –UNESCO.

2. INTERNATIONAL FEDERATION FOR INFORMATION DOCUMENTATION – FID (HTTP://WWW.KB.NL/INFOLEV ABOUT/INDEX.HTML):

2.1 Genesis: Paul Otlet and Henry la Fontaine has founde International Federation for Information and Documentat Brussels, Belgium in 1895 as the International Institute of Biblio –IIB [2]. Initially the IIB dealt with problems of bibliograph librarianship and an attempt was made to standardize cata rules. In 1906, IIB published a proposal of Goldschmidt and C make use of microfilm (the invention of Dagron in 1870) for and documentary reproduction purposes. In 1931 the "documentation" accepted by the Institute in its name (International de Documentation -IID) at its 10th Conference Hague. And the word "information" was added to the name i and the name was changed once again to the International Fed for Information and Documentation –FID, but the acronym I continues. FID is essentially a scientific and professional orga and a non-governmental body.

The membership fall into six main categories: International Me National Members; Corporate Members; Institutional Me Personal Members; and Honorary Fellows. FID currently h 350 members in more than 90 countries. Its revenue com membership subscription; sell of publications and from UNE 1.2 Constitution: There are Commissions and Committees constitute FID. They are attempted hereunder with objective them.

2.2.1. Regional Commissions

a). Latin American Commission (FID/CLA), 1960 and
b). Regional Commission for Asia and Oceania (FID/CAO), 1968.

These commissions are founded in order to take care of Regional Interests with the central aim of promoting, initiating and supporting national documentation and information services in that region and to encourage and facilitate cooperation in documentation and information.

2.2.2. Technical Committees

a) Central Classification Committee (FID/CCC), 1924,
b) Classification Research (FID/CR), 1946,
c) Education and Training (FID/ET), 1953,
d) Linguistics in Documentation (FID//LD), 1960,
e) Information for Industry (FID//IT), 1961,
f) Developing Countries (FID/DC), 1966,
g) Terminology of Information and Documentation (FID/DT), 1972,
h) Patent Documentation and Information (FID/PD), 1976,
i) Research on the Theoretical Basis of Information (FID/RI),
j) Theory of Machine Techniques and Systems (FID/TM) and
k) Operational Machine Techniques and Systems (FID/OM).

There are only eleven main committees but they have a large number of subcommittees and working groups. For e.g., for the various sections of the UDC, the FID/CCC has 26 Revision Committees, with 22 subsections. They have been setup to review fields, plan and execute actions towards furthering the technical programmes of FID.

2.3 Objectives: At the time of inception, the main objective was the creation and maintenance of a comprehensive world reportory of knowledge and development of the Universal Decimal Classification from the Dewey Decimal Classification for providing order and access to the bibliographic entries. The Dewey Decimal Classification is substantially adapted with systematic standard subdivisions and an expanded notation into the Universal Decimal Classification -UDC. The UDC is widely adopted, especially in technical libraries. It is the first classification scheme to be based primarily on facets. It was before 1938, when the headquarters was completely shifted to The Hague, the activities were very few and the participation was confined to European Countries only. In order to complete the programme

sensibly, the Council of the General Assembly proposed a considerably broader formulation of the aim. The aim of FID has thus revised to promote, through international cooperation, research in and development of documentation which includes, interalia, the organization, storage, retrieval, dissemination and evaluation of information however recorded, in fields of science, technology, social sciences, arts and humanities. Five major fields of tasks at international level were placed in prospect:

1.3.1 To increase substantially the effectiveness of documenta tion efforts.
1.3.2 To elaborate means of overcoming effectively the numerous language barriers whose existence impedes the effective coupling of systems.
1.3.3 To develop modern means of information storage, retrieval and dissemination.
1.3.4 To optimize the structure of national, regional and interna tional systems.
1.3.5 To create, from the linkage of national, regional and mission-oriented systems, worldwide networks in the several fields of knowledge, as there development warrants.

2.4 Activities: The FID activities can be divided into:

1.4.1 Scientific and methodological tasks and
1.4.2. Applied tasks.

2.4.1 Among the scientific and methodological tasks confronting FID, the programme of the federation is oriented to:

1.4.1.1 Study formalized and non-formalized, conventional and non-conventional methods and means of communication and make recommendations for their improvement.
1.4.1.2 Contribute to the elaboration of new methods and means in communication based on the newer technological advances such as modern computers, phototype setting and reprog raphy.
1.4.1.3 Define criteria and techniques for the evaluation of the effec tiveness of documentation work of all kinds.
1.4.1.4 Further improve the UDC and develop other retrieval languages designed for documentation search. Complete editions of UDC are issued \ prepared in English, French, German, Japanese, Portuguese and Spanish while abridged and special editions are issued \ prepared in Czech, Danish,

Dutch, English, French, German, Polish, Portuguese, Rumanian, Russian, Spanish and Swedish. A trilingual standard abridged edition in English-French-German was appeared in 1955.

1.4.1.5 Study and elaborate principles of data compilation, processing, storage, search, retrieval and transmission.
1.4.1.6 Elaborate better methods for the preparation of analytical information reviews.
1.4.1.7 Identify the main research trends.
1.4.1.8 Elaborate the theoretical and methodological bases.

2.4.2. Among the applied tasks specially aimed at to:

1.4.2.1 Help in setting up information activities and establishing Docu mentation Centers in countries where they do not exist, and assisting in the development of existing centers.
1.4.2.2 Encourage the establishment of Information Analysis Cen ters, especially in the presently more rapidly progressing fields of science and technology.
1.4.2.3 Promote the training of documentalists at all levels of ac complishments, especially in developing countries.
1.4.2.4 Promote the education of documentation users in the effi cient utilization of documentation services.
1.4.2.5 Publish and promote the publication of manuals, textbooks, and other materials for general and specialized training of documentalists and users of documentation.
1.4.2.6 Organize, on a regular basis, international conferences on the most important problems of documentation.
1.4.2.7 Seek better co-operation with other international organiza tions in the field of documentation.

FID holds a Congress at different venues, once every year. Usually general commissions FID/CAO and FID/CLA also hold Biennial Congress and General Assembly. FID publishes a Monthly FID News Bulletin, a Quarterly International Forum on Information Documentation (English-Russian), the Bi-monthly Research and Development Projects in Documentation and Librarianship, the annual Extensions and Corrections to the UDC and the Bi-annual FID Directory. FID also publishes an active monograph publication programme. FID co-operates with other organizations such as UNESCO, IFLA, International Council of Archives –ICA (1948) and International Organization for Standardization –ISO (1946) Technical

Committee 46 (ISO/TC 46).

The **Global Information Alliance – GIA** is formed by the 35 signatories of the **Tokyo Resolution** at a meeting in London in January 1995, as an informal Strategic Alliance between non-governmental international professional associations active in the fields of information, communication and knowledge transfer (http://www.kb.nl/infolev/fid/conicyt/giaopen.htm). Major aims of the Global Information Alliance are:

- to strengthen collaboration
- strengthen the possibilities to influence policy of national and international agencies
- work out joint efforts between information oriented NGOs and associations

2.5 India's Association and Contribution: India's contribution with FID dates back to 1948.

5.1.1 Joint venture of Dr. Donker Duyvis, a past Secretary- General of FID and late Dr. S R Ranganathan on the work of FID/CA i.e., Committee for General Theory of Classification and FID/CR –Committee for Classification Research.

5.1.2 India had represented in many Technical Committees such as FID/CR, FID/ET, FID/II, FID/LD and FID/PD.

5.1.3 INSDOC, New Delhi has been the national member of FID since its inception i.e., 1952. National Committee of FID has been constituted by INSDOC, to ensure active participation of India.

5.1.4 India hosted International Conference and Regional Conference. To name a few, India hosted the 3rd International Conference on Classification Research in 1975, 2nd Regional Conference on Classification Research in 1985 and 49th Conference and Congress Towards the New Information Society of Tomorrow: Innovations, Challenges and Impact took place in Jaipur and New Delhi, India.

FID's board is effectively inactive as the terms of office of FID's 12 existing Council members expired at the end of December 2001 and no elections were ever held to replace them. For further information please visit http://www.kb.nl/infolev/fid/.

3 INTERNATIONAL FEDERATION OF LIBRARY ASSOCIATIONS AND INSTITUTIONS -IFLA (HTTP://WWW.IFLA.ORG):

3.1 Genesis: On the occasion of the 50th anniversary conference of the American Library Association –ALA held in Atlantic City in October, 1926, an International Committee recommended to the ALA to take the initiative and to request the delegates authorized to study the creation of an International Library Committee and send to Edinburgh on the occasion of the 50th Anniversary Conference of the (British) Library Association in 1927. It was September 1927 when section dealing with International Co-operation of Libraries studied the opinion expressed by these authorized delegates of the national associations. As a result the "International Libraries and Bibliographical Committee" was constituted. Its president, Mr. I. Collijn conveyed its first meeting, in March 1928 where 14 national associations had signed official letters of adhesion and that the committee was thus formally constituted. M. Sevensma, Librarian of the League of the Nations, accepted his nomination as permanent Secretary of the International Federation [3]. The federation comprises of:
1. Members: a) Association Members, b) International Members and c) Honorary Members like Honorary Presidents and Honorary Fellows; and 2. Affiliates: a) Institutional Affiliates and b) Personal Affiliates. IFLA have 1622 Members in 143 countries around the world.\

IFLA's budget is based on membership dues, a grant from UNESCO, and a grant from the Council on Library Resources for strengthening of IFLA's administrative and staff operations and a grant from the Dutch Government to further the operations of the secretariat in The Hague. Furthermore a special grant from the Council on Library Resources enables IFLA to maintain a permanent secretariat at The Hague for the Committee on Cataloguing.

3.2. Constitution: IFLA has an international office for the Universal Bibliographic Control and an office for the International Lending at the British Library Reference and Lending Divisions. IFLA has regional offices in Africa (DAKAR, Senegal), Asia and Oceania (BANGKOK, Thailand), and Latin America and Caribbean (Rio de Janeiro, Brazil). The following are the Divisions and Sections, as established in April 1977 by the Provisional Professional Board:

3.2.1. Division of general research libraries

- Section of national libraries and

- Section of university libraries and other general research li braries.
- Section of parliamentary libraries.

3.2.2. Division of special libraries

- Section of administrative libraries.
- Section of social sciences libraries.
- Section of geography and map libraries.
- Round table of astronomical and geophysical libraries.

3.2.3. Division of libraries serving the general public

- Section of public libraries.
- Section of library services of hospitals and to handicapped readers.
- Section of children's' libraries.

3.2.4. Division of bibliographic control

- Section on bibliography.
- Section on cataloging.

3.2.5. Division of collections and services

- Section on exchange of publications.
- Sections on inter lending.
- Section on official publications.
- Section on rare and precious books and manuscripts.
- Section on serial publications.

3.2.6. Division of management and technology

- Section on library buildings and equipment.
- Section on mechanization.
- Section on statistics.
- Section on conservation.

3.2.7. Division of education and research

- Section on library schools and other training aspects.
- Section on library theory and research.
- Round table of editors of library journals.

3.2.8. Division of regional activities (1976)

- Section on Africa.
- Section on Asia.
- Section on Latin America and the Caribean.

3.3. Objectives: The broad aim of IFLA is to promote international understanding, co-operation, discussion, research and development in all fields of library activity including bibliography, information services and education of personnel and to provide a professional body through which librarianship can be represented in matters of international interest. In pursuance of these objectives, the Federation shall undertake such tasks and enterprises as may be determined appropriate and desirable and notably:

3.3.1 Undertake, support and co-ordinate research and studies;
3.3.2 Collect, collate, publish and otherwise disseminate information relating to library, bibliography, and information and training activity;
3.3.3 Organize general and specialized meetings and conferences;
3.3.4 Collaborate with international organizations in the field of information, documentation and archives;
3.3.5 Set up offices to carry out specific tasks; and
3.3.6 Shall undertake such other activities as will promote fulfillment of theoretical and practical objectives in every field of library activity.

3.4. Activities: The activities if IFLA are guided by Medium Term Programme –MTP prepared by the Programme Development Group. The major programmes in which IFLA concentrates its efforts are Advancement of Librarianship -ALP; Universal Bibliographic Control and International MARC -UBCIM (1974); Universal Availability of Publications -UAP; Preservation and Conservation -PAC; International Standard Bibliographic Description -ISBD; Committee on Copyright and other Legal Matters -CLM; and Committee on Free Access to Information and Freedom of Expression -FAIFE. Another major sphere of activity of IFLA is development of library work in the third world countries. And IFLA's main fields of action are:

3.4.1 Universal Bibliographic Control and its implementation;
3.4.2 UNISIST (World Science Information System) and the possible contribution of IFLA in the implementation of the various recommendations in the areas of standardized international bibliographic description, mechanized systems, exchange of publications etc.;
3.4.3 Cataloging- The permanent secretariat will serve as the center for the international co-ordination and standardization of cataloging rules and practices. It issues a quarterly bulletin: International Cataloging;
3.4.4 International Loan and Exchange- On exchange a European colloquium was held in Vienna in 1972. Loan was the subject of a seminar in 1973. It was the intention and IFLA has been co-operating in an International Loan Center within the new British Library;
3.4.5 Developing Countries- The first IFLA pre-session seminar for developing countries was held in Liverpool (1971), sponsored by UNESCO. This led to the establishment of a

Working Group on developing countries. It was created to provide a forum for discussions of library problems of common interest to developing countries. An increased activity in this field may be expected in the coming years;

3.4.6 Co-operation with FID in the fields of common interest, such as education and training, developing countries, UNISIST, research terminology, standardization etc.;

3.4.7 Standards and legislation in the public library field- Revised standards for public library work were published in 1973;

3.4.8 Relations with other international organizations- IFLA aims at intensifying and stabilizing its relations with other international organizations in the library field;

3.4.9 An active publication policy; and

3.4.10 Revision of the statutes.

In conjunction with the Annual Conference, a number of pre and post Conferences, Seminars and Round Table Meetings devoted to specific areas are held. The periodical publication of IFLA are: the quarterly IFLA Journal and International Cataloging; IFLA Annual and the Annual IFLA Directory, addition to that Monograph Series having number of useful publications and Series related to UBC publications.

3.5. India's Association and Contribution:

3.5.1 India is representing in the Executive Board of IFLA.

3.5.2 In 1985, ILA organized for IFLA a Regional Seminar on UAP in New Delhi and in 1992 IFLA agreed to hold the General Conference in New Delhi under the hostmanship of ILA.

3.5.3 The Indian Library Association and other professional associations / institutions are members of IFLA.

4 UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION –UNESCO (HTTP://WWW.UNESCO.ORG/):

4.1 Genesis: UNESCO, founded in 1946, is an inter-governmental agency belonging to United Nations System. It has its headquarters in Paris, France and 73 field offices and units in different parts of the world. The historical roots of UNESCO lie in the intellectual co-0operation efforts of the League of Nations. And in 1945 the UN founding conferences at San Francisco and London, at which scholars who wanted to help in increasing the flow and exchange of knowledge, drafted the organization's program.

UNESCO is administered by a Director General and an international

civil service of about 1717 persons at Headquarters, subject to advice and direction from an executive board of 30 (originally 18) elected by the General Conference and designated by individual member state. Its permanent headquarters are in the Paris. The constitution provides for national citizen advisory commissions in member states. The activities of UNESCO are coordinated with those of other UN agencies by the UN Economic and Social Council and by the policies of their respective member states. UNESCO's membership, 44 in 1945, had reached 127 by 1972[4].

At the request of a number of archivists from the United States, UNESCO convened in Paris in 1948 a small international group of experts to advise it on archival needs and problems. With the support of UNESCO, this group proposed the creation of an International Council on Archives -ICA, which was formally organized in the Paris during the first International Congress on Archives in 1950. The formulation and execution of a broad-based and continuing programme found difficult as the responsibility for archive development, as well as for library development, was divided between several units of the UNESCO Secretariat. To overcome these difficulties, UNESCO in 1967 created a separate Department of Documentation, Libraries and Archives –DLA [5]. Among many subjects implied in the title, it also deals with the two divisions, Documentation, Libraries and Archives; and Scientific and Technological Documentation and Information that were formulized in 1976. Before that, for many years most of the library work of UNESCO was located within the DLA.

4.2. Objectives: From its inception, UNESCO has been active in promotion, co-ordination and development of library archives, documentation and information services. Its role has been one of promotional, advisory, catalytic and sensitizing in nature. The involvement is in the nature of carrying out projects under Technical Assistant Programme on its own behalf and United Nations Development Programme –UNDP, holding seminars, conferences and meetings, providing experts, equipment, fellowships and consultancies, publishing manuals, preparing standards and guidelines, supporting bibliographical projects and rendering advisory services. It has been carrying out numerous programmes projects and activities, particularly to benefit developing countries.

4.3. Activities: The launching of World Scientific Information System –UNISIST programme in 1973 and the formation of General

Information Programme –PGI Division marked a new phase in UNESCO's work in the library, documentation and information field. The UNISIST principles were applicable also to other fields of study than the natural sciences and technology, and the proposed information systems Development Sciences –DEVSIS, Architecture –ARKISYST and Population –POPINS were influenced by UNISIST's experience in their formation. The activities of UNISIST are grouped in three categories: 1). Conceptual e.g., Planning/ organizing information systems; 2). Normative e.g., Indexing principles; and 3). Operational e.g., Practical assistance, holding seminars. The following are the recommendations to fulfill the here mention objectives satisfactorily:

1. UNISIST should work towards the improvement of the tools of systems interconnection.
2. UNISIST should work to strengthen the functions and improve the performance of the institutional components of the information transfer chain.
3. UNISIST should work to develop the human resources essential to the planning and operation of future information network.
4. UNISIST should work with government to provide optimal economic and political environments for the development of systems connectivity and co-operation.
5. UNISIST should provide assistance to developing countries by helping them to develop minimum bases of scientific information, and by developing pilot projects in co-operation with other United Nations Agencies like Developing Countries: Information Infrastructure; Developing Countries: Linking to UNISIST; and UNISIST Management.
6. The National Information Systems –NATIS programme emerged in 1974, in second intergovernmental conference. The objectives are broadly categorized as:

6.1 Objectives for National Actions are—

a. A national information policy;
b. Stimulation of user awareness;
c. Promotion of reading habit;
d. Assessment of users' needs;
e. Analysis of existing information resources;
f. Analysis of manpower resources;
g. Planning the organizational structure of NATIS;
h. Supplying manpower for NATIS;
i. Planning the technological needs;
j. Establishing a legislative framework;

k. Financing NATIS; and
l. Universal Bibliographic Control.

6.2 Objectives for International Actions are

a. Assistance to member states for the planning and development of NATIS;
b. Promotion of UBC;
c. A long-term programme of action; and
d. Convening of an intergovernmental conference.

A new General Information Programme –PGI emerged as the Director General's recommendation, accepted by the 1976's General Conference that was to merge UNISIST and NATIS. And with the PGI's response to the General Conference, to promote the development of modern archival and records management systems and services, a programme designated Records and Archives Management Programme - RAMP was created in 1979. The overall objectives of RAMP according to the working document prepared by Secretariat in consultation with archival experts in May 1970 are as follows:

1. To promote and assist in creation of a full awareness and understanding of he value and uses of records and archivesas basic information resources, particularly in relation to planning And development and in conjunction with other information resources.
2. To assist Member States, upon request, in the organization and development of the records management and archival systems and services necessary for full and effective utilization of these basic information resources [6].

The main continuing information programmes within the control of UNESCO are as follows:

1. Data Retrieval System –DARE for Documentation in the social sciences.
2. Marine Environmental Data Referral System – a recent development by UNESCO with the United Nations Environmental Programme's International Referral System –UNEPIRS.
3. International System for the Exchange of Information on the Application of Science and Technology Department –SPINES. It is planned to become operational in the field of information exchange of science and technology policy in 1983.
4. A joint venture of PGI and FID called International Information

System on Research in Documentation –ISORID.

5. International Serials Data Systems –ISDS: a joint venture of PGI within the UNISIST and the French Government of Paris. Objectives of the ISDS are-

5.1 To develop and maintain an international register of serial publications;

5.2 To define and promote the use of a standard code International Standard Serials Number –ISSN for the unique identification of each serial;

5.3 To facilitate retrieval of scientific and technical information in serials;

5.4 To make this information currently available to all countries, organizations or individual users.

5.5 To establish a network of communication between libraries, secondary information services, publishers of serial literature and international organizations; and

5.6 To promote international standards for bibliographic descriptions, communication formats, and information exchange in the area of serial publications.

6. The joint venture of UNESCO's PGI programme and the Australian Standards Institute in Vienna called International Information Center for Terminology –INFOTERM, aims at coordinating terminological activity and collecting data worldwide.

7. A joint venture of UNESCO's PGI and the British Library, London called UNISIST International Center for Bibliographic Description –UNIBID, where UNESCO provides 10% of funding. Objectives are to maintain the UNISIST Reference Manual for Machine Readable Bibliographic Description, issuing amendments as required and to provide information on and coordinate research in the field of Standard Bibliographic Description.

8. A joint venture of UNESCO's PGI and the Polish Institute for Scientific, Technical and Economic Information –IINTE in Warsaw called UNISIST Clearing House for Thesauri and Classifications, aims to collect, process and disseminate information on thesauri, classification descriptive lists, subject heading lists etc., in all subject fields. It publishes a Bibliographic Bulletin in English.

9. A joint operation with UNESCO's Educational Sector of a Documentation and Information Unit at Geneva known as International Bureau of Education Documentation and

Information Systems –IBEDOC which serves UNESCO and its member states by publishing a quarterly Newsletter, a Directory and many other alerting publication.

10. Regional Network for Exchange of Information and Experience in Science and Technology in Asia and the Pacific –ASTINFO.
11. UNESCO launched Asia-Pacific Information Network in Social Sciences –APINESS in 1986 with the collaboration of Association of Asian Social Research Councils.
12. UNESCO's work in the field of software development is a great encouragement to developing countries to switch over to computerization and modernization in the library and information area. They are the portable, user-friendly software packages to be supported by microprocessor systems for application in library and information such as CDS/ISIS, SUPERDOC and IV + V (Information Vermittling and Verarbeiting i.e., Information Dissemination and Processing).

UNESCO publishes bi-monthly UNESCO Bulletin for Libraries; quarterly UNISIST Newsletter and other publications like Monographs, Manuals, Handbooks and guidelines, Training Manuals and Package Reports, Seminar Proceedings, Project Documents etc. The chief organizations joined with UNESCO are,

- International Council on Archives –ICA, (1948): It was founded in Paris to establish, maintain and strengthen relations among archivists of all nations and among all professional agencies and institutions whose activities relate to those of the activities of UNESCO to some extent.
- International Organization for Standardization –ISO, (1946): In 1944 the United Nations Standard Coordinating Committee was set up and this became ISO in 1946 at a London Conference. It is based on the work of the Federation of National Standardizing Association –ISA, which was founded in 1926. ISO has 146 Technical Committees of which one, TC/46 is concerned with libraries, documentation and information handling.

5 CONCLUSION:

It has been seen that the international cooperation is fostered by voluntary participation of national agencies and various international organizations have come up to offer a framework as well as mechanism to practice international cooperation. United Nations agencies like UNESCO is inter-governmental body whose role is

promotional and advisory and whose activities are catalytic and multiplier effect in the participating member countries. On the other hand, organizations like FID and IFLA, voluntary organizations are professional bodies and are offering a forum for contacts and exchange of ideas and experiences. And only through international resource sharing, we would be able to attempt universal control, standardization and dissemination of information in the field of library and information services throughout the world.

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NEED OF HUMAN RESOURCE DEVELOPMENT IN ELECTRONIC INFORMATION ENVIRONMENT

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1 INTRODUCTION

It is now recognised that information plays a very important role in national development and that an adequate library and information structure is therefore essential. Such structure requires professional information personnel of sufficient quality and in sufficient number to plan, design, organise, manage and operate a wide range of information system and service. Further more information systems and service should be able to draw up on a theoretical foundation established by fundamental research in information science. For these purpose skilled research workers are required, the field of library and information studies is a dynamic area of study drawing upon different technologies such as:

a) Computer Technologies
b) Telecommunication Technologies
c) Reprographic Technologies
d) Library Technologies
e) Technical Communication

The present curricula of library and information science needs to undergo drastic change incorporating the latest technologies for study

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regarding skills of staff at all levels.

Professional library staff should be accorded full academic and management status. This needs to be linked to proper plan of professional human resource development to ensure that librarians are able to cope up with the new technologies.

2 HUMAN RESOURCE PLANNING

The primary purpose of Human Resource Planning, as in any other aspect of planning, is to prepare for the future by reducing its uncertainty. Human Resource Planning Strategies should:

1) collect, maintain and interpret relevant information regarding human resources.
2) report periodically manpower objectives, requirements and existing employment and other features of the manpower.
3) develop procedures and techniques to determine the requirements of different types of manpower for a period.
4) develop measures for the utilisation of the humanware.
5) employ suitable techniques leading to the effective allocation of work with a view to improving humanware utilisation.
6) conduct research to determine factors hampering the contribution of the individual and groups to society/organisation with a view to modify or remove these hurdles.
7) develop and employ methods of economic assessment of human resources reflecting its impact as generator of other resources.
8) evaluate the procurement, promotion and retention of the effective human resources in the context of future requirements.
9) analyse and control societal of organisational processes and structure for maximising individual and group performance.

3 HUMAN RESOURCE SYSTEM

Various systems and programmes or activites are needed for HRD. Such systems and programmes should have the following elements:

1. Development of leadership
2. Organisational Commitment
3. Career Planning Development
4. Performance appraisal
5. An adequate reward system

6. Potential appraisal system
7. Effective Counseling system
8. HR Information system
9. Grievance handling system
10. Management development system
11. Technical development system
12. Supervisor development system
13. Training and education system
14. Discipline management system
15. Health and welfare management system
16. Feedback

HRD as a function consists of various activities related to training, performance appraisal and development. They play a significant role in achieving the individuals' growth and development. The functions of HRD Planners in society as well as in organisations are:

1. To act as an expert and consultant
2. To facilitate change from tradition to modernity
3. To participate in planning and strategy formulations
4. To keep liaison between individuals and groups for HRD
5. To identify HRD Strategies and develop team work
6. To motivate individuals and groups to achieve HRD Goals effectively and efficiently.
7. To diagnose problems and to determine appropriate solutions in HRD areas.
8. To provide Co-ordination and support services for conducting HRD Activities and services.
9. To evalaute the impact of HRD on the overall performance and production
10. To conduct research and provide the feedback for further planning.

4 HUMAN RESOURCE RELATIONSHIP

HRR deal with the handling of people individually and collectively as members of society, organisations, trade unions etc. Human relations, attitudes and values are important factors for HRD. The aim of Human Resource Relationships is to increase co-operation, trust and to involve people actively in HRD activities and programmes.

5 HUMAN RESOURCE UTILISATION

To improve the use and utilisation of Human Resources the following

actions are needed:

1. Conduct productivity drive
2. Improve manpower budgeting and control techniques
3. Introduce work measurement
4. Use appropriate rewarding methods
5. Improve motivation
6. Involving people or employees in improvement programmes
7. Introducing new technology
8. Introducing training programmes
9. Creation of scientific temper
10. Explain the role of information/knowledge in the progress and development

6 CONCLUSION

Jawaharlal Nehru in his Tryst with Destiny, rightly stressed that the vast concourse of human resource should be rejuvenated to mould destiny. The HRD Policies and programmes of government will reduce the vast gap between the rich and poor countries in the world. HRD has gained momentum with the liberation of more and more countries in Asia from the western colonialism. All the developing democratic countries have HRD as an agenda for qualitative improvement of the humanware in their countries and to grapple with the challenges of modernity.

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ORGANISATION OF ELECTRONIC INFORMATION: SOME ISSUES

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ABSTRACT

This paper highlights the issues concerned with the organization of electronic information in the library and information centers. Now-a-days, libraries have started acquiring electronic information in the form of CD-ROM databases, electronic and on-line journals and e-documents to cope with the present scenario and to meet the users' information requirements. Electronic forms of information in libraries and information centers are making the job of librarian tough as far as their identification, selection, organization and retrieval is concerned. This paper identifies and discusses some of the issues associated with the organization of electronic information sources. It concludes that librarians and information managers are now required to build their collection and organize information services accordingly in the new technological age for their survival.

1 INTRODUCTION

Electronic publishing has become a major topic in the world literature in recent years, particularly because of the developments in information technologies. Electronic publications are those publications that are in electronic or digital forms [1]. These electronic and on-line publications are making a forceful entry into the libraries, especially the academic and more affluent R & D institutions are slowly and steadily migrating towards the electronic publications

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including CD-ROM databases, electronic and on-line journals and e-documents. The very nature of these electronic publications put forward problems to librarians for their identification, selection, organization and retrieval. The present paper identifies and discusses some of the problems associated with these types of information sources.

2 PROBLEMS POSED BY ELECTRONIC PUBLICATIONS

The very nature of electronic publication poses difficulties for their selection, organization and retrieval. The organization of CDs is troublesome. If we remove the CDs that come along with the books from books and organize them separately on racks, librarian shall face problems in charging and discharging a book and face problems in selecting the right CD of the book which is being charged. On the other hand, if we keep the CD in the book itself, chances for its missing or damages are very high. It is an issue, the librarians have to tackle in the near future.

Apart from this, there are some more issues that arise at the identification, selection and acquisition stages relate to the nature of electronic resources.

3 ACQUISITION

Identifying potential electronic resources for building collection often requires different processes and pathways than those established for print materials. These processes are complicated as electronic resources often come in several different packages. And indicating just what is in each package is not a completely straightforward process. Acquiring electronic resources poses yet another kind of challenge since one is not sure whether to buy them or get them on rent. E-documents differ from printed materials in the ways they arrive at the library as they tend to come through wires and cables rather than in boxes. A further consideration is that e-documents, in nearly all media, are not like printed things in that they refuse to stay in a fixed, permanent arrangement. Imagine the consequences of these differences [2].

Periodicals in printed form are usually selected basing on certain procedures such as asking for a sample issue, evaluation, reviews, etc. before they are actually acquired [3]. In electronic environment, there is a certain amount of 'try before you buy' in the form of trial

subscriptions and access to a demonstration version of the resource, but the form of the resources tested may depend on the computer equipment available to the selector. It may differ substantially from the version that would be acquired [4]. Therefore, identification, evaluation, selection and organizing are the main issues to be addressed before resorting to subscription of e-journals and for the selection of e-documents.

3 ACCESSIBILITY

Another concern is the decision regarding the format and type of journals to be subscribed, i.e., whether to continue the print version or subscribe to electronic version only or both [5]. Accessibility as availability for use is one consideration. Typically, this question does not arise in the world of printed documents. An item, once catalogued and shelved, remains available and accessible for all those who can use the catalogue. Sharing resources through inter library borrowing is an established service in libraries, so the potential user need not to be a member of the library's user community to access the books or journals. With electronic documents, all these certainties disappear. Availability may be restricted to those of the immediate library user community. There may arise major restrictions on making the resource available to those who are not affiliated to the library. Another dimension of accessibility is how the electronic resources may be accessed. Access may depend on factors such as the library's technological infrastructure. It may need to be considered when deciding whether to acquire an electronic resource or not. With electronic resources, one is simultaneously expanding and contracting the user base, i.e., by expanding the number of users who can use a resource from home or office on one hand, but contracting by including only those members of the primary user community on the other hand.

In some cases, the quality of information in the resource may be of known value but for some it may be completely untested. Sometimes similar information is available through a different source with a different interface. Therefore, the question arises how does one weigh the relative merits of content and presentation of these documents. Librarians and information managers have had to answer these questions concerning accessibility in all its dimensions [6].

4 OWNERSHIP

If all the identification and selection issues had been resolved, then

there are still a multitude of acquisition factors. First is the nature of acquisition, which commonly is understood as buying and owning. Nearly all the printed volumes survive in the hands of users or on the shelves until withdrawn or until doomsday. By contrast, electronic resources cannot be described in terms of ownership but frequently described in terms of access and use. One acquires rights or licenses to access to electronic resources [7]. As back-files are maintained on networks, libraries have to pay extra charges for accessing back volumes (subscribed earlier) after the expiry or cancellation of subscription by way of access fee, password fee or renewal fee. This is not the case with printed journals. It means that, even after paying subscription charges to electronic (on-line) journals and documents, the library may not possess (own) them; they merely provide access to information contained in them even during the subscription period [8].

5 PERMANENCY

While discussing any electronic resource, its fluid nature makes it difficult to say what it is being described. CD-ROMs even though seems permanent in format vary when they are replaced with an updated disc or have an upgraded interface. This creates some thorny issues when one imagines cataloguing these resources [9].

6 PROCESSING

Electronic data differ from printed materials in the ways they arrive at the library as well, since electrons have only a negligible physical presence. They tend to arrive through an electronic 'pipe' with a computer for a faucet. When they are not being used, they exist in a state of potential, rather than reality. The reality that exists for any user will very likely differ in appearance and capabilities depending on the size of the pipe and the type of faucet being used to access the resource. There may be an all text option, or a low graphics version of a resource. The version one finds on the World Wide Web may differ in substantive as well as graphical ways from the version reached through Telnet. In creating a permanent record for these resources the cataloguer cannot reflect the variations in any way. Can he catalogue the documents as presented through the computer screen available at the cataloguer's workstation, or does the cataloguer travel from version to version to discover the common elements. If the resource has different names in its different incarnations how is that to be reflected in the records. To put it another

way, one may not know a book by its cover, but at least it has one. Then what is the equivalent of an electronic resource's cover? Another question is what kind of record is being created for the electronic resource, and its corollary, where will the record reside? Devising unambiguous, durable, robust, and accurate locating schedules for these resources is another challenge [10].

7 READABILITY

Even computers with the best resolution cannot match the print equivalent for reading. Furthermore, conventional publications allow continuous, uninterrupted reading. Computers cannot hold a full page at a time and need scrolling of screen every few minutes for browsing which may detract the attention of the readers. The quality of figures in the computer printed output even using laser printers, cannot match that of print publications because of resolution. This is in addition to the lack of pagination, ease of usage, and the transportability of publication for a leisurely reading at a convenient place and time still make the printed journal preferable over the electronic journal [11].

8 STANDARDIZATION

At present the e-journals are available in various forms, formats and through different access points. This is a problem for the reader for accessing. Some of the e-journals do not include page numbers as the size of the page in different computers(VDUs) is different. This raises citation problems when the same material to be cited can appear in different pages. The hardware and software also need to be standardized to enable the end-user to retrieve information irrespective of the make of the machine and the required retrieval software. At present a user has to get familiarized with a plethora of retrieval software associated with the various CD-ROM databases. A common command information retrieval language which can work with any computer and retrieval software may be useful in such situations [12].

9 CONCLUSION

In the present technological age, library's organization may need to be revised to better support the growing number of electronic resources in its collection. If all the records that identify the resources available to the users' community were integrated with the necessary access guides and suggestions for its use, they would provide the user an opportunity to get the maximum utility from each resource.

This would make the resources even more cost effective for the library acquiring them.

As on today, where business enterprises are increasing their marketing efforts to sell information directly to users over the WWW and the Internet, libraries that do not meet users' expectations may not thrive or even survive. Redesigning the library's organization is one step in ensuring a dynamic and vital future for librarians, libraries and the users who rely on them. Electronic forms of information in libraries and information centers are making the job of librarian tough as far as their identification, selection, organization and retrieval is concerned. It is the responsibility of librarians to accept the challenge and organize the library accordingly. Though electronic publication involves certain problems due to its very nature, its increasing use in library proves its popularity with users. In ever changing scenario, librarians are required to reorganize their services and collections in an entirely new perspective that should exactly match the interest of users.

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UPWARD STRATEGIES OF THE JUNIOR STAFF : A STUDY OF UNIVERSITY LIBRARIES IN HARYANA

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1 INTRODUCTION

Librarian is the key person in the University Library System. He is the leader who leads the library team to accomplish its goals. Main goal of the University Library is to provide excellent services to its users, as to produce the relevant documents and information according to their requirements and availability of the materials in the library as and when they need. The question arises what is that the librarians actually do? They do nothing but exercise leadership. The way of exercise leadership is called leadership style. The exercises of leadership or leadership style involve the methods of doing work, getting work done through his subordinates, it also involves the tactics or strategies, which they are adopting in their course of work. The strategies adopted by the Librarians to get works from their subordinates are called the downward strategies. Leader use power to influence the followers that is exercised through the use of various behaviour strategies or methods. Leaders exercise their power but by using different methods, in different situations, and for different reasons.

2 STRATEGY

The word strategy has entered in the field of management more recently. At first the word was used in the terms of Military Science to mean what a manager does to offset or potential actions of competitors. Originally the word strategy has been derived from Greek 'Strategies', which means 'general'. The word strategy, therefore,

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means the art of the general. When the term strategy is used in millinery sense it refers to actions that can be taken in the light of action taken by opposite party.

According to the Oxford Dictionary, military strategy is the art of so moving of disposing the instruments of warfare (troops, ships, aircraft, missiles, etc.) as to impose upon the enemy the place, time and conditions for fighting by oneself. Strategy ends, or yields to tactics when actual contact with enemy is made. However in management the concept of strategy is mostly taken in a slightly different from rather than military form.

Chandler (1962), who made a comprehensive analysis of the interrelationships among the environment, strategy, and organization structure has defined the term strategy as the determination of the basic long-term goals and objectives of an enterprise and the adoption of the course of action and the allocation of resources necessary for carrying out these goals".

The Professors at Harvard Business School, viewed the term strategy as the pattern of objectives, purposes or goals and major policies and plans for achieving these goals, stated in such a way, so as to define what business the company is in or is to be and the kind of company it is or is to be.

According to Glueck (1980) strategy is a unified, comprehensive, and integrated plan relating the strategic advantages of the firm to the challenges of the environment. it is designed to ensure that the basic objectives of the enterprise are achieved.

3 SUBORDINATE POWER OVER SUPERIORS

In order to understand the influence and strategy of leadership, it is necessary to consider the influence of subordinates on the leader as well as the leader's influence over subordinates. The potential influence of subordinates is sometimes called their 'counterpower', and it serves as a restraint on the leader's exercise of power. The primary source of subordinate counterpower is leader's dependence on subordinates. This dependency can take several forms. It is most obvious when the leader is selected by subordinates and can be replaced at their discretion. In groups with emergent or elected leaders who lack appreciable position power, the subordinates clearly hold the balance of power. Leaders are provided with the opportunity to exercise influence based on their expertise, attractiveness, and legitimate status, but their power will quickly vanish if they fail to satisfy the expectations and needs of followers (Yukl, 1981).

For leaders who have substantial position power and are accountable to superiors or some power elite, retention of the leadership position can be influenced but not completely controlled by subordinates. The removal of such leaders is difficult to accomplish by subordinates, and it would likely require an intense rebellion or a mass protest by a sizable percentage of them. The principle source of counterpower in organizations with appointed leaders is the leader's dependence on subordinates for attainment of other desirable outcomes besides retention of his office. One form of dependency occurs where subordinates formally evaluate leaders, and this evaluation influences the leader's compensation, reputation, and prospects for promotion to a better position. However, organizations seldom provide a formal mechanism for subordinates to evaluate their leaders. In most cases, subordinates influence the evaluation of leaders only indirectly. If subordinates perform well, they can help their boss gain a reputation as an effective manager. On the other hand, if they restrict production, sabotage operations, go out on strike, initiate grievances, hold demonstrations, and complain directly to higher management, subordinates can damage the reputation of their boss (Mechanic, 1962).

The counterpower of subordinates is more visibly displayed and more effectively exerted when subordinates organize to take collective action (Lee, 1977). Even the threat to establish a subordinate union or association may serve as a restraint on superiors. Counterpower is also enhanced when one or more subordinates forms an alliance with powerful persons in the organization (e.g., peers or superiors of leader) or with outside groups (e.g., special interest lobbying groups, professional associations) that are able to exert pressure on the leader and on his superiors (Preffer, 1977).

Individual subordinates derive power from control over vital information (Pettigrew, 1972). When subordinates have exclusive access to information that is used by superiors to make decisions, this advantage can be used as a source of subtle influence over the superior's decisions through information distortion. Information control also facilitates use of rational persuasion by subordinates, and in extreme cases may enable them to use rational faith as a form of influence over their boss. One tactic used to increase the leader's dependence on a particular subordinate is for the subordinate to assume responsibility for collecting, storing, and reporting operating information. Preparing reports with complex analyses that cannot be readily understood by the boss makes him dependent on the subordinate for interpretation of the reports, which may cause him to

invite the subordinate to participate directly in decision making, such as by attending meetings and making recommendations (Korda, 1975).

Another source of subordinate influence is demonstration of special skill and expertise in dealing with critical problems in the organization. The ability to perform some function that the leader cannot do himself increases leader dependence on a subordinate (Mechanic, 1962).

One problem with expert power is that it is quickly dissipated if special knowledge and expertise are shared to the point where people are no longer dependent on the agent. Subordinates may try to protect their expert power by keeping procedures and techniques shrouded in secrecy, by using technical jargon to make the task seem more complex and mysterious, and by destroying alternate sources of information such as operating manuals and written descriptions of computing procedures (Hickson, at al., 1971).

In highly bureaucratic organizations, knowledge of organizational rules and regulations is another type of expertise that may become a source of counter power. Rules and tradition provide a basis for legitimate requests by subordinates. If the manager is newly appointed from the outside, subordinates will have an advantage for a time knowing rules regulations better than the manager (Jacobs, 1970).

A final source of upward influence for a subordinate is demonstration of approval and loyalty. People who have lower power and status often try to use flattery and praise to ingratiate themselves with high status persons. If flattery and praise appear insincere, they are unlikely to be effective, but if used in subtle, skillful manner over a period of time, they may help a subordinate to establish a closer relationship with his boss. Other tactics for improving relations with the boss include being dependable and displaying loyalty when the boss is criticized by others (Dubrin, 1978)

A survey of studies on power strategies indicates that a number of overlapping strategies are available. Some of the most widely reported downward strategies of the University Librarians are:

1. Blocking- it involves the withholding some crucial information; engage in a work slow-down; act unfriendly or do not cooperate and stop the work in between if demands were not met.
2. Coalition- involves such things as the use of steady pressure for compliance by obtaining the support of coworkers' and/or by 'obtaining the support of subordinates'.

3. Defiance- it includes oppose openly; differ if it is necessary; put a note of dissent on proposals; challenge ability and fight for it.
4. Diplomacy- to show their welfare in doing his work.
5. Exchange of Benefits- involves such things as 'offering an exchange' or 'offering to make personal scarifies'.
6. Ingratiation- involves making the other person feel important, inflating the importance of a request, showing a need, asking politely, acting friendly or humbly, or pretending that the other person is really going to make the decision
7. Manipulation- informing or arguing in such a way that the recipient is not aware of being influenced or feel them that it was their idea, keep the record of their mistakes.
8. Personalized Help- personal favours, help them in the time of their need.
9. Persuasion- force repeatedly to comply with arguments, convincing that my way was the best way.
10. Reasoning- it includes to explaine the reasons for request; use logic to convince; to provide sufficient information in support the view presented; tell the reasons why the presented plan is best; and to convince humbly by explaining the importance of the issue.
11. Showing Dependency- they had the responsibility to decide things for me, to show that I cannot really work their help.
12. Showing Expertise- show the knowledge of the specific issue, told that I have a lot of experience with such matters, influence with technical knowledge and competence.
13. Upward Appeal- involves bringing additional pressure for conformity on the target of influence by calling a person at a higher level in the organization to help- as 'making a formal appeal to higher levels' or 'obtaining the informal support of higher-ups'.
14. Unclassified- it includes to show a feeling of dislike; to voice the wishes loudly; and pay friendly visits.

4 OBJECTIVES OF THE STUDY

The objective of the present study is to find out the upward strategies adopted by of the subordinate staff (personnel's directly related to the University Librarian) towards their University Librarian in their day-to-days working. The Fourteen upwards strategies (1) Blocking; (2) Coalition; (3) Defiance; (4) Diplomacy; (5) Exchange of Benefit; (6)

Ingratiation; (7) Manipulation; (8) Personalized Help; (9) Persuasion; (10) Reasoning; (11) Showing Dependency; (12) Showing Expertise; (13) Upward Appeal; and (14) Unclassified were identified for the present study, which were mostly adopted by the subordinates against their Librarian in their daily working.

5 LIMITATIONS OF THE STUDY

This research endeavor has been completed by an individual scholar and therefore, certain constraints like time, financial resources, and sufficient authority to collect the required information, are always there. To highlight few, it may be mentioned that the inferences drawn are based primarily on the perceptions of the respondents and the observations made by the scholar. And thus, like other social sciences, the limitations of perceptions of the subjects and also the prejudices of the scholar in making observation always influence the rationality interpretations. Though, through observations the scholar tried to compare the two situations i.e. the information recorded by the observational units in the schedule and the actual behaviour practiced by the leaders of the selected libraries to lead the participants. For the purpose of generalization of inferences in the survey sample libraries from different states of the country should have been included, but due to time, financial and personal limitations, only four University Libraries operative in the State of Haryana have been selected. Pertaining to actual practices of downward strategies practiced by the heads of the Libraries, however, the author had tried to unearth the reality either by putting counter questions or by observing the behviour of the heads. Despite these limitations, the author with his sincere efforts has tried to find out the significant conclusions on the subject of the study.

6 UNIVERSE OF THE STUDY

For the purpose, the main survey was conducted in the period of 1996 to 1998 and the study is confined to the University Libraries located in the State of Haryana. The University Libraries in India are many and they differ form one another rather radically in many respects. The areas are also so wide and it is very difficult to cover it by the investigator. And thus for the purpose only one state was selected for investigation. During the period of investigation, there were four University Libraries, in the State of Haryana, which are rich in its collection and better in providing effective services.

7 THE SAMPLE

The sample for the present study has been drawn from all the four University Libraries of the State of Haryana: i.e. Nehru Library, Ch. Charan Singh Haryana Agriculture University, Hissar (UL1); National Library In Dairy, National Dairy Research Institute (Deemed University, ICAR), Karnal (UL2); Jawaharlal Nehru Library, Kurukshetra University, Kurukshetra (UL3); and University Library, Maharashi Dayanand University, Rohtak (UL4).

Table 1: Data Summary Regarding the University Libraries under Study

Library code Name of the University library and address (date of establishment)	UL-1 Nehru Library, CCSHAU, Hissar (1970)	UL-2 National Library In Dairy. National Dairy Research Institute, Deemed University (ICAR), Karnal (1955).	UL-3 Jawaharlal Nehru University Library, Kurukshetra University, Kurukshetra (1956)	UL-4 University University, Library Maharshi Dayanand University, Rohtak - Haryana (1976)
Type of University	Agricultural University	Deemed University (University level institution in Dairy).	State University	State University
Type of Library	Agriculture Uni. Library	National Library in Dairy	University Library	University Library
Size of the Staff (Total)	90	21	91	86
Professionnel Semi-	10	5	16	28
Professionnel	28	5	20	10
Other Staff	52	11	55	48

8 PROFESSIONALLY QUALIFIED AND EXPERIENCE OF THE LIBRARIANS

For the purpose of accomplishing the main objectives of the present study of all the librarians of the four universities have been included in the sample. The table shows that out of four, three library leaders were professionally qualified and only one is non-professional. The two leaders were working as librarians and other two were operating as incharge librarians. Experience-wise the two librarians have got the experience of about seven years where as the incharges are credited with experience of two and half year (refer to table 2.)

Table 2: Professionally Qualified and Experience of the Librarians.

University Libraries	Professional	Non-Professional	Librarian	Library In-charge	Service as Leader of the Library
UL.1	Yes	-	Yes	-	7
UL.2	-	Yes	-	Yes	2½
UL.3	Yes	-	-	Yes	2½
UL.4	Yes	-	Yes	-	22

9 THE SURVEY SCHEDULE

To obtain the perceptions of respondents on various issues pertaining to the objectives of the study one schedule (Annexure-I) consisting of two sections has been prepared and administered to the subjects. Sections A includes had 6 items concerning the personal information data of the respondents. Fifty five items have been included in section B to examine the ways of dealing by the subordinates with their University Librarian in day-to-day affairs (for instance upward strategies of the subordinates towards their Librarian)

10 UNIVERSE OF THE STUDY

The sample for the present study has been drawn from all the four University Libraries of the State of Haryana: i.e. Nehru Library, Ch. Charan Singh Haryana Agriculture University, Hissar (TS-90= 10P, 28SP, 52) (UL1); National Library In Dairy, National Dairy Research Institute (Deemed University, ICAR), Karnal (TS-21= 5P, 5SP, 11) (UL2); Jawaharlal Nehru Library, Kurukshetra University, Kurukshetra (TS-91= 16P, 20SP, 55) (UL3); and University Library, Maharashi Dayanand University, Rohtak (TS-86= 28P, 10SP, 48) (UL4).

11 THE STATISTICAL ANALYSIS

Most of the items related to the selected variables incorporated in the schedule supplied to collect the primary data was designed to be responded in terms of five point scale (Likert type scale) and respondents were asked to identify their position on the scale by encircling any one point i.e. either by circling SA or SD on somewhere in between these two extremes. For the purpose of scoring each category of responses, we have assigned weight as 5 to SA, 4 to A, 3 to I, 2 to D and 1 to SD.

The frequencies for each response have been totaled in relation to

every dependent variable and for all categories of our observational units included in the sample. And, finally these frequencies have been multiplied by their respective assigned weights to compute obtained score. The percentage for score has been ascertained as under:

Percentage for score = Obtained Score divided by Maximum Score multiplied by 100. (i.e. O.S. * M.S. / 100)

Where, Maximum score = Total number of respondents multiplied by Maximum assigned weight (i.e. 5).

12 UPWARD STRATEGIES MEASURED

To assess the prevalent upward strategies 55 items were contained in the upward strategy measure in the different dimension. The items were drawn from recent works of Falbo (1977), Falbo and Peplean (1980, Kipnis *et al* (1980) and Ansari (1990) with some modifications. To respond in terms of upward strategies like blocking, coalition, defince, diplomacy, exchange of benefits, Ingratiation, manipulation, personalised help, persuasion, reasoning, showing dependency, showing expertise, upward appeal and unclassified, the respondents were prompted to check their position on a 5 point scale as in the case of downward strategies with which during the past time they engaged in the behaviors described by the scale items to influence their librarians at work. They were instructed to answer in terms of what they generally did or did not. What they would like to do has no meaning here. The distribution of items upward strategies is presented in Table 2.9.

TABLE 3 DISTRIBUTION OF ITEMS OF UPWARD STRATEGIES MEASURED

Sr.No.	Strategies	Code	Number of Item
1	Blocking	B	4
2	Coalition	C	5
3	Defiance	DI	5
4	Diplomacy	D	4
5	Exchange of Benefits	E	5
6	Ingratiation	I	4
7	Manipulation	M	4
8	personalized help	PI	3
9	Persuasion	P	3
10	Reasoning	R	5
11	Showing dependency	D2	3
12	Showing expertise	EI	4
13	Upward appeal	U	3
14	Unclassified	UI	3
Total Number of items			**55**

13 UPWARD STRATEGIES

Section EI of the schedule which deals with fourteen upward strategies (i.e. blocking, coalition, defiance, diplomacy, exchange of benefit, Ingratiation, manipulation, personalized help, persuasion, reasoning, showing dependency, showing expertise, upward appeal and Unclassified) of the subordinates of the university libraries in dealing with their leaders in their day to day working. A total of 55 single-statement items were identified and measured on the basis of the recent work of Ansari (1990), of course with some modifications according to the needs of the present study. The respondents were asked to respond the item statements, on a 5-point scale, about how they influence their librarians. They were instructed to respond in terms of what they generally did, and not what they would like to do. To collect the information on fourteen strategies 55 items relevant to these strategies were palace before the subordinates to measure their perceptions about their strategies which they have adopted to manipulate their respective leaders. Table 3.8 describe the upward strategies and distribution their items in schedule.

The identified sets of the items pertaining to upward strategies of the subordinates to interact with their librarians were calculated with their appropriate score awarded to various items by them. After calculation, the scores of the sets were converted into the percentage score on the basis of 100 as maximum base scores (refer to please, table 3.9). The Table 3.9 describes that the subordinate staffs of the UL1 adopted the strategies like ingratiating, showing expertise, persuasion, personalized help, showing dependency, diplomacy, unclassified strategy and upward appeal, in dealing with their librarian in day-to-day functioning as the obtained score of the strategies have been more than 60.0 per cent. The figure also point out that the subordinate never use blocking, reasoning, coalition, manipulation defiance and exchange of benefits while interacting with their leaders as the scores for these strategies have been less than 60.0 per cent.

TABLE 3 UPWARD STRATEGIES AND DISTRIBUTION OF ITEMS

S.No.	Strategies	Code	Sr. No. Of Item	Total Items
1	Blocking	B	3,15,36,42	4
2	Coalition	C	11,16,34,46,51	5
3	Defiance	DI	22,29,32,41,52	5
4	Diplomacy	D	28,35,37,47	4
5	Exchange of Benefit	E	5,27,43,48,55	5
6	Ingratiation	I	6,25,31,39	4

7	Manipulation	M	20,44,49,53	4
8	Personalized Help	P1	4,14,54	3
9	Persuasion	P	9,23,26	3
10	Reasoning	R	1,8,13,17,21	5
11	Showing Dependency	D2	7,10,45	3
12	Showing Expertise	E1	19,30,38,50	4
13	Upward Appeal	U	2,24,40	3
14	Unclassified	U1	12,18,33	3

On the basis of rank the as shown in the table 3.9 the respondents of the UL1 were behaving with their leader through strategies like Ingratiation, showing expertise and persuasion as the obtained scores of these strategies are 81.5 per cent, 74.5 per cent and 73.3 per cent respectively.

As per the table the respondents of UL2 have adopted showing expertise, reasoning, Ingratiation and persuasion strategies in dealing with their leaders, though they were not sure about the diplomacy. The tables also describes that the respondents of UL2 have not adopted strategies like unclassified strategy, blocking, personalized help, upward appeal, manipulation, coalition, showing dependency defiance and exchange of benefits. On the basis of first, second and third rank it can be described that the most preferred strategies of the subordinates while interacting with their superiors have been showing expertise, reasoning and Ingratiation.

The respondents of UL3 explained that in their routine working behaviour they have interacted with their leaders through reasoning, showing expertise, ingratiating and persuasion strategies. The exhibit also describes that they have not adopted manipulation, coalition, blocking, exchange of benefits, defiance, showing dependency, upward appeal, diplomacy, unclassified strategy and personalized help strategies in their interaction with the leaders. On the basis of assigned ranks it could be stated that the reasoning, showing expertise and Ingratiation have been the most preferred strategies practiced by the subordinates of UL3.

TABLE 4 UPWARD STRATEGIES PRACTISED BY SUBORDINATES

(Base score = 100, N=57).

Strategies Code	UL I		UL2		U3		UL4		Combined Score	
	Score	rank	Score	rank	Score	rank	Score	rank	Score	rank
B	44.0	14	46.4	13	44.2	12	46.0	14	45.2	14
Ó	50.4	12	47.4	10	43.4	13	51.8	12	48.3	13
DI	58.4	10	50.9	7	48.4	10	64.6	4	55.6	8
D	63.0	6	60.0	5	52.6	7	55.0	10	57.7	6
E	59.2	9	53.1	6	45.1	11	51.1	13	56.1	11
I	81.5	1	70.7	3	61.3	3	64.1	5	69.4	2
PI	67.3	4	46.7	11.5	59.7	5	58.7	7	58.1	5
M	52.0	11	48.6	9	40.3	14	53.4	11	48.6	12
P	73.3	3	66.7	4	61.1	4	75.6	2	69.2	3
R	45.9	13	72.6	2	71.2	1	78.5	1	67.1	4
D2	66.0	5	50.5	8	51.6	9	58.4	8	56.6	7
EI	74.5	2	79.3	1	69.0	2	73.6	3	74.1	1
U	62.0	8	46.7	11.5	51.9	8	61.0	6	55.4	9
UI	62.7	7	39.1	14	57.8	6	56.1	9	53.9	10

The table 3.9 shows that the respondents of UL4 were interacting with their leaders through a group of six strategies (reasoning, persuasion, showing expertise, defiance, Ingratiation and persuasion). As shown in the table they were never use blocking, exchange of benefits, coalition, manipulation, diplomacy, unclassified strategy, showing dependency and personalized help strategies in their behaviour in dealing with their leaders. The ranking pattern of strategies as disclosed by the subordinates of UL4 indicates that most of the times they shorted out their problems through reasoning, persuasion and showing expertise strategies.

Thus the overall picture emerged through the analysis is explained

that the subordinates used showing expertise, Ingratiating, persuasion and reasoning behavioural strategies in dealing with their respective librarians to accomplish their routine task and the remaining 10 strategies included in the study were not adopted by them.

14 INFLUENCE STRATEGIES OF THE LIBRARIANS AND THEIR SUBORDINATES

The main objective of the present study is to examine the popularity of the influence strategies adopted by the subordinates in dealing with their librarians in their day–to-day work. The summary analysis of influence strategies (upward strategies of the subordinates in dealing with the their respective librarians) as reported by the respondents for their popularity is contained in the

TABLE 5 POPULARITY ORDER OF INFLUENCE STRATEGIES

Popularity	Upward strategies of the subordinates in dealing with their respective Librarians
	Adopted
Most Popular	Showing expertise
	Ingratiation
	Persuasion
	Reasoning
To	
	Not Adopted
	Personalized help
	Diplomacy
Least Popular	Showing Dependency
	Defiance
	Upward appeal
	Unclassified strategies
	Exchange of benefits
	Manipulation
	Coalition
	Blocking

The table 5.2 clearly points out that positive sanctions, diplomacy,

rationality, Ingratiation and personalized help are the most popular tactics used by the university librarians for influencing their immediate subordinates. Some tactics like - showing expertise, assertion, persuasion, coalition, upward appeal and exchange of benefits which appear to be the least popular in the behaviour of the librarians for influencing the immediate subordinates. In contrast such tactics as showing dependency, manipulation, negative sanctions and threats are the influence methods which were not used by the librarians.

The table also reveals that the upward influence tactics played by the subordinates to influence their librarians are: showing expertise, ingraciation, persuasion and reasoning which are most popularly used in the university libraries. It also suggests that blocking, coalition, manipulation, exchange of benefits, upward appeal, defiance, showing dependency and personalized help are the tactics which are least popular in these libraries as these tactics are not used by the subordinates to influence their leader.

As evident from the table, interestingly, both the categories of respondents were found using three common strategies (showing expertise, ingratiation and persuasion) to influence each other i.e. the strategies used by the librarians to influence their subordinates and the tactics used by the subordinates to influence their leaders. Similarly there are two common tactics (showing dependency and manipulation) which were not found operative in both the categories of respondents. Thus most of the time both the categories of respondents used only rational strategies like positive sanctions, Ingratiation, persuasion, reasoning and showing expertise and they have rejected the practice of blocking, coalition, manipulation, exchange of benefits, showing dependency, negative sanctions and threats, all non-rational influence strategies.

The study also points out that showing expertise, persuasion, reasoning and Ingratiation are some upward strategies of the subordinates in dealing with their respective librarian which are correlated with each other and these were found in the subordinates when the librarian is authoritarian, while in contrast, the subordinates of nurturant, task-oriented, participative, situational and bureaucratic type of leaders are not using these strategies in dealing with their librarian.

15 CONCLUSION

The survey has presented the data as to how the Librarians of the University Libraries exercise their power and what are their strategies in dealing with their subordinates to face in their day-to-day working

and in exercising their leadership. The survey was conducted in four different type of university libraries located in the State of Haryana. One university belongs to agricultural education another belongs to dairy education and remaining belongs to basic education. Having such a heterogeneous universe was a deliberate attempt to generalize the findings in significantly different settings. Primary information was collected through conducting interviews of the respondents and these interviews were conducted in confidence to maintain secrecy for the supply of information. They were also assured of complete anonymity of their individual responses. Before the measures were subjected to final analysis, their psychometric properties were thoroughly checked. In brief, each of the measures had substantial reliability and construct validity.

Main objective of the study is to examine the popularity of the influence strategies adopted by the University Librarians in dealing with their subordinates. The summary analysis of influence strategies (downward strategies in dealing with the their respective subordinates) as reported by the respondents for their popularity is contained in the Table 5

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CHANGED ROLES AND RESPONSIBILITIES OF INFORMATIONAL PROFESSIONALS

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ABSTRACT

We have already entered in the 21st century, which is also popularly known as an Information Century. The present paper highlights very important concerns while using hi-tech for information retrieval for meeting out meeting the information needs resulted from 'Information Explosion' in the present competitive world. The paper stresses many challenges posed by the hi-tech environment as well the changed roles and responsibilities of the information professionals to serve the information needs of the present society. Besides, the paper also raises the key-problems and hitches for adapting into the hi-tech environment.

1 INTRODUCTION

'Information' being the most important resource for every type of development has become the need of the day. Accessing right information at the right time has become essential and the same is being achieved through Internet. The present society is taking a shape of 'Information Society'. The significant indicators of the information society are given as below :

- Right access to right information at the right time
- Introductionof computers and telecommunication technologies in dealing with information
- Information rather than the capital as a strategic resource base

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- Growth of infrastructural backbone for IT applications Shift in occupational structure from manufacturing to information based activities

2 CHANGED INFORMATION SCENARIO

Industrial revolution changed our society from an agricultural society to an industrial society. IT is changing the industrial society to an information society. Besides, the human society is undergoing a sea change due to phenomenal growth of information and application of IT in the form of high degree of computerisation and transmission of electronic information. Tremendous developments in the computer hardware and communication technology along with the necessary software tools have made possible the quick retrieval of the desired piece of information merely on the pressing of button.

Today's hi-tech information environment is passing through various challenges due to lack of certain skills. The major of these are:

1. **Information Professionals' Skills**
2. **Information Management Skills**
3. **Up-to-date Subject Knowledge**

2.1 Information Professionals' Skills

The information society definitely lacks in the information professional skills. Few of these skills include identification of user's information needs; analysis and anticipation of user and organisational information needs; presentation, editorial and publication skills; ability to organise and store information for effective retrieval; training, education and consultancy skills; knowledge delivery mechanisms; ability to add value to information; methods of disseminating information; awareness of technology skills and subject expertise; knowledge of disparate information resources and how to access/ integrate these; familiarity with research methods; ability to evaluate information; knowledge management; knowledge of legal, economic and political aspects of information.

2.2 Information Management Skills

Information is considered the most important resource and that's why in the context of decision making, information is also treated as the blood of management. In the absence of awareness regarding

various kinds of management, the information manager can't enjoy the right benefit of the right information in the undertaken stage of decision making. So, management skills are required by information professional at various stages of the information cycle.

2. 3 Up-to-date Subject Knowledge

An information professional must keep one of his eyes at present and another at future. He should not be confined be his subject but in the light of technological innovations, availability of better software development tools, better techniques of communication, etc. must update himself.

3 UNSETTLED ISSUES IN INFORMATION ACCESS

There are so many hi-tech developments taking place in our surroundings which will make the life quite comfortable for the generations to come as they would not be operating within cities presently being named 'Citizens' but will operate world-wide sitting on their desktops through Internets and thus would become 'Netizens'. The hi-tech environment has posed many challenges. Few major challenges are :

3.1 The 'World Wide Wait'

One of the most annoying features of the Internet is the speed with which Web pages are delivered to a screen. The graphics which are embedded in many pages demands a lot of transmission capacity and there are a number of servers and clients that suffer from relatively telecommunications links. Delays can be further aggravated by high traffic on some sections of Internet. This will get worse rather than better as volume of traffic increases, unless higher-capacity telecommunications links become available across more elements of the networks that comprise the Internet, and/or improved data compression algorithms allow more data to be transmitted through the same bandwidth.

3.2 Copyright

A major unsettled issue in the emerging networked digital library environment is that of copyright. The emergence of digital library environment has left many questions unanswered. Prominent among these are :

- To what extent the present copyright laws, made largely for the print media, are appropriate in the new environment ?
- If they are not suitable, what re-adjustments and re- definitions have to be made and
- What new laws have to be framed ?
- How are agents like libraries going to be affected ?
- How will the publishers respond to new environment

3.3 Right of Electronic Access

Copyright law grants exclusive rights to authors for copying for educational purposes and also copying privileges to librarians and archivists but these rights are applicable within the purview of work in digital form. Displaying, downloading, copying, transmitting or printing of copyright works in electronic form has to be performed under contract license. Thus a crucial role has to be played by information professionals for both controlling and facilitating access to the growing number of local and remote electronic information resources. Therefore a need is felt for statutory rights to use copyright protected material in all formats.

3.4 Structure

Users can't locate the information or the site that they want on the Internet unless they are searching with a specific address, and even addresses change. The role that search engines play in providing access to Internet resources will evolve over the next few years. Search engines will be viewed as increasingly central in determining which sites users visit; as consumer guides they have potential to be very powerful. In addition, a greater number of search engines will be necessary to meet the needs of different client groups. An important element in the professional development of information managers will be the scope and features of the search engines.

3.5 Information Society

Libraries and individual information seekers should be granted statutory right of access to use digital information for certain purposes without any payment otherwise there is a danger that this will lead to an even greater division between the information-rich and information-poor. Therefore, copyright legislation equivalent to that for printed media should be laid down for the digital or electronic information.

3.6 Scholarly Publishing

It is quite clear and obvious that the introduction of digital libraries will severely affect the traditional functions of authorship, editing, publication, critical reviews, book selling, libraries, readers and consumers. So, definitely it will pose certain other challenges and these are :

- What are the implications of networked information exchange and digital libraries for scholarly publishing
- What shifts are likely in the roles, responsibilities, revenues and services of the key players ?

3.7 Document Delivery

Librarians or Information Scientists can't deliver information in desired format to its users for non-profit-making purposes because of certain copyright considerations. So, librarians should have statutory permission to copy digitally, and store temporarily, copyright works as part of an electronic document delivery service.

3.8 Security and Ownership

Many potential electronic information publishers are reluctant to disseminate digital-based contents until some kind of technical and legal standards can ensure that their sizeable investments in intellectual property won't be illegally copied, sold or altered. Issues of copyright and intellectual property are of particular concern to the information industry, since issues of ownership are at the heart of rights and responsibilities, and who has the authority to make commercial arrangements associated with information. These must be addressed through a mixture of legislation which is relevant across an international network, practice and licenses and agreements. Also, for people to be able to enact commerce on the Internet, the ability to keep monetary and other proprietary information secure as it passes across the Internet, and the need to authenticate the status and identity of the sender, is crucial for effective commercial transactions.

4 SLOW ADAPTATION OF HI-TECH ENVIRONMENT

It is very true that digitizing of information do help a great deal. However, there are problems for handling and using these large volumes of digitised information. Few of these are:

- There will be a necessity to be proficient in computer usage and keep abreast of the state-of-the-art in the field, if they wish to retain an edge in the provision and utilisation of information services.
- Librarian like professionals perceive a threat to their jobs posed by computers which can presumably take-over their functions with greater efficiency and will resist the move towards complete computerisation.
- Compatibility and standardisation problems are likely to be faced due to the use of a variety of hardware, software, information collection, storage and retrieval methods
- A problem frequently encountered and difficult to overcome will be the one of copyright and intellectual property issues.
- Remote access to documents are uncomfortable when compared to spot accesses
- Disappearance of nascent information in Internet
- Some documents are used only when it is seen
- Changing habits in the arena of learning and teaching is also another problem
- Browsing on the digitised form is difficult when compared to printed form
- Inadequacy of the libraries to predict the future use of documents, irrespective of its type i.e. printed or digital • Locating the information on the Internet requires good skills
- Problems of intellectual property rights of the author and publisher.
- Browsing on the digitised form is difficult when compared to printed form
- The emphasis on consistently upgrading skills and the yawing gap between information rich and poor will give way to such new social problems as 'technophobia' and this will initiate a new battle in the users.
- With the growing use of networked systems, security will become a key issue. Protecting valuable databanks from infiltration by the disgruntled users will require special effort. In fact, security is one of the most complex challenges facing information providers on the Internet today.
- It also difficult for the users to locate and access the information because information is not usually structured and no rules or codes are followed and besides no one controls the information

that is made available. Here, the information or data may be of different types.

- There is the problem of health hazards associated with the use of computers (eye and back problems as well as the exposure of radiation from monitors).

In order to minimize the present resistance and inhibiting factors in the emerging Information Society, we must take into consideration certain possible remedial measures.

5 CONCLUSION

In 21st century, only information richest country can survive in the global village and the existing hi-tech environment has given birth to an Information Society which is passing through many challenges due to lack of Information Professional's Skills, Information Management Skills and Up-to-date Subject Knowledge. Making available proper information infrastructure, information management techniques and proper information policies will make Information Society of 21st century a grand success. Besides, roles and responsibilities of information professionals have also changed manifold and thus need certain remedial solutions at the earliest to win-over the problem.

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EDUCATING THE EDUCATORS: THE TOUGHEST HURDLE IN USER EDUCATION IN ONLINE ENVIRONMENT

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ABSTRACT

States that 'integration' of library and information science within the curricula of other disciplines is a pre-condition for success of any user education programme. Outlines the impact of modern information technology on user education. Examines the problems concerning the education of the university teachers who have been designated the task of integration. Considers the methods of user instruction focusing on a method whereby library and information education are integrated into the teaching and research work of the university. Concludes that this is probably the most viable alternative for implementation of a successful online user education programme in university libraries in India.

1 INTRODUCTION

The dream of perfect user education is the integration of the subject matter of library and information science (LIS) into the curricula of other disciplines. Integration means firstly, incorporation of the subject matter of LIS into other disciplines by lectures, books, journals, and other kinds of knowledge provision; secondly, recognition of the exemplary effect that the university teacher and all other collaborators have on the students; and thirdly, the education of all collaborators within the university in order to achieve this exemplary effort.

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It is an accepted fact that user education cannot be performed in isolation but should be an integral part of academic life [9]. Normally it should be given by the subject teachers with the object of explaining the importance of the libraries and showing their role in the general degree course scheme. The question arises: who should educate the university teachers concerned in this integration? This paper attempts to discuss this problem as it concerns our higher education system as a whole and the success of user education in academic libraries in particular.

Naturally, the above does not mean that the librarian is no longer responsible for user education. On the contrary, he has full responsibility as he directs and controls this process. The number of publications on user education is large, and increasing, in almost all countries. A simple free text search on LISA Plus™ retrieved about 4,000 records on the topic of user education.

2 THE IMPACT OF INFORMATION TECHNOLOGY

It is the desire of a modern library to apply and enjoy the benefits of up-to-date technology in its every day functioning and future development. Libraries attached to universities throughout the world are on the forefront to introduce information technology (IT) in all its forms within their individual capabilities as well as forming consortia. This fact is resulting in a modification of working procedures both before and behind the scenes. Computerised catalogues are a visible change for the user. In addition, LIS is testing further new and innovative methods in improving the performance of the online catalogues. Experiments with view-based online public access catalogues are proofs of one such innovation [15]. Similarly, online information retrieval systems are a visible result for the user. These new tools are also accompanied by new methods of user education using videotext, optical information storage, electronic publishing, and electronic mail techniques [2]. The conscious integration of LIS components in other disciplines in many western universities was gradually introduced during the 1960s. Chemistry was the first field to be benefited by such attempts [14]. During the last of quarter of the 20th century, the majority of libraries and information centres in developed countries have introduced up-to-date computer and communication technologies to improve and enhance their services. Developing countries like India are also taking useful strides in this regard [8]. Methods that familiarize the potential user with subsequent working results can scarcely be overlooked in user education. In user

education a new branch of instruction has developed, which is designated by several terms: online user instruction, computer-assisted instruction, user instruction in the online era, instruction for online catalogues, and so on.

3 METHODS OF INSTRUCTION

An analysis of some recent bibliographies [1, 10-12] on user education has shown the following methods to be very useful:

1. Establishment of a one-to-one relationship between the user and the staff of information centres.
2. Training courses for several hours or days, with instructions in the use of individual information systems and networks, databases, computerised catalogues and, of course, the Internet (with the help of lectures, online demonstrations, slides, film, video, profile preparation, computing records, and so on).
3. Publication of instructions and guidelines concerning individual information systems and networks, databases, computerised catalogues, and the Internet (guidelines or guidebooks).
4. Using electronic mail and Internet for training in the use of the OPAC and online services [3, 7].

To these a fifth may be added: the teaching of 'online age' subjects by academics in their appropriate disciplines.

4 INVOLVING THE EDUCATORS

The fifth method involves the integration of the LIS education into teaching and research work of the university, into the administrative work of the institution, and into the preparation and distribution of teaching aids. For example, a university teacher, once having seen the utility of the Internet or CD-ROM based databases in his own work, will also pass his knowledge, abilities, and facilities on to his university students either in oral or in written form. This integration into the teaching and research work is the required precondition for the popularization of our library and information services. Therefore, this method is more effective than obligatory/voluntary attendance at a lecture on library and information facilities, which is given by librarians or information scientists.

The simple formula is: before we educate the persons to be educated, we must educate the educators. Then the educators will also be able to help us and educate with us the persons to be educated.

In this case, integration means that the subject matter functionally relates to the study. Therefore, it must be integrated into the study processes. User education is optimum only when the subject matter is the basis of the requirement that the student correctly elaborates the conspectus, uses the catalogues rationally for supply of literature, expands bibliographies, defends his project/thesis with good arguments, and finally takes an active part in the information dissemination process.

By this exemplary effect, the university teacher plays an important role in his branch of knowledge. He can, like no other member of the institution, not even the librarian, positively influence the students and educate them to be good users. Naturally, he must himself be educated for the purpose – that is, he must have knowledge of our special subject. He must himself be a good user and take an active part in the promotion of library services and information dissemination processes within the university.

5 METHODS OF EDUCATOR EDUCATION

The question is how do we educate the educator? Some potential way outs may be suggested as follows.

5.1 ENHANCING THE STATUS OF THE LIBRARY

The library must be attractive for the academician. By extensive opening hours, a trained staff, a prompt purchase and an uncomplicated supply of information sources and other services; an atmosphere is created which enables the academician to have a good personal relationship with the library. This relationship is also a prerequisite for the successful performance of duties in user education. At the university, the teacher is the normal partner of students in contrast to the librarian who comes in contact with the students only occasionally and more often as an anonymous person. Not only with young teachers, but also with teachers having many years of experience behind them, it is apparent that there is a contrast between their spoken appreciation of the high importance of the library and information to their teaching and research work, and their actual behaviour and apathy towards the library in many instances. Quite a few experienced professors and their students have been found

inexperienced in the use of the library and information. A recent study by Hall [6] at California State University at Sacramento found that faculty were not keeping up with changes taking place in the physical layout of the library and the facilities provided and, consequently, were tending to give incorrect information to their students and referring them to obsolete information services and resources. Nowadays, the division between the library and academician, which is certainly necessary in the light of history, results in great losses to both knowledge and humanity.

5.2 TRAINING COURSE STRUCTURE

Unlike the school teachers, there are no training courses in teaching methodology for college and university teachers in this country. However, such courses have existed in the field of university education for a long time in not so developed countries like the erstwhile German Democratic Republic. There the participants acquire the necessary and basic educational and psychological knowledge, which is essential for their activity in instructing and educating students. They develop their abilities to manage the educational problems and make use of them for the solution of practical problems. The following are the main subjects covered by this training: educational activity of the teachers; planning, preparation, and conduct of teaching sessions and application of aids to teaching and learning.

It is possible to use this kind of further education to cover the subject matter of library and information science. Concentrating on the following subjects could be effective:

- information searching skills and formulation of search strategies;
- introduction to the use of specific information sources (e.g. of the 'grey literature', patents, standards, etc.);
- providing facilities for the use of information (e.g. online and CD-ROM databases, Internet, etc.); and
- providing training for the production of scientific papers including knowledge on citation methods, technical writing, etc.

The time devoted to each subject is dependent on its nature and content.

5.3 ATTITUDES OF ACADEMICS

Special attention needs to be paid to the user education of the advanced students (research scholars) and the junior faculty. They have already attended a basic course where they were given an introduction to the facilities in the libraries and information centres. After that, they must be specifically educated about special information sources, special libraries and information centres, and special information systems in their particular branches of knowledge as well as acquiring a basic knowledge of classification systems, special thesauri, information searching skills and search strategies, and research reporting methods. International experts no longer doubt the value of such a separate continuing user education [5, 13]. It is here that the attitude is developed which will determine the teacher's future behaviour in the library. Only by means of this equipment is the teacher able to take an active part in the process of user education. After final qualification, the majority of young teachers will become leaders in the campus.

5.4 PREPARATION AND DISTRIBUTION OF TEACHING LITERATURE

A very difficult problem is the way of assisting the educators by means of the publication of special papers relating to LIS. It can be done by preparing suitable material on the following three aspects.

5.4.1 The General Introduction to the Whole Subject

This gives the teacher a survey of the field as well as suggestions and instructions for lessons and exercises. At the same time, it gives examples for the integration of our questions into the appropriate subjects. In the best sense of the word, the introductions consequently have an ideological and popularly instructional function.

5.4.2 The Collection of Examples

These materials give suggestions and instructions for the integration of our questions into the appropriate subjects, especially in the form of exercises. Naturally, opinions differ on content, and only after the present materials have been tested can one decide on the details. However, some general statements can now be made, and the following may be used as essential elements:

(a) an introduction to the bibliographic presentation with hints on

basic rules for transliteration;

(b) the determination of information sources from the library catalogues, publishers' lists, and other bibliographic aids;

(c) the production of scientific papers, especially the guidelines and requirements, the structure, the formal production, the bibliography, and the index; and

(d) the provision of collections of problems for the students of individual branches of knowledge with instructions for the determination of specific information sources, for research reports, and studies on online catalogues, online and CD-ROM based databases, Internet based resources, etc.

5.4.3 Guides to the Literature

For advanced students and young faculty members orientation journals need to be produced, which may be published by university libraries, library associations, library research institutes, and library schools. These bodies may share their experiences by either exchanging such materials among themselves and/or producing such materials in a joint venture. As a result, future graduates should be better qualified than those were in the past to use the results of scientific-technical information and the university libraries, and to contribute to the communication of research results. In some fifty or so odd pages, the reader should get a solid introduction about:

(a) scientific associations, research institutes, and publishing houses;

(b) special journals;

(c) patents and standards;

(d) libraries and information centres;

(e) information work; and

(f) important aids (lexicons, handbooks, encyclopaedias, dictionaries).

This could be a worthwhile project, which can be used far beyond the universities, down to schools even, and from which the subject specialists will profit in a satisfactory way.

6 CONCLUSION

Experiences of experts involved in user education, especially in the changed library scenario on the face of introduction of modern IT, have revealed that the librarian is not the only person responsible for user education. At all levels of education ranging from school to further

college lecturer, university faculty, or even the family member) has a high responsibility for giving knowledge, fostering abilities and creating facilities.

In special lectures, seminars, and specific publications the teachers report on the use of published material, refer to important information sources, assist in the evaluation of literature, and stimulate the use of the library and the use of information systems. Of course, they must be adequately qualified for this task.

User education is always a dynamic matter. It depends on the support of libraries and information centres. As IT is increasingly applied, network-based online user training assumes an important role. In this case, the subject teacher has to accomplish a specific task. Countries in the west have already paid lot of attention to this fact and initiated appropriate projects and programmes.

Unfortunately, in Indian university libraries the value and potential of user education in furthering the cause of teaching and learning is yet to be fully recognised. This is due to complete lack of teaching aids required for this programme, the necessary infrastructure and the innovation of suitable library instruction methods to suit Indian conditions [4]. In many of our libraries, we are perturbed by the dwindling number of users. Large number of students and teachers virtually shun away from the library. We have discussed the issue in a number of seminars and conferences. These have motivated some libraries to undertake user education programmes. But, non-existence of a national/regional policy and lack of coordinated efforts have failed to produce any visible result so far in the sphere of higher education and effective rôle play by the library in the higher academic institutions. The solution seems to be in the nurturing of faculty-librarian collaboration in building curriculum. Both the library professionals and the faculty must equip themselves appropriately. The professionals have to play a pro-active role in reminding the faculty of the exemplary effect that the latter has on his/her students and convincing him/her to become an active partner in user education programme. At the same time, the faculty must acknowledge the specialist knowledge of the librarian in user education and get them duly trained in the necessary skills including updating of the same from time to time. For the librarian at present, education of the faculty seems to be toughest hurdle to overcome in effecting a successful online user education programme. This is probably the best among all feasible alternatives.

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E-LEARNING AND HUMAN RESOURCES DEVELOPMENT

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ABSTRACT

The paper briefs about learning processes- traditional classroom learning vis-à-vis E-Learning, rules, benefits, components and limitations of E-Learning and the application of E-Learning in education as seen in Open University environment.

1 INTRODUCTION

In recent years electronic media has influenced the education both in terms of what is taught, how the teaching is done and referred and how programmes are accredited. The web based teaching, distance learning, electronic books and interactive learning environments will play increasingly significant role in shaping what we teach, how we teach and how student learn.

Research and development needs a scientist to update the knowledge in the field of electronics, computer and IT technology. Research activity, literature survey, available theories/techniques, prior art search, merits and demerits of existing theories /techniques, futuristic applications are timely contributions to refine the current theories.

In 20th century, many advances were made that support technology based education including work in compute based training, intelligent tutoring systems, compute based cooperative works and the building

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of internet.

The term E-Learning covers a wide set of applications and processes incorporating computer based learning, web based learning, virtual class room and different collaboration.

E-Learning can be defined as the development of content via all the electronic media including internet, intranets, extranets, satellite broadcasts, audio/video tape, interactive CD-ROM, etc. Yet E-Learning is defined mere narrowly than distance learning which include text based learning and courses conducted via correspondences.

It is more effective distance learning anywhere, anytime. This new mode of learning also addresses the issue of interaction with instructor. The participants in E-Learning can become a part and get the feel of a virtual class room where interaction with instructor and other participants is possible.

2 ISSUES INVOLVED IN INSTRUCTOR-BASED CLASSROOM

In order to understand the pros and cons of E-Learning, one needs to grasp the various aspects in traditional classroom learning, which even today is the most effective way of learning [1]. Once these issues are understood one can see how these are being addressed in an E-Learning solution which is being examined for adopting in the organization.

a.	Content:	Content preparation Homework preparation
b.	Delivery:	Lecture delivery Student presentation
c.	Access:	Contents (Lectures, HW) Teacher Peer/Group
d.	Interaction:	Between students Asynchronous (Class, Lab, Telephone) Asynchronous (Voice mail, e-mail) Between faculty and students Synchronous (Class, Office,

	Lab) Asynchronous (Voice voice mail, e-mail)
e.Assessment/ Feedback:	Exams Homework Individual and group Presentations
f.Administrative issues:	Course information Registration Assistance Library resources

In the above mentioned list access to teachers, peer group and interaction among them, which play an important role in the learning process are the challenges for E-Learning solution providers.

The classroom teaching methods are instruction based where attendance is necessary. Strengths of such approach based a time on the spot support. But often the exchange of idea of students or/ and teacher ends with the course itself.

3 NEW LEARNING PARADIGM

- Learner engagement
- Student as client
- Resource based learning
- Media rich environments

4 FEATURES OF E-LEARNING

E-Learning is powerful training tool for several reasons:

1. E-Learning provides immediate feedback: Immediate feedback allows both instructors and trainees to monitor progress and adjust the instructions accordingly. This feature of E-Learning allows a student to decide how much time he or she needs to spend on a particular area, assuming that the student spends enough time on areas of weakness and not too much time on areas of proficiency.

2. E-Learning provides Integration Of Text, Graphics and Sound E-Learning is an efficient training option because it appeals to multiple senses – seeing, hearing and doing. According to the Royal Centre article, people remember 10 percent of what they read, 20 percent of what they hear, 30 percent of what they see and 50 percent of what they hear and see.

   E-Learning is effective for people with various learning styles and receiving information through more than one sense increase the likelihood that the student will be able to recall the information in the future.

3. E-learning is Cost effective After initial costs one has a 24 hours/ day trainer. A trainer is able to teach any no. of trainees at the same time using E-Learning. Also having a E-Learning program eliminates the cost of hiring professional instructors, renting teaching facilities and travel expenses that may come when training employees with traditional training methods.

4. E-Learning Is an Effective Training Option For the Adult Population In some cases, adults who are required to attain additional training for employment purposes may need threatened by the atmosphere of traditional classroom training. With E-learning the student feels in control because the computer provides a non-threatening and non-judgemental learning environment. E-Learning actively involves the student in the training process providing for measured student satisfaction.

5. E-learning is self paced, flexible and individualized A student can work at his or her own pace using an E-Learning program plus, E-learning can sequences training to match the need of the student and provides immediate feedback so a student can keep with his or her own progress.

6. E-Learning is Tireless and Consistent E-Learning is superior training option because it never needs a break, is always available, can train greater number of students in a given time frame than other training methods and meets the needs in today's workforce for continuous training. It provides consistency of training in terms of the quality of information provided.

7. E-Learning improves Job Performance An E-learning Program can help companies successfully train people in specific skills

for specific performances while providing increased access to information tools for decision making and general skills that effect overall employee performance.

5 MAIN DANGER OF E-LEARNING AS A MEDIUM

E-learning can be used extremely effectively as a learning medium but, like all other media, it needs to be used appropriately. If it is not carefully designed and robustly implemented, problems with the medium can detract from the content of the course and the learning experience. Another danger is that of the digital divide one needs to be careful not to create e-learning environments which will exclude students from particular background, whether that be for social ethnic or economic reasons.

Inadequate technology infrastructure cause multiple problems, like duplicate current developments lack of inter-linking among learning modules and lack of data sharing among systems

6 POTENTIAL OF E-LEARNING AND TECHNICAL CHALLENGES OF E-LEARNING

6.1 Business Drivers

The technical challenges for business trying to realize the potential of E-learning include:

6.2 Architecture

The performance requirements for E-learning must be verified for architectures and applications for different environments. Any architecture must be flexible to allow applications to be accessed by end users asynchronously- any time, anywhere learning and not confine the end user to traditional distance learning, synchronous environments. These architectures must allow for seamless transfer of content for providers- distributes – end users. Low latency networks for interactivity rights management and maintain fidelity at the end user platform.

6.3 Standards

Standards are needed to ensure that learning module will be compatible with the technology used to store, distribute and present

it and transportable within different E-learning Architectures. This includes the current specification to support the most powerful feature for educational content, file formats for distribution and present it and transportable within different E-learning architectures. This includes the current specification to support the most powerful feature for educational content, file formats for distribution, presentation, storage protocols and standards for web access and web casting of rich media.

6.4 Content

Electronic files are to be converted from traditional learning content. New E-Learning content need to be developed that provides accommodation for multimedia, human interactivity, records management, compatibility, accessibility reusability and digital rights management. In order to take advantages of potential of E-learning guidelines will be needed to promote the criteria of the content that utilizes the full potential in the emerging E-Learning architecture environment.

6.5 Cost Management

Cost for startup of E-Learning and system and infrastructure are to be minimized.

a) Well organizing electronic content and formatting to facilitate its use in E-learning.
b) Distribution and presentation of E-learning content.

The communication (Network or physical distribution), the hardware and software used for distribution and presentation associated with distribution and presentation, are all essential, and also can generate revenue for the business involved.

6.6 E-Learning Management

This includes the function for managing a traditional institution of learning (organizing a curriculum keeping records, administering tests, etc.) plus any new management functions- that are specific to E-learning.

6.7 Effective E-Learning

E-learning should have effective built-in learning management

including measurement and certification capabilities. This includes integrated testing on the capability that registers each participants' identity and collect responding data much as answers and exams, to analyse the results in real time during a session, so that the presenter can gauge his or her effectiveness during the session itself. This allows a presenter to adjust the speed, flow, organization and level of detail based on live feed back just like conventional class room which includes attendance, class performance and number of participants who interact directly with the presenter by calling in or e-mailing right person to receive right message.

When choosing an e-learning solution, it is important to consider the role played by video visual interactivity in conveying and understanding communication. Conventional 'classroom' learning takes advantage of the full range of verbal and non-verbal communication skills that comprise human interaction and understanding. This is learning environment just as in daily life the subtleties of face to face human interaction can illuminate the conventional communication the meaning and the understanding on learning.

6.8 Rules for E-Learning

The recent advances in educational technology now mean that it is possible to provide more and different learning opportunities to students than ever before while educational theories which have been used in the past still apply, the concept of 'learning space' has been very important. Students coming to higher education have wider variety of learning styles and variously developed learning strategies. In E-Learning it is necessary to provide a learning experience that uses a variety of media, provide many opportunities for interaction both with other course participants and the course-ware. It is necessary to understand how people make senses of information in a screen based environment.

6.9 Issues of E-Learning

Inadequate technology infrastructure causes multiple problems: duplicate content development for multiple platforms, lack of interoperability among learning modules, lack of data sharing among systems, difficulty in locating existing materials, issue of unreliable quality of service, absence of a convenient way to charge for use of material and disincentive to develop and publish materials a small amount at a time.

7 E-LEARNING SOLUTIONS

The following solutions form a wide spectrum of E-Learning:

7.1 Self Learning Material

The instruction material on CDs or reactive through web. The learning is totally driven by the participant.

7.2 Instructor led E-Learning

Instructor driven E-Learning where the material/ exercises are delivered through web lecture by lecture. The student browses through the material and submits the exercises for review by the instructor.. Queries by students of the virtual classroom are addressed by the instructor on offline mode as visible to the entire class.

7.3 Online Learning

In Online learning the virtual classroom has an online session with the instructor through satellite-based broadcast. The students can receive the broadcast online using direct PC kind of equipment or other broad band medium. The student's screen shows the slides as well as the instructor video in a window. The instructor can pass a yes/no question to the class which the student can answer; the cumulative answer is immediately available to the instructor. Students can raise hands (logically) for asking online questions. After permission from the instructor the student can speak out the question which can then be addressed by the instructor.

Online learning constitutes just as part of technology based learning and desirable via internet, intranet and extranet. This includes text and graphics of the course, exercises testing and record keeping such as test score and bookmarks. A sophisticated online learning program includes animations, simulations, audio and video sequences, peer and expert discussion in group.

7.4 E-Learning Material

E-Learning material is available at a variety of levels. At the simplest level, it could be purely text oriented. The concepts are presented as text pages, which are followed by quiz to test the understanding of

learners. Use of product screen dumps to provide look of the product in various usage conditions. More advanced products provide a look and feel of the product to the learner. The learner is demonstrated a certain feature and then asked to perform a simple task using the product interface.

7.5 Just In Time E-Learning

E-Learning material is organized in terms of skillets, i.e. a simple well defined skill is taught/learnt at a time. After learning the basic skills, one can start using the product. Advanced features can be learnt as and when required. Thus the need to learn all the advanced features at a time is not present. Moreover whatever is learnt, if not used, tends to be forgotten. Thus the effort to spend acquiring the knowledge which can immediately be applied in work environment is lost. Just in time learning makes it possible to learn the required skills as and when required.

7.6 Changed Role of the Instructor

It has been realized that in product based learning much of the time is spent in learning the various features/aspects of the product for which effective guidance can be provided by E-Learning material. The instructor's time can thus be devoted to conceptual level input and problem discussion reducing the demand of instructor's time.

7.7 Learning Management System (LMS)

E-Learning environment in an organisation is training insulation providing the mode of learning requires management of the entire E-Learning process. LMS should support registration of participants for various modules, keep track of a sub-module covered, quiz results, etc. E-Learning supporting instructor led learning, should also support delivery of module, exercises, submission of solutions and question and answer in virtual class mode. It should also support integration of third party E-Learning material, etc.

7.8 E-learning at Open Universities

How does E-learning fit into Open University teaching strategy?
The supported distance teaching model used by the open universities at USA and UK exploits a range of media in the presentation of courses. Electronic media can stimulate students' interest and

improve the learning experience. The courses can be delivered as an integrated combination of media and methods to each chooser for its unique contribution to the learning experience.
It is essential to provide the balance of media text, audio, video, interactive simulation, database resources, IT tools, communication environments.

How are electronic media currently being used at Open Universities? A large number of open universities at USA and Europe are heavily reliant on the electronic materials and service and a rolling programme of curriculum renewal enables new course to adopt those electronic media which will enhance students learning experience and assist the achievement of the learning objective defined for the course and the chosen programme of study.

Open university courses in USA range from those courses which are virtually completed online e.g. – you, your computer and the internet through model- which use compulsory or optional asynchronous/synchronous conferencing web/CD-ROM based materials and electronic submissions of assignments, to the basic web presence for information/course choice purposes which all open university course here. The courses include:

Will e-learning replace paper and classroom based teaching?

There will always be a place for paper and classroom based teaching, but as part of a widened array of teaching technologies. The open university mainly teaches at a distance, and both paper based materials and class room teaching are valuable for certain learning activities open university students are allocated to locally based tutor groups, most of which are the basis for tutorial sessions at local study centre. Many courses also run residential schools. Despite being valuable for some students, many are not able to attend due to geographic isolation, family and work constraints contact group work and support from other students and their tutor which they would not otherwise get

8 USE OF ONLINE INSTRUCTIONAL TECHNOLOGY [7]

Computer technologies can support a wide range of learning activities that engage students in a continuous collaborative process of building and reshaping understanding. The use of instructional technology foster course content related discussion. There are a number of

online course delivery softwares in the market such as the ecollege.com, Intra Learn, Web CT, The Learning Manager and the Web Mentor. The important attributes of these types at software could include developmental features, instructor tools, instructional features, students tools, technical support, administrator tools and administrative features.

9 FREE WEBSITE FOR INDIA SCHOOLS [8]

Ahmedabad based Norquest Company has tied up with Flouride based Cool Biz, a Solutions Provider for e-business websites to offer free website to Indian schools and educational institutions, individuals can also apply for these. These sites will be completely free without any banner advertisement or spouse messages. Schools or individuals in time can offer these website to others and got paid for it.

According to Norquest, this will help school gain a web presence, and encourage students to use the web to interact with other students the world once for Cool Biz, the strategy will help the company increase in presence in web hosting. It wants to start new camera off on the web at no financial cost, so that when they want to upgrade to commercial website with more features, they would already be aware of the company and its products.

10 E-LEARNING LIMITATIONS

Self learning has several disadvantages. Learning is left entirely to the initiative of the individual. The success of learning thus depends on the motivational level of the leaner. Remote instructor involvement or mentioning of some kind of time bound registration etc can bring some level of discipline required for effective learning, social impact of peer group in learning and personal development is also lacking.

Not all aspects of training can be covered using e-learning techniques. For example, disciplines which required development of sensory/ motor skills like in machine operations, surgical operations, etc cannot be taught using e-learning techniques. However, e-learning can help in reducing the time required on campus for practical experiments and hence the demand on the physical resources: as the academic part can be pre-delivered through e-learning mechanism.

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ELECTRONIC INFORMATION AND HUMAN RESOURCE DEVELOPMENT

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ABSTRACT

This paper highlights the advantages of Modern Digital Library over the traditional Library. This information superhighway has a significant impact on libraries. In modern library system, the most sophisticated infrastructure such as multimedia, internet, ISDN, OCR facilities are available . To cope up with new computer environment, the Library professionals should be trained in the areas of multimedia, internet under different platforms such as windows, UNIX . In this paper, current development in networks& video conference have been discussed. In addition, various awareness training programmes, concept based theory, skill based practicals, value based training have been discussed for the Library professionals. Apart from training, curriculum should be updated for them. This paper makes an attempt to investigate the common barriers of librarians. Survey has been conducted to provide information about Modern Library by using the state of the Art Technology. This paper explains the present and the future scenario of training and development. The right brain curriculum is focusing on HR Re-engineering. In summary, we have tried to bring the importance of right HRD and computer training for the right Library professionals at the right time in a right manner.

1 INTRODUCTION

According to Dr.S.R.Ranganathan's statement, Library is a growing

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organism. In ancient Libraries, documents were presented in different types such as Clay tablets, silk, metals and Palm leaves. With the rapid development in both Paper & Printing Technology, there is an exponential growth in publications. It is estimated that millions of pages are being printed every minute at global level.

With the emergence of computer technology, paper documents is changed drastically. Latest storage medias such as microfilms, floppy disk, hand disk, CD-ROM, Cartridge, cassettes are minimized and substituted for large volume of conventional documents. Paperless documents are used by leaps and bounds.

Digital Library seems to be the computerization of Traditional Library. It is a heterogeneous Library, which contains both hard copy and soft copy. It has the paper documents as well as electronic documents.

The Modern Digital Library system as illustrated in figure (1). With the advent of multimedia & Internet computer, Library is growing by leaps& bounds. CBT (Computer Based Training) plays a significant role in modern Digital Library. Library user can learn any subjects by using CBT method. Most of the subjects are available in the form of CD. Students can access any information by using WBT (Web Based Training) from any part of the world. Most of the universities like IGNOU are imparting training through WBT only Simulation software like Flight simulation is available in Digital Library. Different tutorials and manuals are available in CD-ROM Library whereas different kinds of information can be accessed from Virtual Library through Internet with the rapid development in ISDN (Integrated Switched Digital Network). Video conference is possible in Digital Library.

Most of the state of the art Library Automation software is available in Indian software market. Online Public Access Cataloguing (OPAC) is the best feature of Library automation in software. Apart from that other Library works like acquisition, cataloguing, circulation, serial contorls are incorporated in the software. Search facilities are also available. Books can be searched Subjectwise or Authorwise. Database can be maintained by using the key fields such as Book No., Subject, and Author name, Publication Name, Price, year of edition. Barcodes will be useful for security purpose & physical verification.

Office Automation suites like MS-Office, Lotus Smart suite are used for different applications such as Word-processing, Spreadsheet,

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EMERGING COMMUNICATION MEDIA AND ITS USE IN THE UNIVERSITY LIBRARIES OF KARNATAKA

Ramesh R.Naik*

ABSTRACT

Today, workers at all levels are knowledge workers. Their scope of responsibility continues to expand, as does their need for ready access to information. In today's competitive environment, relying solely on verbal communication for information transfer can be inefficient, untimely, and very expensive. Beginning with the advances made in communication media, this paper examines Communication media and its use in the University Libraries.

1 INTRODCTION

The Information Age: From Dirt to Data : The ability of man to acquire, assimilate, organize and communicate information has been the corner stone of the progress through the ages. The advances in modern science and technology have revolutionized the methods of recording, storing, retrieving and communicating information. In the information society, *Knowledge workers* will focus their energies on providing a myriad of information services. The Knowledge worker's job function revolves around the use, manipulation, and dissemination of information.

The paradigm shifts are truly dramatic. Our acceptance and dependence on a myriad of information services may be inevitable.

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Now the present day Information Officer/ Media Manager or Librarian has entered in to a new post industrial age, often called as the *Information Age*, in which the ability to put information to use has become critical, not only for the essential production of goods but also for providing a better life for the people.

2 PROBLEMS IN INFORMATION USE

There have been several inherent problems in information use and handling, because of the information explosion, inter disciplinary nature and mission- oriented nature of R&D activities, geographical, language and other barriers. However, in order to over come these barriers, there exists today a vast array of electronic tools and techniques for accumulating, storing, organizing, retrieving and interpreting information on a world wide scale, in a volume and at a speed and with an accuracy that would have been impossible hardly a few years ago.

3 THE IMPACT OF TECHNOLOGY ON INFORMATION HANDLING

Now the modern day librarian is experiencing 'the push of technology' and its impact on every facet of information handling. The advent of the digital computer and advances in telecommunication technology and digital audio-visual technologies have opened up new possibilities in dealing with problems arising from collecting, organizing and disseminating a vast amount of information in various forms and formats.

4 HARDWARE AND STORAGE MEDIA

Because of its random and sequential processing capabilities, magnetic disk storage is the overwhelming choice of computer users, whether on micros or on supercomputers. A variety of magnetic disk drives (the hardware device) and magnetic disk (the media) are manufactured for different user requirements. Virtually all micros sold today are configured with at least one hard disk drive (which is permanently installed, rigid and are usually made of aluminum with a surface coating of easily magnetized elements, such as iron, cobalt, chromium, and nickel.) and one interchangeable disk drive, which provides a vehicle for their distribution of data and software, a means for back up and archival storage, and of course, on- line storage.
Direct access storage devices (DASD) are pre requisites for all

information systems where the data must be on-line and accessed directly. An airline or train reservation system provides a good example of this need. The demand for on-line system during the past decade has caused the virtual disappearance of interchangeable disk-storage media in the mainframe environment.

The tremendous amount of low-cost direct- access storage made possible by optical laser disks opened the doors to numerous many new applications. Currently, most of the commercially produced CD-ROM disks contain reference materials. Many industry analysts have predicted that optical laser disk technology, now in its maturity stage of use and development, eventually may make magnetic disk and tape storage obsolete. With this technology, the read /write used in magnetic storage is replaced by two lasers. One laser beam writes to the recording surface by scoring microscopic pits in the disk, and another laser reads the data from the light-sensitive recording surface. A light beam is easily deflected to the desired place on the optical disk, so a mechanical access arm is not needed. Present scientists now talk about laser scanning and recording techniques, holographic systems, bubble memories, digital video recording and other exotic technologies for information processing.

With the advent of compilers and data base management systems, much of the complexity of programming computers has been simplified. The lead-time for the development of software has been shortened and the growth of data retrieval system has become possible. The spectacular advances that are taking place in the field of software development is helping in developing 'Artificial Intelligence'.

5 COMMUNICATION MEDIA

The electronics explosion, the software phenomenon and the Communication media have changed the destiny of mankind. They are together the most vital segment of the information superhighway that symbolically bridges peoples and cultures, countries and communities, hopes and aspirations and thus leads to the fulfillment of the greater vision of the global village.

So for a discussion on written, print, digital audio-visual materials as sources of information is made. Besides these sources the technological impact has converted or transformed the oral communication channel into new communication media for example the telephonic communication has now its application found in the

one of the most widely used communication system the electronic mail or *e-mail.*

The telephone is also instrumental in facsimile transmission, which has business, education and library applications. In business it is popularly known as fax service, where as in library one of its application is found in Document delivery service. Apart from the telephone the integration of computer and communication technology have created greatest impact on oral communication media, both face-to-face and otherwise. In this context the Teleconferencing, Videoconference, Bulletin board services are the new innovations in the communication media.

In addition to the technological oriented information and communication systems the human expertise and knowledge and institutional resources were also considered in the context of new and emerging communication media. In this context the growth of World Wide Web can be attributed to the role of the institutional and organizational information. The WWW, which was once a commercially oriented organizational information media has now spread to all types of institutions including the libraries. Hence in the discussion deliberated on communication media the following are considered from both traditional as well as the part of current trends, it begins with INTERNET, one of the vastly spread communication media of today.

6 INTERNET AS AN INFORMATION SYSTEM

The Internet opened a totally new dimension. The convergence of media made it exciting and created new challenges for libraries to grapple with. Internet is today a huge information system only the parameters/components of this information system are in controlled environment and hence monitoring the various parameters is a problem. Libraries or information systems are defined by their function as systems that comprise of a spectrum of activates from generation and location of information to dissemination and use of it. The nature of the activities in the Internet information system also conforms to the components of an information system as depicted below:
Generationà

Storing→Organization→Retrieval→Dissemination→Control

These components are described briefly here: From the generation

point of view, publishing information on the net, or electronic publishing offered an alternative also to traditional publishing. Further, the information generated will not be restricted to any geographical boundaries and can be reached globally, thus widening its scope. The retrieval aspect depends to a large extent, on the description of the document with location of the document as the primary purpose. In traditional library , the catalogue performs this function. In the Internet parlance, 'the book' or 'information item' is basically an Internet resource or most commonly a 'homepage' or 'web page'.

In addition to the familiar services a few others could also be offered using the Internet as the base. To name a few information services;

1. Reference Service
2. Referral Service
3. Webliographies
4. BBS/Discussion forums
5. Alert Services, announcements
6. OPAC's
7. Newspapers clipping Services

The list of services above is only partial; there can be innumerable services. Net-based information services will soon be a part of the library routine work. Familiarity with a few techniques required for handling the net resources would help to a large extent to generate and provide these net-based services.

7 E-COMMUNICATION

Communication has never been faster, simpler, or more universally accessible than it is with today's technology. When many people think of electronic communications they think of electronic mail, or "email". From being used almost exclusively in academic and government circles in the early 1990s, at the start of the millennium email is a household phenomenon, used all around the world and in all levels of society. But electronic communications encompass a border spectrum of possibilities than just email. The television, the mobile telephone, and the computer all have a major part to play in our digital age, linked together by a huge global communication network.

8 LISTSERVS

Listserves are one of the most popular uses of the Internet. can be used to network with other librarians across the coun share similar problems and to find out how other libraries are d with issues that often encountered in our libraries. For examp issue of how can new technologies is used to promote libra information organization? Here user of listservs for discussi be used as a resource of getting answers to their questi message can be posted asking for a particular piece of inforr and within a few hours, other subscribers will provide answers. lists are used to distribute electronic journals. Listservs are p communication tools.

9 USENET

Usenet newsgroups are the vast array of discussion groups on the INTERNET. Librarians may be reluctant to use such a in order to answer reference questions, because answers t can come from anyone and there is no way to ver authoritativeness of the answer received. However, some have found Usenet useful for answering questions about culture as well as about specialized topics

10 INTERNET ON TV

The Internet has gradually moved from institutional hon everyday information tool, entering to homes. The efforts this direction have made Internet accessible through home t and one can tunes into the Net through the cable network idea behind Internet-ready television was to bring the Interne who cannot quite come to terms with computer technology. ready TV usually consists of a set-top box that provides t connection to the Internet by plugging in a telephone line and, the TV itself. There is an in-built modem that takes care o connectivity. Cable operators are likely to offer Internet through their set-top boxes in the next few years, eliminatin for an Internet-ready TV. Thus Internet is now gradually m PC to TV. Internet-ready TV includes remote keyboards, h and printers, as well as a central processing unit to handle types of task. Such TVs also include a streaming multimedia chip that handles all the video, graphic and audio inpu processing, as well as the output on TV set. An Internet-r

more than just replacement for computer and cable box; it can also replace video-editing set-up, and could include video and audio inputs for video cameras and camcorders. Coupled with a hard drive, video processing hardware and software, this new Internet-ready TV's could be used to edit video and to create own home movies.

11 INTRANET: THE NEW WAVE

The application and use of Internet standards and technology within an organization is termed as *Intranet* In other words it is a by-product of Internet. In which internal www sites by which users communicate using a standard common language and protocol. The word Intranet summaries area's like a LAN, a private WAN to hybrid directory services & searching systems to just about every type of Groupware (most often open or standards based). Currently the word Intranet is generally used to define modern networking. Intranets seek to seamlessly integrate desktops, LAN's, Client/Server applications, legacy systems, and the public Internet to enhance existing computing process.

12 PUSH TECHNOLOGY: INFORMATION AT DESKTOP

With push technology, the publisher can deliver content directly to the user's PC, thus substantially improving the likelihood that the user will view it. Push technology borrows some of the concepts used in traditional publishing, such as the subscription model, to streamline the delivery of content to the end-user. Push content can be extremely timely, and delivered fresh several times a day. In addition, push content can be customized to the specifications of each individual end-user. Currently there exist a host or push vendors or web casters. Examples include Air media, Back web, Data Channel, Diffusion (Intra Express), In common (Down town), Intermind (communicator), Marimba (castanet) Microsoft (Internet Explorer and Netscape's Net caster.

13 OTHER COMMUNICATION MEDIA

13.1 View Data: View data is another type of videotext system. It is also computer- based information system. The network operates by linking View data terminals to a central computer through telephone lines, like in the case of teletext, on a request by the viewer, page appears on the screen or printer Originally, information is transmitted on pages.

13.2 Prestel : It is an interactive view data system using the TV screen to present information and to respond to specific requests from the user. Prestel incorporates the use of a television receiver, keypad and the user's telephone line. In contrast to the teletext services, which are one-way. The Prestel computer database stores millions of pages of information and these are being added to and updated continually. A subscriber to the service uses a code index in order to locate the information required. The code is dialed by telephone or input by keypad and the appropriate page of information is displayed on the TV screen. The user can also use the keypad to reply to the system a limited way. The subscriber is charged for the telephone call, certain items requested, and for computer time access to pages. Almost limitless information can be made available subscribers, but the systems are expensive to use.

13.3 Teletext: Teletext is an electronic device of communication operates with sophisticated communication technology, which provides an opportunity for communication with the general public. This technique of communication offers a limited or narrow choice of information and services. The messages are transmitted and delivered by the conventional television signals and decoded by a device attached to a television set. Teletext is only one-way like the television. In India *Intext* is the joint venture Teletext Service of Doordarshan and the National Informatics Center (NIC). Intext intends to use the unutilized picture space in the television transmission for sending textual material in data communication form. The incoming signal can be decoded by using decoders and displayed on a television.

13.4 Videotext: The international name for the system originally designated view data but also often taken to mean the broadcast service, generally known as videotext. Sometimes, the term "broadcast videotext" is used. The remarkable development in the electronic media, among others, is the videotext. This technology increases the capacity to the television set to function like a computer terminal and retrieve information and graphics from a remote database. A videotext system would be very useful in disseminating general information about courses and programmes available through distance education.

The listener / viewer operates the key controller and oral information is available through modem over the telephone and its visual

erpart is flashed on the T.V. screen. The telephone and modem for a two-way interactive system wherein the listener /viewer ask questions, seek clarifications or get supplementary nation.

Telefacsimile: Telefacsimile is the technology that facilities ıst electronic transfer of written materials between distant points. ıl equipment's compatible with the same standards have resulted contributed to the improvement in quality of the copy hence cts librarians for interlibrary loan transactions.

Bulletin board: Many systems were employed to deliver mation services to the home and business sectors. Now a day's net has brought Bulletin board System (BBS), in most popular ɔe, which creates the possibility to engage in public discussions create an interactive community. It makes many-to-many munication possible. Any person can leave a message for all to l and anybody can attach his comments. Leads to topic oriented ussions - which are a learning experience to all. Any body may a question and all those with something to offer can react instantly their advice. Infact BBS is much older system before the Internet ame popular and widely acceptable.

7 Telepresence: Telepresence use virtual - reality technology to ulate objects, people, sound and environment. The components - Sensor equipped gloves connected to a computer and - Head unted displays. The computer simulates events in a distant virtual ld using databases or real - time objects and sounds. The output ns the digital database of real - time objects and sound are sent he user though a display mounted on the head, showing scenes. ɜ user's senses get immersed in a illusionary yet sensible world. ɜ person may be mounted on a movable Chair fitted with movement ısors to have corresponding changes in the viewpoint of the virtual rld.

.8 Teleconferencing: Teleconferencing integrates data, voice d image and can be used by groups working on same subject but read over a large geographical area. It can reduce travel expenses d speed up decision-making. Teleconferencing is also called as deo-conferencing." or "telephone conference" in which practically -direct communication between the participants is carried out via ɜ public telephone system.

14 COMMUNICATION MEDIA AND ITS USE IN THE UNIVERSITY LIBRARIES IN KARNATAKA STATE: ANALYSIS AND DISCUSSION

ı order to know the existing communication media facilities available ı university libraries of Karnataka state a questioner has been ıepared and sent to the some of the selected libraries to collect the ıformation. In order to speed up the process visits to the university ıbraries ware made to discuss the problems and prospects of ıandling new media by library professionals. This includes the Internet, /ideo conferencing etc., services offered and the availability of other ;ommunication media like teleconference or videoconference facilities ıs well as participation in the library networks and consortia. All these ıspects have been collected through the questions and presented ıere.

14.1 Internet Connectivity: in almost every library most of the activities of the library staff are geared to serve the needs of the users. Utilizing Internet has widened the scope of Information Services being rendered by the library staff to a very great extent. Internet has ushered multimedia field that can help media managers in efficient and effective acquisition, organization and dissemination of information in various media. It is found that there is an increasing acceptance of Internet in academic library and information centre the responses colleted are tabulated in Table 1.

Table 1: Internet Connectivity

Sl. No	University Library	Connectivity	Dial up Lease line
1	Bangalore University	√	BSNL
2	Gulbarga University	√	BSNL & CSAR
3	Hampi Kannada University	-	-
4	Karnatak University	√	Disha
5	Karnatak State Open University	√	-
6	Kuvempu University	√	
7	Mangalore University-	√	BSNL
8	University of Mysore-	√	STP

14.2 Internet Services: It may be said that the Internet is massive, searchable, dynamic, widely available, distributed, multi-platform information system having a great potential of resources. The resources available on Internet are changing constantly. Therefore, any list is liable to be out of date. There are different types of services .To mention a few like e-mail which allows users to send messages or files to each other, in other words electronic mail communicates word processors along with display system and computer terminals with printing facility, message obtained on display screen as well as paper document. Getting on-line connectivity or getting news, remote log in, or File transfer protocol, which allows users to access, and retrieve files at remote sites.

Table 2 Internet Services

Sl. No	University LibraryServices	E-mail	Online	FTP	Telnet	Chat	NG
1	Bangalore Universit	y	√	√	√	√	√
2	Gulbarga University	y	√	√	√	√	√
3	Hampi Kannada University	√	√	√	√	√	√
4	Karnatak Universityy	–	–	–	–	–	–
5	Karnatak State Open University	–	–	–	–	–	–
6	Kuvempu University	√	√	–	√	√	–
7	Mangalore University	√	√	√	√	√	√
8	University of Mysore	√	√	√	√	√	√

FTP-File Transfer Protocol/Downloading NG-News Group (List Server, Discussion Group)

14.3 Availability of Communication Media Based Services

The world of communication media increasing in and through its technological and industrial convergence-poised on the cusp of yet another major and revolutionary advance. Digital compression, the capacity to transmit hundreds and even thousands of separate signals - of voice, image, text and data - down a cable or a twisted copper wire, is ready like the shock troops of an invading army, to advance across the landscapes of present more or less cosy media lives.

Table 3: Availability of Communication Media Based Services

Sl. No	University Library	Teleconference	Videoconference	CTV
1	Bangalore University	√	√	√
2	Gulbarga University	-	-	-
3	Hampi Kannada University	-	-	-
4	Karnatak University	-	-	-
5	Karnatak State Open University	-	-	-
6	Kuvempu University	-	-	-
7	Mangalore University	√	√	√
8	University of Mysore	-	-	-

CTV-Close Circuit Cable TV Network

It is very surprising to note that except Bangalore University and Mangalore University libraries no other library is providing the latest communication media based services like Close Circuit TV service as well as Teleconferencing facility to the users.

14.4 Network Based Services: Developments in information technology, particularly through electronic publishing, database design and development, online information network, variety of user interface technologies have provided for the flexible user-friendly fast access information networks.

Library networking is the use of computer networking to support all forms of communication between libraries, and their users and between libraries. On the other hand, information networking is concerned with end -user communication and access to networked information sources not in any way mediated by the library. It is an information dissemination and gathering activity solely by the presence of the network.

Table 4 Network Based Services

Sl. No	University Library	Network	Consortia	Directory
1	Bangalore University	√	√	√
2	Gulbarga University	√	–	√
3	Hampi Kannada University	-	-	-
4	Karnatak University	√	√	√
5	Karnatak State Open University	-	-	-
6	Kuvempu University	√		√
7	Mangalore University			
8	University of Mysore	√	√	√

)und from the above table that Bangalore, Karnatak and Mysore ersity Libraries (100%) are accessing Network, Consortia and tory information for the users followed by Gulbarga and galore University Libraries (66.67%). Kuvempu University Library 3%) provides only the Directory service to the users.

Availability of Human Resources: The human resource refers y individual serving as a source of information. Talking, interaction fellow scientists, experts,specialists, and family members gives of insight into the problems of a researcher. In order to check awareness about human resources available over Internet a tion is asked and tabulated here.

Table 5 Availability of Human Resources

loUniversity Library	INFLIBNET Data	Experts Database	Project Database
Bangalore University	√	√	√
Gulbarga University	√	–	√
Hampi Kannada University	-	-	-
Karnatak University	√	√	√
Karnatak State Open University	-	-	-
Kuvempu University	√	–	
Mangalore University	√	√	√
University of Mysore	√	√	√

received responses as indicate in above table shows that most he libraries are aware about the INFLIBNET data, Experts abase and project database. Many librarians are utilizing this type esources quite often.

6 Availability of Manpower Skills: The librarians job calls for h intellectual capabilities precise technical skills and vast ninistration abilities. The librarians and their colleagues must have vork shoulder to shoulder with whose business it is to broadcast owledge, to reinterpret it and to extend its bounds. Do the new dia cause special staffing problems? Some would argue that they y demand extra skills from the professional librarians, while others nt to the need for extra differently qualified personnel. In order to ek the information regarding available libraries staff, a question is ked and the response is tabulated here.

Table 6 Availability of Manpower Skills

Sl. No	University Library	Manpower Skills Availability YES	NO
1	Bangalore University	√	
2	Gulbarga University	√	
3	Hampi Kannada University	√	
4	Karnatak University	√	
5	Karnatak State Open University	√	
6	Kuvempu University	√	
7	Mangalore University	√	
8	University of Mysore	√	

The present table reveals that most of the libraries are havingseparate skilled staff to provide IT oriented service to the users.

14.7 Rating of Manpower Skills: Information Technology oriented multimedia information is rapidly growing both in importance and in diversity. The question is not simply how such information should be handled by library and information staff, but also whether their role might by bypassed by direct end-user access. This possibility is examined by asking a question to the librarian and the response is recorded in table 7.

Table 7: Rating of Manpower Skills

Sl. No	University Library	Excellent	Very Good	Good	Average	Poor
1	Bangalore University	-	√	-	-	-
2	Gulbarga University	√	√	√	√	
3	Hampi Kannada University	-	-	-	√	-
4	Karnatak University	√	√			
5	Karnatak State Open University	-	-	-	-	√
6	Kuvempu University	-	√	-	-	-
7	Mangalore University	-	-	√	-	-
8	University of Mysore	-	-	√	√	-

It is noted from the above table that most of the libraries under the survey are having better staff proportion in handling applications of IT.

15 CONCLUSIONS

The evolution of modern information technologies has spawned a new lexicon. Librarians have been called warriors on the information superhighway, cybrarians and navigators in the knowledge economy. While few can legitimately claim such status in cyberspace, all need to aspire to this goal. These new information technologies provide threats and opportunities to the global library community.

Not all information professionals have embraced new technologies willingly. The scarcity of resources coupled with inadequate or inappropriate training has made the choice difficult for many in both the developed and underdeveloped worlds. Some have been swept along on the tide of technological change unsure of where the journey ends.

Copyright, preservation, legal deposit, privacy, content regulation and censorship are all issues, which need to be resolved quickly and thoughtfully. We must not become slavish automatons worshipping at the ideological altar of technocracy.

Libraries are not museums, and although they may have a local, regional or even national archival role, libraries are not finally archives. Academic Libraries build collections to support educational and research missions. They are repositories of *ideas* as well as *artifacts*. Further, in order to use the ideas that libraries store on their shelves and in their databases, scholars must also use (perhaps use up) the actual physical artifacts that contain those ideas. Over a period of time, difficult choices must be made, whether to store and how to store (Baker seriously underestimates the cost of building and staffing storage facilities), whether to microfilm or purchase microfilm copies of important titles, whether to digitize or purchase digital versions of important titles and finally, whether to discard or keep titles that no longer meet the needs of their particular user communities.

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L&IS EDUCATION THROUGH DISTANCE LEARNING: ROLE OF DISTANCE LEARNING TECHNOLOGIES

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ABSTRACT

Discusses the need for Distance Education in India in the field of library and information Science in the present day context. Mentions the institutions offering Library and Information Science education in India through open and distance learning. Also discusses the role of distance education technologies in imparting Library and Information Science education effectively and suggests the measures to be adopted by the distance learning institutions to meet out the challenges posed by information and communication technologies.

1 INTRODUCTION

The twentieth century has witnessed the creation and evolution of technologies beyond imagination a century ago. The computer enabled the digital presentation of knowledge and increased the speed with which information can be captured and processed. Communication technologies have made possible the storage, transfer, and sharing of information from remote places to anywhere in world. These technologies led to new alternatives for providing education and training in ways not possible just a few decades ago. Further, the use of information technology paved the way for developing communication tools that can deliver information and knowledge without the limitation

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imposed by traditional learning environments. In the present century, we are witnessing unprecedented growth in the number of commercial, governmental and educational institutions planning or implementing some form of distance learning. Gubernick and Ebeling[1] opined that, "The number of learners participating in distance learning environment is expected to exceed 3 million by the year 2000. LaRosse, Gregg, and Eastin [2] says that there are over 100 universities that offer more than 2500 courses over the Internet. Race and Brown[3] while discussing the role of distance learning in the modern era state that the reasons for the rapid growth of distance learning in recent years are (i) lower cost of computer hardware, software, and telecommunications services; (ii) younger generation familiar with computers and the Internet; (iii) younger generation has better keyboarding skills and less fear of technology; (iv) better access to computers in the general population; and (v) more pleasing users interfaces including multimedia. India is not an exception to these factors.

2 NEED FOR DISSTANCE EDUCATION IN INDIA

Higher education in India after independence has expanded enormously. About 4427000 students were studying in universities and colleges during 1990-1991[4] in about 147 universities and 7126 colleges. In 1997-98 the number of universities in India swelled to 229.[5] As per an estimate, now, the number of universities in India are more than 250 along with over 10,000 colleges. Despite of such a tremendous growth in the number of higher education institution in the country the situation of higher education in the country is certainly not healthy as access to higher education in the country is still restricted only to 6% of the people of the age group of 18 to 23[6] and India being a developing nation can not afford to restrict the access to higher to such a low percentage of the people in the country. If it has to increase, if greater access is to be provided, how can this be done ? Of course, answer is distance education system which has proved to be a powerful instrument to achieve this laudable result. In addition, there are other factors such as lower costs of education and training per learner, increase education and training opportunities for all knowledge workers who work with and produce value from information rather than from products of physical labor and provide lifelong learning opportunities for people of all ages, lifestyles, capabilities and financial situations have also contributed in boosting the distance education learning in India. Due to all such factors, in India now, there are 69 universities which are offering several

traditional and professional courses through distance learning. Some of the professional courses being conducted by various universities in this country are: Public Relations and Advertising, Journalism, Education, Management, Office Organisation & Procedures, Tourism and Hotel Management, Computer Applications, Language Teaching, Automobile Engineering, Rural Development, Food and Nutrition etc. Perhaps, having motivation from such like efforts and increasing demands of library and information centres for professionally qualified library professionals in the country, many universities came forward to launch library and information science courses at various levels through distance learning.

3 OBJECTIVES OF L&IS EDUCATION THROUGH0 DISTANCE MODE

Some of the noteworthy objectives of imparting library and information science education through the mode of distance learning are:

1. To meet the increasing thrust of non-qualified work force;
2. To make available educational facilities to the rural and remote areas;
3. To provide an opportunity to the working library and information personnel for acquiring additional formal qualifications;
4. To inculcate professional competence among working non-professional library staff;
5. To make the library and information science teaching and learning process more cost effective;
6. To provide an opportunity to the people who desire to learn and earn simultaneously;
7. To provide an opportunity to the dropouts who could not find entry in formal stream due to various reasons; and
8. To provide an opportunity for career development to the working librarians and information personnel.

4 STATUS OF L& IS EDUCATION IN INDIA THROUGH DISTANCE LEARNING

There are so many universities in India which are conducting L&IS courses at different levels in the country. Some noteworthy universities which are imparting L&IS education through distance mode are:

1. Alagappa University (Directorate of Distance Education, Karaikudi – 623003);
2. Annamalai University (Directorate of Distance Education, Annamalainagar- 608002);
3. Awadhesh Pratap Singh University (School of Correspondence Courses and Distance Education, Rewa- 486003);
4. Barkatullah Vishwavidalaya (Institute of Open and Distance Learning, Bhopal – 462026;
5. Bharathidasan University (Centre for Distance Education, Tiruchirapalli – 620024);
6. University of Calicut (School of Distance Education, Calicut – 673635);
7. Dr. B.R. Ambedkar Open University (Ahmedabad – 380003);
8. Dr. B.R. Ambedkar Open University (Hyderabad-500033);
9. Guru Ghasida University (Institute of Distance Education, Bilaspur- 110068);
10. University of Hyderabad (Centre for Distance Education, Central University, Hyderabad- 500046 (A.P.));
11. Indira Gandhi National Open University(New Delhi – 110068);
12. Jai Narayan Vyas University (Shri Onkarmal Somani College of Commerce, Jodhpur – 342003);
13. Kakatiya University (School of Distance Learning and Continuing Education, Warangal – 306009;
14. University of Kashmir (Department of Distance Education, Srinagar – 190006);
15. Kota Open University (Kota – 324010);
16. Kurukshetra University (Department of Distance Education, Kurukshetra – 132119);
17. University of Madras (Institute of Correspondence Education, Channai – 600005);
18. Madurai Kamraj University (Directorate of Distance Education, Madurai – 625021);
19. Mahatma Gandhi Gramodya Vishwavidayalaya (Institute of Distance Learning and Continuing Education, Chitrakoot, Satna – 485331);
20. Meharishi Dyanand University (Directorate of Distance Education, Rohtak, Haryana- 124001);
21. Nalanda Open University (Kidwai Puri, Patna – 800001);
22. Patna University (Directorate of Distance Education, Patna - 800005);
23. Punjabi University (Department of Correspondence Courses, Patiala – 1470002);
24. Sri Venkateswara University (Directorate of Distance Education,

Tirupati – 17502);
25. Yashwantrao Chavan Maharashtra Open University (Gangapur Dam, Nashik – 422005); and
26. Dr. Hari Singh Gaur University,(Directorate of Distance Education, Sagar)

5 L&IS EDUCATION THROUGH DISTANCE LEARNING: THE USE OF DISTANCE LEARNING TECHNOLOGIES

There are many technologies that can be used to support distance education and training. Some are use as supplements to traditional classroom environments and others are used as complete replacements for traditional lecture-based courses. Here, the term technology includes those tools that provide access to education or training, such as telecommunication networks, computers, or books. Clark[7] says that these are referred to as delivery technologies. Clark[8] further says that there are also tools that influence the learning experience of learners such as tests, tutorials, exercises, help guides or examples and these are referred to as instructional technologies. In the present context, distance learning technologies include:

1. Computer-Based Training;
2. Computer-Aided Instruction;
3. Web-Based Training;
4. Teleconferencing;
5. Videotape; and
6. Video Tele-Training

5.1. Computer-Based Training Technology

Computer-based training involves training courses that are offered on a computer typically distributed on CD-ROM or diskettes. In fact, Computer-based training technology is very well used as media for tutorials or complete lectures. Learners through this technology enjoy the facility of using the study material for the given course at their own pace. Now a days, there are several courses offered by so many institutions through Computer-based training technology. For example, a programme called 'Learnfortran' is used in schools to teach both programming principles and the Fortran language. Also, there are so many programmes now available in the field of mathematics where several institutions offers mathematics courses for their freshman students. For example, MathWise in Britain or the Math Emporium at Virginia Polytechnic Institute and State University

in the United States. There are several merits of Computer-based training such as (i) learner can work at his own pace and convenience, (ii) learner has more control over his learning environment by using audio, video, animations and other interactions, and (iii) designing modular courses is easy in Computer-based environment which also facilitate the learners to get immediate feedback on their performance on the given course under study; (iv) access to information on CD-ROM is very efficient. However, there are a few de-merits of this system. They are: (i) there is no interaction between learner and instructor, (ii) institution has no control over the learning environment, and (iii) it requires at least a multimedia capable personal computer which some times seems to be costly affair to a learner in his/her personal capacity.

5.2. Computer –Aided Instruction Technology

There are several terms which are being used to denote the concept of Computer-aided Instruction. They are: Computer-aided learning (CAL), Computer-based learning (CBL), Computer-based teaching (CBT), Computer-aided teaching (CAT) etc. In fact, Computer-aided Instruction is similar to Computer-based Training but is typically used as an add-on complement to traditional learning methods. These instructional technologies are often used to provide tutorials delivered in computer laboratories to supplement lecture-based instruction and to provide hands-on exercises to learners. The merits of this technology includes (i) it enhance learner's learning capability, (ii) learner can study tutorials or add-on material at their own pace; (iii) learner has facility to decide when he wants to take the particular computer module that is necessary for him to complete class room work, (iv) designing a modular course is easy in Computer-aided Instruction and learner receives feedback immediately about his/her performance on the course being undertaken, and (v) it enables to make use of multiple modes of learning by using audio, video, text that can be built into the course material and environment. A few de-merits are: (i) limited interaction between learner and instructor, (ii) it requires multiple sets of the same material as it uses the multiple platforms within its environment i.e Unix vs Windows and Macintosh vs IBM compatible.

5.3. Web-Based Training Technology

Web-based Training uses the Internet as its primary medium for delivery of instruction where it ask for using the several tools which are non web-based such as File Transfer Protocol (FTP), Usenet, Internet Mail, Telnet, Listservs and Chat rooms. In fact, Web-based

Training is used to replace courses that offered in regular classrooms, thus, allows students to work at their own pace i.e. cyber courses, emphasizing the learner-centered role of this technology in education and training. Actually, Web-based Training is often used solely for information distribution, a function that is particularly well served by hypertext. Web-based Training allows the distribution of course material to take place any time and anywhere around the globe and offer communication capabilities through interactions between learners and between learners and instructors using a variety of communication facilities such as electronic mail, listservs and chat facilities. A few noteworthy merits of this technology are: (i) Web-based training courses are available free of charge on the Internet, (ii) truly distributed learning can be achieved as Internet is used as a backbone for communication and course dissemination, (iii) Hypertext encourages learners to explore more control of their learning environment, (iv) Web-based Training courses are ease of use because Web courses use a browser as the main interface between the learner and the material, and (v) instructors can update course material as required because of the dynamic nature of Web environments. However, some of the de-merits of this system are: (i) reliance on information system provider, (ii) low speed connections, (iii) viruses while scanning the files, (iv) network access cost is high because of necessarily using the Internet facility, (v) lack of quality material, (vi) security and privacy and (vii) instructors have no control over the learning environments.

5.4. Teleconferencing Technology

Teleconferencing is a technique which enables learners in a course to be connected to each other including the instructor. There are three types of teleconferencing technologies. They are: Audio, Data and Video. Audio conferencing is performed using computer multimedia facilities such as microphones, speakers and audio-software. Data conferencing includes all forms of simultaneous exchange of data between several individuals. This includes sharing documents to work on, automating file transfers to several individuals, and using chat facilities. Vide conferencing uses cameras, appropriate multimedia monitors and software to actually view remote individuals in a quasi fact-to-face type environment. There are three major categories of interactions in a teleconferencing technique: (i) one way interaction only where dissemination of information is achieved via audio, video, and text features to remote learners by instructors, (ii) two way interaction where one-on-one electronic communication between the instructor and individual learners is achieved, and (iii)

many ways interaction where all learners are allowed to interact together and with the instructor or tutor via audio or video. Two-way conferencing is comparatively more popular than one-way conferencing because the instructor can deliver knowledge while receiving feedback from learners, individually. Merits of teleconferencing technology are: (i) include a video component simulate face-to-face interaction, (ii) interaction between learners and instructor where they can ask questions and obtain immediate feedback, (iii) learners can be geographically distributed worldwide, and (iv) complex problems can be solved as the instructor uses a combination of audio, text, graphics and videos in the process of interaction with learners. De-merit of this technology are: (i) it requires bandwidth i.e. high speed connections to the Internet, (ii) it allows only two individuals to use audio and video capabilities at the same time, and (iii) no off-line work is permissible as teleconferencing sessions are held in synchronous modes.

5.5. Videotape Technology

This distance learning technology is very old and still being used as one of the options to promote distance learning. One of the characteristics of this type of training is that the delivery mechanism is based on video projection equipment, screens and appropriate room. The material contained in the video should be of a fairly enduring nature, as it cannot be updated except for creating a new video. In this learner accompany self-study workbooks or lectures recorded in videotape. Its merits includes: (i) learners can follow a course at any time according to their convenience, (ii) videotapes can easily be distributed worldwide, and (iii) Videotape can be played on any videotape player. Its de-merits are: (i) no performance feedback is possible, (ii) only one mode of learning is possible, and (iii) no interaction between learner and instructor.

5.6 Video Tele-Training

It offers some of the facilities of teleconferencing and some of the facilities of videotaping. It involves live video and audio capabilities to offer distance education at several locations. The instructor teaches a course in real-time that is being broadcasted to one or more remote locations almost similar to the broadcasting we see on television news channels. Learners can often participate in the course by asking questions using telephone lines or other two-way audio communication facilities. Its merits include: (i) two-way communication links possible, (ii) updating materials is possible, and (iii) interaction between learners and instructor is possible. It de-

merits include: (i) learners has to be very punctual in timing as the programmes are broadcasted at a fixed time, and (ii) it offers very limited geographic dependence and visual display limitations.

6 CONCLUSION

The distance learning technologies discussed above are plasticized very commonly worldwide in the present information technology environment. However, an ideal instructional technology for distance learner depends on the particular needs of the organization depending on the financial capabilities of that organization as well. As we all know that the New Education Policy of India emphasizes on the need to offer higher education through distance learning to the people who live in remote place and rural areas where the facilities for formal-education are very limited. This is equally applicable to Library and Information Science education as well. However, the quality of education has always been a matter great concern and the debates are going on such like matters. Further, the issue of quality of education burns too much and becomes so serious when education through distance learning is imparted for professional courses like Library and Information Science in India. The hot issues related to distance education in India particularly in the field of Library and Information Science are to examine (i) the fitness for the purpose the education is imparted, (ii) determine the value of the money spent on education, (iii) feedback management to know the standard of educational programmes offered, and (iv) overall improvement in the quality of education through this mode of learning. In addition to several benchmarks offered by the educationists for the purpose of evaluation of training progarmmes of Library and Information Science education through distance learning, the solution upto certain level is also seen in the implementation of distance learning technologies.

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NEED FOR A TRAINING POLICY FOR POWER SECTOR LIBRARIANS IN INDIA

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ABSTRACT

The libraries are comforting the problems ever increasing number of document in various physical forms, book and non book, printed and non printed, published and unpublished graphic and audiovisual, microforms and other forms.The nature of user needs and requirement are also being changed under electronic access environment. The inter disciplinary and multidisciplinary approaches of user as well as project -oriented and mission -oriented searcher have been making the library services move complicated..Libraries are gradually becoming information centers, particularly in changing sanrio of disinvestment and globalization in Power Sector in India, where information is a valuable national resource which can be generated, retrieved and disseminated through the creation of database and systematic information services. Only Library & Information Science is not adequate to cater the needs of modern library of Power Sector but proper training is required to handle the task of an information specialist of Power Sector.This paper focuses on the need of training policy and useful areas of training for Power Sector Librarians

1 INTRODUCTION

The influx of technologies into libraries in the decade has caused a tremendous impact on the library professionals of. Power Sector and the services rendered by them . More and more

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electronic and information technology based information will enter the libraries and their use will grow increasingly year after year. With the emergence of CD.ROM and Internet Technology, electronic resources are visible in the inventory of the library and few Power Sector Libraries can be identified as hybrid library which includes a combination of electronic and print products; all united by a common electronic catalogue with consistent cataloguing and search mechanism . A hybrid library has to be fashioned in such a way so as to provide access to both , traditional as well as electronic resource. This has resulted in adding extra responsibilities on the so called hybrid librarian of today therefore proper training is required to meet the new challenges under electronic environment of Power Sector Libraries.

2 TRAINING POLICY

A policy sets out in writing the purpose, scope, and composition of a training program. It is useful to have a document that describes the training program from several perspectives. Administrators may want to set limits on how much the training program undertakes. Staff members who implement it need to know what their boundaries and expectations encompass. Staff members who participate in the program may want to know what they can expect from it.
In many settings, the program may actually be a section of another unit, such as personnel, human resources, or staff development. In other cases, it may sit off by itself and include multiple reporting lines . A well-written training plan makes clear the responsibilities of the adminstrator. A policy statement may include a number of elements:

1 a mission statement, and/or a purpose, that delineates the policy's scope
2 goals that indicate the direction a policy takes
3 objectives of what will be undertaken (often reformulated each year)
4 overall guiding principles that are general and important to mention upfront
5 considerations regarding people, places, or things that impact on or are impacted by the training program

A mission statement is much broader than a goal. It is a vision of why something exists. Some may argue that a policy is subordinate to and thus shares the institution's primary mission. In lieu of a mission, the policy should at least state the purpose of the program. In its most general terms a training program exists to further the mission of the Power Sector Library to serve the information needs

of its constituents. Stated a little more concretely, the purpose of a training program might be to provide support in the form of training to staff members so that they can carry out their responsibilities. Likewise, depending on the mission, the program's purpose might also be to provide support in the form of training to patrons (customers, clients, etc.) so that they can effectively fill their information needs.

Part of the purpose statement may include background information concerning various relationships regarding training, such as where the responsibility for the training exists and what avenues exist for collaboration and cooperation. In Power Sector Organizations the responsibility for running the program (administration, management, registration, promotion, etc.) lies with the HR Unit while responsibility for developing courses (design, implementation, evaluation, etc.) lies with the training team or the coordinator of the training. A training program can achieve its mission or purpose by having a variety of goals. These are usually broad statements of intent. For instance, it may be, "To train staff to access online energy information . Or a goal might be, "To train staff to better carry out the mission of the library" (i.e., professional development). Another goal could be, "To train patrons to use information technologies" (i.e., catalogues, indexes, search engines, etc.).

3 OBJECTIVES, PRINCIPLES, AND IMPACT

An objective is more like a summary of a plan than a broad direction. To distinguish goals from objectives, I like to use a definition that has its roots in education: Objectives are specific statements of action that result in a measurable outcome. Similar to learning objectives, policy objectives can describe who is impacted (audience), specific activities involved (behaviors), the circumstances under which the activities take place (conditions), and the criteria for measuring success (degree). For instance, an objective to initiate training on MARC may be stated simply: "Training will be given on the MARC Format .Training will be given to staff to ensure they are able to Create online library catalogues. An even more detailed objective may be stated:

"Hands-on training will be provided so that staff will be able to perform searches and retrieve pertinent results at the time of accessing and searching the OPAC .

In addition to mission, goals, and objectives, a training policy may

state principles that should be followed and considerations that need to be taken into account. For instance, the library may establish principles involving how or when training is performed. Perhaps it indicates a set number of hours of training per individual per year (20), or when training would best be presented , or whether staff would be compensated for coming in during evenings.

Finally, we should consider variables that can impact or be impacted by the policy. Often it can be difficult to know exactly how or where these things will be affected,but they should still be factored into the equation at the appropriate time. For instance, it may be hard to determine exactly how funding will stand in a year but consideration must be given to the budget (though not as a driving factor of the policy). Likewise, variables like how many staff members from the same unit can attend at one time wouldn't be spelled out in the policy, but there might be a bulleted item that states, "Consideration should be given to covering absences during training."

4 TYPES OF TRAINING

What types of training should our policy cover? First, it is likely that this will change over time. Second, there are many types of training that can take place in an organization, and so we may have more than one such policy. I oversee information and communication technology training, from the operating system (Windows) to some applications (browsers) to electronic resources (indexes) to the Internet (search engines, etc.). The HR Unit oversees "soft skill" training (working in teams, etc.).

Thus, a training policy may describe which training it is responsible for and also indicate other areas of training. As noted, information technology training can cover a wide gamut. It may be broad (Introduction to the Internet) or specific (Converting Handouts to the Web). In Power Sector Libraries , we teach some basic application courses using available textbooks (e.g., Windows, MS Word,PowerPoint). Most courses are developed in-house (Searching for Current Events, Troubleshooting Your PC, etc.). Other development courses may likewise be general (Supervision), a little more specific (Managing Team Meetings), or work-integrated (Discussing Expectations in the Libraries Performance Management System) and are lumped together under our staff development and training umbrella. **Now, Use It or Lose It!**

Why should our library have a training policy? First and foremost, a policy is critical to articulate and share the vision and direction of professional development. It is essential in a time and environment when gossip can fly as fast as an e-mail virus to set things down in writing (though not necessarily in concrete, as things may change). The policy is a way to tell staff, patrons, supervisors, administration, the board of trustees, etc., that our values are committed to keeping up with change.

A policy is useful when we are first carving out responsibilities for training. If training already exists, but without a policy, it would be worthwhile to capture what is going on. Also, when responsibilities grow or shift, it is very helpful to articulate goals, boundaries, and expectations. For instance, if one person who has been leading the training effort leaves, it may be time to reconsider how training will get done. Will responsibilities remain in the same unit, with one person? Who should do it—someone new or someone already within the library? Should the work be shared—among people, among units?

Making a commitment to using the policy means that we believe strongly in the mission of continuing education, instruction, and teaching. To do a good job means putting the energy, people, and resources behind needs analysis, design, thorough development, quality implementation, and serious evaluation. The willingness to put an emphasis on training also means promoting it and creating a way to maintain and track it (e.g., a thorough system of prerequisite filtering, registration, and follow-up to ensure its effectiveness).

5 TRAINING FOR LIBRARY PROFESSIONALS

The library authority should coordinate with training specialists to chalk out schedules for useful training programms for library professionals.

Library professionals and supporting staff (administrative staff)should be trained to install software , and tackle simple technical problems so that no time is wasted waiting for the appropriate information professional to attend to it.

They should also be familiar with some of the operating systems such as MS DOS, Windows and some document and spreadsheet tools like MS Word, Excel, PowerPoint, etc.

E-mail technology has opened new vistas in communication. Using this technology will improve and accelerate the communication process.

The information services providers should be trained to retrieve information from databases, each of which may have different user interfaces, build search strategies, refine searchs, and download results in the required formats.

Library professionals are considered the best choice for content development. They therefore need to be trained in data organisation , structuring and presentation of contents.

With the advent of Internet, library professionals are faced with the herculean task of filtering information from an unstructured or semi-structured heterogeneous mass of information. To perform this task it is essential for them to understand the needs of the clientele. The library manager who understands the goals of the organisation should guide these professionals to search for the relevant information actively and proactively.

Library professionals should have at least the basic knowledge of library networking, library intranet ,security technologies, viz. firewalls, authentication, access control, computer virus countermeasures, security audits, etc.

6 CONCLUSION

The profession of librarian as conclusion and manipulator of information should continue one of the most highly esteemed occupatious in the coming century. The librarian will be a kind of information engineer, not just a keeper of books , a classifier , or a teacher displaced from the class room . As an object , the book has changed. Library buildings have changed as operational spaces. The role of reading in a computerised society has gained new recognition. Libraries, as information engineers with broad human backgrounds, must of necessity change them way of thinking if they are to meet the challenges of the twenty first century.

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NEED OF TRAINING FOR INFORMATION PROFESSIONALS IN ELECTRONIC ERA

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ABSTRACT

In the modern society, information is considered as the key resource for the economic, socio-cultural and political development of a nation. Importance of information in decision making has been recognised by the service organisations, which use it as a vital raw material. Introduction of information technology, with its infinite potential on storage and retrieval of information, has brought about dimensions of change in the job of library professionals. The library professional should be equipped with the know-how of different information sources, management, retrieval and dissemination as well as global access to information. The traditional library services, both at the conceptual and operational levels have become outdated and obsolete especially in areas of information service. The library personnel are forced to build electronic environment in the library as services through electronic media have placed tremendous demand in the library situation. Sufficient training has to be given to the library staff in order to attain a desired standard of efficiency and skill.The paper discusses the role of information professionals in the electronic information environment. By acquiring the necessary skills, provision of latest information services can be a reality which is suitable for the present age. The factors related to training have been considered in the context of electronic information age. Methods of training and other factors related to human resource development in librarianship have been examined.

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1 INTRODUCTION

Librarianship is an exalted profession which enhances and broadens vision, increases the sphere of knowledge and the depth of friendship among human beings. The very essence of librarianship is service before self. Library provides information, inspiration and recreation for the enlightenment of the personality of the individual at the vital spiritual and mental levels. Dr.S.R.Ranganathan says 'librarianship is a noble profession. Service for mind is its motto. The great success of the service basically depends on the human relations. A standard conduct is based on courtesy, honour and ethics which guides the practitioner in his human relations with clients and colleagues'.

While the fundamental mission of libraries-to facilitate access to knowledge and information-has remained unchanged, the processes, tools and techniques employed for realising this objective have all undergone profound transformation. Due to exponential growth of information in all fields of human knowledge, the retrieval of right information has become a great challenge.

The present day library services are greatly influenced by the technological applications and advancements in electronics and communications. The last two decades have been the decades of rapid changes and we are living in a period of transition. The library professionals need to accept the change in the environment and adapt accordingly.

2 ELECTRONIC INFORMATION ERA

The storage and maintenance of the huge mass of paper documents year after year have become extremely costly, time consuming and labour intensive. The storage and maintenance cost of paper documents is becoming more than their production cost. Today we are moving from the print media towards the magnetic tape, giving rise to electronic library. This age may truly be called an electronic information era caused by the explosion of electronic methods in every specialised fields. Electronic media has made its impact on education, entertainment, information supply, social, cultural and behavioural aspects. Librarianship is also experiencing the impact of electronic media.

Electronic media is helping libraries to increase their efficiency and effectiveness by providing information in all its dimensions and colours.

In an electronic environment, information is available in sources like e-books, e-journals, CD-ROMs, Internet, DVDs and databases. Moreover the library need not own publications to be readily accessible. Many of the sources available in electronic form can be made available to the user community by developing electronic information access facilities. The availability of information in the electronic media has created opportunity for global access to information.

Today electronic storage and telecommunication media are playing an important role in the transmission of information. Electronic information technology establishes a different relationship between interpretive works and the underlying data or primary works on which they are based. Electronic information is beginning successfully to compete with information in traditional printed form. The pattern of provision of electronic information is very different from that of printed information. There is an emerging trend among the librarians and academicians that the electronic dissemination of information might be a solution to the problems of scholarly communication in print form.

The availability of text in electronic form has important potential advantages. For resource sharing among institutions, texts stored electronically are almost instantaneously transmittable. To justify its existence in the electronic world, the library must continue to perform one of the most important functions it now performs in the print on paper worlds to organise the universe of resources in such a way that those most likely to be of value to the user community are made most accessible to the community, physically and intellectually.

It is with the emergence of information technology that storage of information in electronic form has become a reality. Information technology has dramatically changed the nature of business of modern day libraries. The conventional set up of brick and mortar libraries that store information within a constrained physical space has given way to digital multimedia information storehouses that integrate data resources around the globe through effective deployment of information technology, without straining the tight financial resources.

Information technology is advantageous to accommodate increased workload, achieving greater efficiency, generation of new services, and helps in cooperative activities. The application and use of information technology helps in improving the quality and productivity

of library and information services.

The library, as a primary institution for storing and disseminating information, has therefore to take advantage of information technology and facilitate access to whatever information is needed and wherever it may be. For this purpose it must modernise its operations and services with the help of information technology and have internet connectivity and online information retrieval facilities.

The internet is playing an important role in transforming the library system and the way in which we view the library resources and services. The net provides instant access to billions of information sources which include books, reports, journals, video films, sound recording and wide variety of other sources.

In the modern world of information explosion, the internet has become a necessity for the libraries and information centres. It is a global network of computer networks which has opened up unimaginable opportunities for searching and offering information.

Various compelling conditions have necessitated the application of technological and managerial expertise in information systems and networks, previously unknown to library professionals. The role of traditional librarian in the profession of information science requires to be objectively reassessed and reasserted. Information being an essential input for development, the need for those who handle information have to master the techniques which are necessary for its efficient storage and dissemination. As we are becoming more and more dependent on electronic medias and their forms and concentrating on digitising our libraries, we definitely require sufficient change in our role of librarians and their responsibilities.

Professionalism in librarianship is facing newer challenges in the face of new information environment. New approaches to content-analysis, identification and processing of documents and their thematic connection to the users' environment is providing scope for emergence of new methodologies and systems and the renewal of older ones with new settings. The professional roles of librarians and other information workers keep renewing towards new challenges in library and information service.

3 ROLE OF INFORMATION PROFESSIONALS

The information professional will have a challenging and dynamic

role to play in the electronic information environment. The technology is progressively replacing the old methods of information collection, storage and retrieval. In the 21st century most of the documents will begin to publish in electronic full text form and will be available online. Advances in multimedia applications will add new dimension to a librarian's job. Library professionals have to face the challenge of this changing scene.

It is time that we understood the fact that information technology is going to stay forever. Library professionals need to change their attitudes now. The present scenario of librarianship involves several factors like demand for information at finger tips, information revolution, changes in information revolution, Internet and Intranet, web publishing, electronic publishing, floods of publications, increase in cost of publications, budget constraints and competition.

The information professional needs specific training to understand the implications of the new working conditions. Knowledge of computer working is essential and should be made compulsory for the future requirement.

The information professional who has the skill and expertise to handle software and search languages, alone will survive in the realm of information storage, retrieval and dissemination. Today the librarians have to shoulder the responsibility for institutional reorganisation keeping in view the future requirements and demands. They should develop the capacity to evaluate the precise requirements of the users besides having knowledge of how to access the world resources available online.

Finally, it is the responsibility of the information professionals to acquire, organise and disseminate right information to the users. The maintenance of librarian-user relationship will be the major challenge before library and information professionals.

As time moves on, the information professionals have to acquire the skills of the day and perform. They should be proactive to the needs of the users which might arise in future.

4 TRAINING AND ITS NEED

Training is an instrument of developing the employees or workforce by enriching the skills and improving the human behaviour, which result in organisation development adequate enough for the accomplishment of objectives from time to time. It helps organisations

and individuals to develop themselves in consonance with the changing needs of the environment in which they survive, operate and progress.

Introduction of new technology and using it for productivity necessitates the staff to learn new skills and undergo training. Training programmes should be conducted for personal enrichment and career advancement. It should provide or private tutoring and remedial training in job-related activities.

The introduction of computers, industrial robots and lasers has created a very different environment. The increasing need for well-trained people using sophisticated tools to perform more complex tasks has made well-thought out skills training more necessary than ever. The professionals could sharpen the skills which they learnt as a part of formal education. Besides, over a period of time, such skills become out of date and need refreshing. The employees can become uptodate on the developments in their fields by undergoing the training programme.

Training and educating make an important method of human development in an organisation, which enables an organisation to prepare its people for various positions. Education is opening the windows of the mind for mental ventilation. What one learns is an acquirement-what one does with this acquirement is an accomplishment. Education is and always will be a continuous journey.

Training is expected to bridge the performance gap, while education is supposed to bridge the behavioural gaps. Hence training and education must go together which must be instrumental to bridge the performance gap, as well as the behavioural gap. Mere training in technology, knowledge or skill need not necessarily make any change in the behavioural pattern of people though it may impart knowledge.

Hence, both training and educating should work together in individuals so that along with gaining skills and technical knowledge it would enrich and improve their behavioural pattern, commitment and conducive attitudes. Thus any training programme must enable the employees to improve their learning process.

Everyday people have to face diverse situations for which they must be educated, trained and oriented in such a way that they are able to

manage the complex work situation. These days library and information profession is undergoing continuous change. Appropriate skills should come handy for the information professionals to handle the situation with confidence. The relationship between trained and competent staff and quality service is apparent to the recipients of service in any organisation.

Today when libraries are making use of modern communication media like e-mail, electronic journals, e-book, fax, telex, satellite communication, telecommunication, on-line network, etc., the level of knowledge of the library users is also on the higher side, knowledge of computers becomes an essential aspect as far as the library professionals are concerned. Once he has the operational knowledge in computers, he can develop his skills and amass new knowledge whereby realise the position of information broker of information intermediary.

The library professional should be proficient in different network operating systems, database management softwares, application softwares, library management softwares and other office automation softwares. By mastering these software packages automation of library activities will be possible enabling the librarian to find more time for information provision. SOUL, SANJAY, LIBSYS, CLASS, WINISIS, OASIS, MYTHREE are some of the major library software packages. Awareness in the same will aid the library professional in his work.

The library professional should develop his communication skills. Institutions like University Grants Commission and INFLIBNET carry out training programmes on different aspects of librarianship periodically.The information professional could either make use of the same or undergo training when library managements conduct such activities. The contributions of INFLIBNET in this particular aspect is a unique effort as far as the development of information professionals are concerned. CDS-ISIS is a database management system which will be a help to the library professional. While organising training training programmes, the library management should bear in mind the fact that the training will have a long term impact on the staff. The information professional have to acquire thorough knowledge on the INTERNET and its tools. He should be well versed of the different search engines, websites and their URLs, and other related information which will be of use to him.

The library professionals need to focus and seize new opportunities

and demonstrate how the tools of internet can be gainfully harnessed for improving library services. They should respond to the opportunities and challenges of the development in information technology with a high degree of enthusiasm and professionalism.Librarians can play a greater role in identification, listing and classifying information sources and providing systematic approach to accessing the required information. This way they can take rightful place as human agent alongside the search engine in searching the internet. In due course of time, the information professionals will have to develop new indexing methods and evaluation techniques to tap information from the internet and also establish the classification modes in an open way to allow for those addition of new categories of document that may differ from original priorities.

There is a strong need for training and developing the people of an organisation in order to equip them to accept challenges. If the human resources of a library are to be properly developed, they should be trained and educated.

Human resource development is a continuous process, which matches organisational needs for human resources and the individual needs for a career development It enables the individuals to gain their best human potential by attaining a total allround development. Human resource development promotes dignity of employment of every employee of an organisation, and provides opportunities for team work, personal development and career development. Hence a well planned HRD system must be a part of human resource management of every organisation. HRD must be able to develop overall capability of individual employees of an organisation, and discover and exploit their own potentials for the common goals of the organisation to which they belong, for the betterment of themselves and their families, and for the country as a whole. For this purpose, appropriate job design and succession plan must be integrated with any human resource development programme.

Training could be given to the library professionals as a part of a continuing education programme which could be in the form of wokshop, short course, seminar, symposium, etc. These programmes will provide additional skills and knowledge to the professionals to function more effectively in their present positions and to prepare for additional responsibilities within the system.

The relevance and importance of information cannot be overlooked

at this juncture. For information to be valuable, it has to be put to best use to the right reader who needs it. The information professionals have to ascertain the needs of the users in order to serve them in an efficient manner. To estimate and fulfil the future needs of the library users, technology will surely aid the information professional. In other words, training programmes add to the knowledge development of the professional who will provide the right information at the right time which will result in the progress of society.

A new contribution in this regard is the passing of the Freedom of Information Bill by the Loksabha on December 5th, which becomes a law, according to which every government organisation will have atleast one public officer whose job will be to provide information to the public about its functioning. According to experts, this is a big step forward towards making the proposed statutoury right to information a tangible reality.

Finally, the library professional owes certain obligations to the library's public and its books, the library professional organisation and to himself. It is necessary to integrate the professional competencies with the behavioural skills in librarianship to maximise quality in both direct and indirect library service to its clientele. Sufficient amount of training according to the need of the hour is sure to enable the modern information professional in performing his duties in the best possible manner.

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RE-ENGINEERING HUMAN RESOURCE IN LIBRARIES FOR HANDLING ELECTRONIC INFORMATION

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Dr. Jalaja V**

ABSTRACT

The paper explains what re-engineering is. Re-engineering is necessitated by changes. Internal as well as external pressures cause re-engineering of human resource in an organization. Handling electronic information is a new challenge to the present day information professionals. The paper tries to highlight the need for re-engineering the present day human resource in libraries to take up the new challenge. The human resource of the library is to be empowered and inspired to succeed in the changing circumstances. The paper attempts to suggest the methods of re-engineering the human resource in libraries to be competent in the changing circumstances.

1 INTRODUCTION

The success and failure of an organization depend mainly on its human resource. In a library also, the human resource is the most important determinant of its success, efficiency and effectiveness. Librarianship has become a subject of attention in the modern times as a result of the development in Information Technology on the one hand and the inflow of great amount and variety of information on the other. The modern information society demands multimedia based information instead of the traditional paper-based information. With the advent of electronic information librarians are compelled to act

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as providers of electronic information using most modern technologies.

In the changed circumstances it is necessary to have efficient and highly skilled professionals who are proficient in handling electronic equipment for proper dissemination of information. In order to cope up with the present day challenges of increasing influx of electronic information, libraries have to re-examine the strength and weakness of their human resource and redesign the workforce according to user needs and expectations.

2 THE CONCEPT OF RE-ENGINEERING

Change is inevitable for the human society. Challenges of change and competition have led the society to the search for new ways and means for survival. Business process re-engineering is the result of such efforts to restructure the enterprise to cope up with the changes. The organizations that adapt to the shocks and forces of change only will survive. Re-engineering involves recognizing work flows, cutting waste, combining process steps and eliminating repetitive tasks.

Re-engineering human resource refers to the radical redesigning of the manpower to attain dramatic achievements in the customer satisfaction. Instead of incremental improvements, re-engineering of human resource produces breakthrough improvements in the performance of the organization. In the modern library environment, the human resource in libraries are to be redesigned deliberately to attain the most important objective of user satisfaction.

3 RE-ENGINEERING HUMAN RESOURCE

The self sustaining flame that perpetuates success in an organization is the dedication of its human resource. Only committed and dedicated employees can fulfill the customer needs which is the prime objective of an organization. As information society demands libraries to be more competitive, the human resource of libraries must be encouraged, empowered and inspired to attain better results.

In the electronic information environment, it is quite impossible to meet the user demands without bringing the library staff up to the mark. There must be deliberate efforts to upgrade the skills of the existing professionals. As the replacement of the entire staff is not possible, individuals must be encouraged to learn continuously and some new skilled staff should be added to the workforce.

4 THE ELECTRONIC INFORMATION ENVIRONMENT

The advancement in computer and telecommunication technologies has resulted into the emergence of global village which is characterised by the availability of electronic publication all over the world. As a result of increase in the production of electronic information, users are in a better position of having up to date information in the electronic form. Such information will be available on CD-ROMs(Compact Disk Read Only Memory), DVDs (Digital Video Disk), Networks etc. The emergence of electronic publishing, internet, CD-ROMs, DVD etc, has changed the role of librarian from custodian of documents to information provider or information intermediary.

5 SOURCES OF ELECTRONIC INFORMATION

The generation of information and its methods of supply have undergone a sea change with the advent of internet, digital libraries and electronic publishing. The sources of electronic information include electronic books, electronic journals, CD-ROM, online database etc. The world wide web is another source of electronic information.

5.1 Electronic Books (e-books)

An e-book is a book which is available in the electronic form. The contents of e-books are disseminated in the electronic form which can be had with the help of a personal computer or special purpose reader. E-books are delivered to the users either through storage media like CD-ROM or through the world wide web. E-books available on the web site are downloadable either free of cost or paying a fee. The availability of e-books will eventually lead to changes in library organization and services. The availability of the usual types of reference books in the electronic form makes the reference service more easy. As information can be given within seconds, there is no scope for long range reference service. With the proliferation of e-books, the library acquisition and technical services also will undergo a considerable change.

5.2 Electronic Journals (e-journals)

E-journals are those journals which can be accessed electronically using different technologies such as the world wide web, groper, ftp, telnet, e-mail, listservs etc. There are two main types of e-journals-those which are issued free of charge over the internet and those

which are the electronic equivalent of the printed journals and published by commercial publishers which require a subscription. As publication of e-journals is quicker, they can convey up to date information. E-journals are also available on various storage media.

5.3 CD-ROM/ DVD

In the electronic information era, CD-ROM plays an important role as an efficient and compatible storage medium. CD-ROM is used to store and deliver large amount of information in the form of data, text, graphics etc. Apart from electronic books and journals, various other information such as software games, music, databases, pictures, abstracts etc are also available on CD-ROM. To read the information contained in CD-ROM, a CD-ROM player/ drive and a micro computer are necessary. DVD is a more advanced form of electronic storage medium which can hold more information than the CD-ROM.

5.4 Internet

The internet is a network of networks which links scientists, businessmen, educators, students, research scholars and others who seek or generate information. Internet based materials include e-books, e-journals, statistical sources, databases etc. The electronic materials available through internet are either free of charge or subscription based. Many standard reference materials such as dictionaries, encyclopaedias, directories, etc are also available through internet. Many of the titles which were available only on CD-ROMs are now available on internet also. Internet materials have the advantage that they can be updated periodically.

5.5 Digital Library Resources

A digital library is one which collects, stores and disseminates digital information. The digital information resources include e-books, e-journals, full text, CD-ROM etc. For building digital collection, digital libraries have to convert the existing print resources into electronic form. They can also acquire resources in electronic form or provide access to external resources. Digital libraries can provide the users fast access to electronic information. They can provide remote access to the resources from many locations simultaneously.

5.6 On-line Databases

There are thousands of databases corresponding to various abstracting and indexing services. These databases contain millions of records covering many years. Database vendors like DIALOG provide on-line search facility for many of these databases. Boolean search logic is commonly followed in searching these databases.

The text matter can be searched at the remote terminals by the users.

6 RE-ENGINEERING HUMAN RESOURCE IN LIBRARIES IN THE CONTEXT OF ELECTRONIC INFORMATION

The information professionals who are proficient in computers and keen enough to know the latest available documents in electronic form only can provide the right information to the users in the electronic information era. Users are to be alerted about the availability of e-documents. As identification, selection, processing and dissemination of electronic information need expertise, the staff members are to be trained and refreshed periodically.

The development of technology is so dynamic that it is very difficult for the professionals to be up to date. The knowledge and skill acquired today will become obsolete tomorrow. The traditional lethargic library staff should be re-engineered in the effective manner by giving training and motivating them to acquire, process and disseminate electronic information effectively.

7 METHODS OF RE-ENGINEERING HUMAN RESOURCE IN LIBRARIES

It is a fact that an ageing workforce cannot bring much results in the electronic information environment. At the same time it is not possible to replace the entire staff with new ones. Hence it is necessary to select enthusiastic staff members and provide them necessary training to upgrade their skill and efficiency. Simultaneously, some new professionals with knowledge in computer and proficient in handling electronic information should be added to the existing workforce.

After recognizing the need for change (in the context of proliferation of electronic information), the above said methods are to be resorted for re-engineering the staff. When such change is introduced, it should be evaluated periodically and maintained for attaining desired results.

8 CONCLUSION

Customer satisfaction is the main objective of any organization. Libraries are no exception to it. Re-engineering human resource is a means to attain this objective. In the context of the growth of electronic information, only efficient and skilled professionals can provide better user satisfaction. As it is neither possible nor feasible to change the entire existing staff, creating a workforce of a combination of the

existing trained staff and some new entrants is feasible.

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RE-ENGINEERING LIS PROFESSIONALS IN THE EMERGING ELECTRONIC ENVIRONMENT THROUGH REFRESHER COURSES : A STUDY OF PARTICIPANTS AT RCC, VIKRAM UNIVERSITY, UJJAIN (M P)

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Dr Leena Shah**
Anil Kumar Jain***

ABSTRACT

Discusses continuing Professional Development (CPD) and Continuing Education Programme (CEP), Refresher Courses and Career Advancement Scheme of UGC as CPD and CEP. Give details of refresher course in Library And Information Science at Vikram University, Ujjain and analyses participants' views with the help of 9 tables, calculates scores for each item. Overall rating for the refresher course has been 66%. Suggests for more IT oriented RCs in future.

1 INTRODUCTION

In order to impart latest developments faculty and library professionals must update their knowledge. Periodic, national seminars and conferences organised by ILA, IASLIC, SIS, MLAI, Caliber and other professional bodies at international, national and state levels provide opportunities for the professionals to update their knowledge. Various short term training courses are also organised by many institutions providing new knowledge to working professionals.

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Many summer and winter schools are also organised to provide update knowledge to LIS professionals. Historically a training programs was organised for school librarians at Mysore in 1920. It is considered to be first as Continuing Education Programme.

Dr. Ranganathan set trend by introducing regular annual and refresher courses and seminars at DRTC, Banglore. The process of continued education has been duly recognised later. Short term regular training programmes have been started by INSDOC, DRTC, NISSAT, DESIDOC etc. Commonly two terms Continuous Professional Development (CPD) and Continuous Education Programme (CEP) are used, sometimes taken synonyms. These are discussed separately in forgoing para.

2 CONTINUOUS PROFESSIONAL DEVELOPMENT (CPD) AND CONTINUING EDUCATION

Programme (CEP)

CPD has been defined as "The training is understood as the process by which an individual learns new ways, information or techniques and changes from a state being incapable of doing the job or being ineffective.[1] The objectives of CPD are to improve the ineffectiveness of present teaching, to adjust with changing professional growth, to help in individual and professional growth, to help in career prospects, to disseminate new ideas and keep the knowledge update. According to Vyas, we need CPD because duration of course in LIS is too short to give sufficient background of the subject, regular flow of newly generated information and use of IT, etc.

CEP has been defined as process by which professionals alone or in groups or in institutional setup purpose fully seek to improve themselves. It is a life long process. It helps professionals to keep abreast with new developments, improve their competency by updating their knowledge, skill and aptitude. It helps in retention of likely to forgotten skill. It updates professional knowledge as life long learning, helps in updating of new knowledge and latest developments.[2]

Every day new technologies are emerging. It is not possible to abreast all of them by working professionals. The computers are inevitable components of information society. Information science, information technology personnel are pushing hard to through out library science. It is time when hybrid technologist having background in IT and library science will be able to bring qualitative changes. Most of present LIS professionals do not have such hybrid qualifications. Only CEP can serve the purpose by updating their knowledge.

Agrawal has identified two types of CEP-formal and informal. Formal includes advanced courses like M.Phil., Ph.D. etc. Refresher courses and in service trainings. Informal CEP includes conferences, seminars, workshops, study circles, reading and writing books and papers, library visits, staff exchange programs, etc.[2]

3 UGC REFRESHER COURSES AS CARRIER ADVANCEMENT SCHEME

UGC has made it compulsory to attend refresher courses and orientation courses for promotion to next higher grade up to Reader level. The scheme is well known and need not to be discussed here. There is controversy regarding senior scales and selection grades for librarians (& Sport Officers) after 1996.This is being considered at highest level and hope for an amicable solution in near future. By that time refresher courses are regularly conducted for them by ASC's and RCC's.

4 ACADEMIC STAFF COLLEGES

National Policy on Education (NPE) 1986 with an aim at improving the status of teachers and proposed to provide opportunities for their professional and carrier development, orientation programmes have been formulated. The Academic Staff Colleges are set up to plan, organise, implement, monitor and evaluate orientation courses to newly appointed college/university teachers. About from these they also organise refresher courses for servicing teachers in various disciplines. They also organise refresher courses to librarians and sport officers also.

Besides ASCs, UGC also recognises many Refresher Course Centres (RCCs) to organise refresher courses in various subjects. The allotment is made on adhoc basis to these RCCs, Vikram University, Ujjain has been sanctioned 6 refresher courses to be organised upto march, 2003. (likely to be extended by Dec, 2004). The Ist refresher course organised by the university sponsored by UGC has been analysed.

5 REFRESHER COURSE AT VIKRAM UNIVERSITY, UJJAIN

At Ujjain, for the first time, refresher course was organised from Sept 4 to 24, 2001. It received 35 participants. The effectiveness of this course has been discussed in this paper.

5.1 Organisation of Course

The Ist refresher course was organised a year back. One of the

author of this paper was organiser of the course and one was participant in this course. The participants were given facilities as per UGC norms with some local variation. Computer practicals were held daily. Lectures from experts from various fields were held, Library visits and sight Scene were part of refresher course. Good boarding and Lodging arrangement was made. At the end of course participants were asked to complete feed back form distributed for this purpose to evaluate the course and suggests for future change. These have been discussed and analysed in next few sections.

5.1.1 Boarding and lodging

The arrangements were made in university guest house annexe where 5-6 halls are available accommodating 3-5 participants in each. It has full facilities for stay. It also has an well-organised kitchen and dining room and also VIP rooms for resource persons. Ladies were accommodated in VIP rooms. The participants served morning bed tea, refreshment, tea at 11.00 lunch, evening tea & dinner daily.

5.1.2 Transport facility

With courtesy from School of Studies in Geology, Vikram University, a mini bus was attached to RCC . Every morning at 9:00 A.M. it use to take participants from university guest house to Central Library for computer practical. Then after participants were taken to department to attend lectures. In the noon it use to take them back to guest for lunch and again back to department for lectures. At the end it left them at guest house at 5:00 P.M. It also took participants to local and outside library visits.

5.1.3 Lectures

Lectures were organised on daily basis. Daily 3 lectures by resource persons from outside and local were invited for the purpose. Faculty from Department of Management Science and Computer Science were also invited. Three theory lectures of 1½ hrs each were organised each day as per UGC norms.

514 Demo + Practical on Computer

Daily practice on computers has been organised with the help of Department of Computer Science of the university. 20 computers with internet connection in LAN are available. Two faculty members conducted practical classes daily in Ist lecture of 2 hrs each day from 9.00 A.M. to 11 A.M. to give aquitance with computers and on hand teaching to library softwares. Demo from Alice for Windows were also organised with courtesy from them.

515 Library Visits

Visits to local libraries like M.P. Social Science Research Library, Kavery Research Centre, Scindia Oriental Research Institute and Museum Vikram University were orgnised on different days in the afternoon. Also a visit to Centre for Advanced Technology (CAT), Indore, Devi Ahilya University Indore, National Research Centre for Soyabean (NRCS), Indore was organised for all participant with the help of transport facility available with RCC, Ujjain. The visits gave them on hand practice to various aspects of libraries and library automation.

516 Sight Scene

Local sight Scene to famous temple Mahakal, Sandipani Ashram and all other important religious places was organised on Sundays. Similarly visit to famous historical place Mandaw (180) and religious place Omkareshwar (164 km) was also organised.

517 Reading Material and Kit

Participants were supplied with good quality kit along with notebook and pen. They were supplied reading materials in bound form. A floppy having library software was also supplied to each participant.

52 The Participants

In this course in all 35 participants took admission out of 150 applicants available and 50 called. They have been analysed in this section.

5.2.1 Residence

There were 7 local and 22 outside participants. 6 participants were from near by places having some relatives locally (semi local). This is shown in table 1

T 1 : Residence of participants

Resident	Male	Female	Total
Local	5	2	7 (20%
Semi local	5	1	6 (17.1%)
Outsider	16	6	22 (62.8)
Total	26	9	35 (100%)

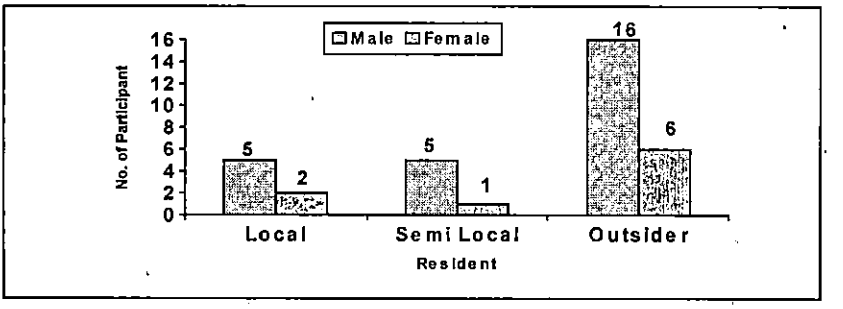


Diagram 1 - Residence of participants

5.2.2 States

The participants belonged to various states.25 were from M.P., 4 from Chattisgarh, 1 from U.P., 3 from Rajasthan and 2 from Maharashtra. This is shown in the table 2.

T 2 States of Participants

S.No.	State	Male	Female	Total
1	M. P.	17	8	25 (71.4 %)
2	C.Garh	3	1	4 (11.4%)
3	UP	1	-	1 (2.8%)
4	Rajasthan	3	-	3 (8.6%)
5	Maharashtra	2	-	2 (5.7%)
	Total	26	9	35 (100%)

In all there were 9 (26%) women participants as shown in the above table.

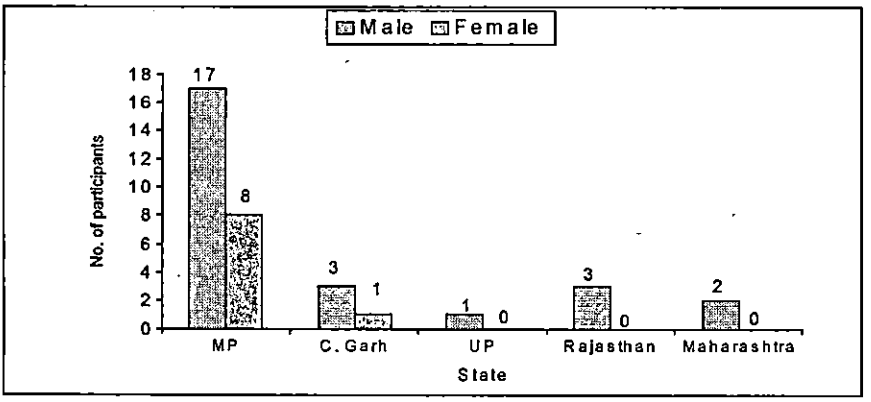


Diagram 2 - States of Participants

523 Affiliation

They belonged to various parent departments .10 were faculty members of various universities. 22 were from college libraries and 3 from special libraries as shown in Table 3.

T 3 Affiliation

S.No.	Affiliation	Male	Female	Total
1	Faculty	8	2	10 (28.6%)
2	College Lib.	15	7	22 (62.8%)
3	Special Lib.	3	-	3 (8.6%)
	Total	26	9	35 (100%)

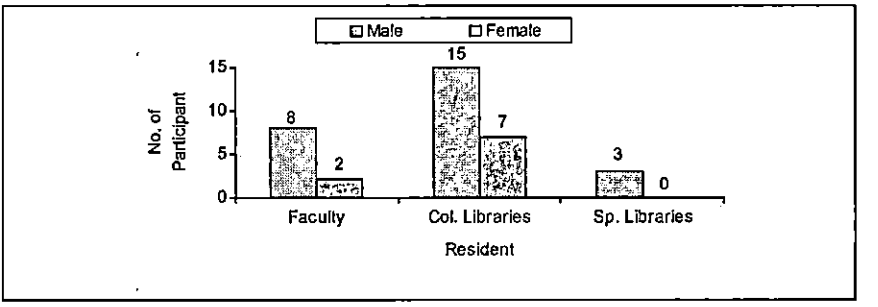


Diagram 3 Affiliation

5.2.4 Scale

6 participants belongs to initial scale, 16 in sr. scale and 13 in selection grade. These grades either have been given to them or grades are due from back date and they were supposed to refresher course. It is given in table 4.

T 4 Scale of Participants

S. No.	Scale	Participants
1	Initial (8000)	6 (17.1%)
2	Sr. Scale (10,000)	16 (45.8%)
3	Selection scale (12000)	13 (37.1%)
	Total	35 (100%)

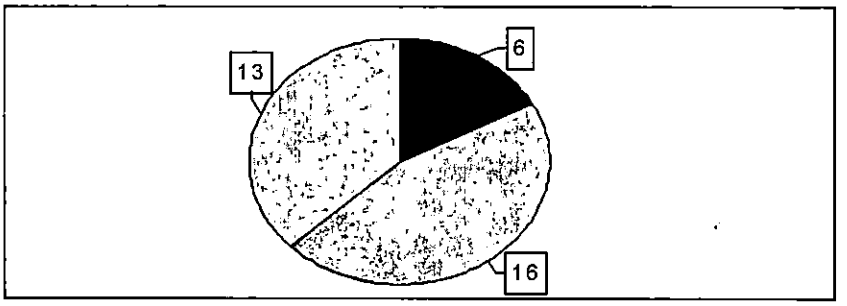


Diagram 4 Scale of Participants

5.2.5 Refresher course attended

The participants have attended various number of refresher courses at other places. 11 participants have attended one, 5 have attended two and 1 has attended. 3 refresher courses, 18 have not attended any refresher course earlier. Similarly 15 have attended orientation courses also. Two have attended more than one-orientation courses and 18 have not attended any orientation course also. This is shown in T 5

T 5 Refresher and Orientation Courses Attended

S. No.	Number of courses	Refresher courses	Orientation courses
1	One	11 (31.4%)	15 (42.8%)
2	Two	5 (14.3%)	2 (5.7%)
3	Three	1 (2.8%)	- -
4	Nil	18 (51.5%)	18 (51.5%)
	Total	35 (100%)	35 (100%)

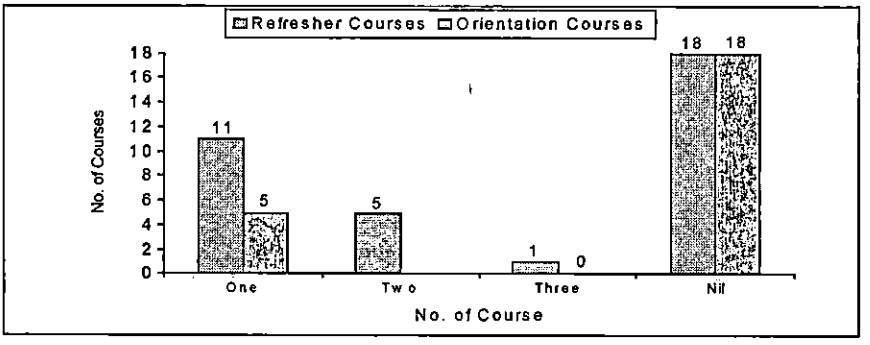


Diagram 5 Refresher and Orientation Course Attended

5.2.6 Experience

The participants have various experiences as professionals. 7 have upto 6 years experience while 3 have 7 to 10 years experience and 25 have more than 10 years experience.

T 6 Experience

Years	Participants
Up to 6 years	7 (20.0%)
7-10 years	3 (8.6%)
More than 10 years	25 (71.4%)
Total	35 (100%)

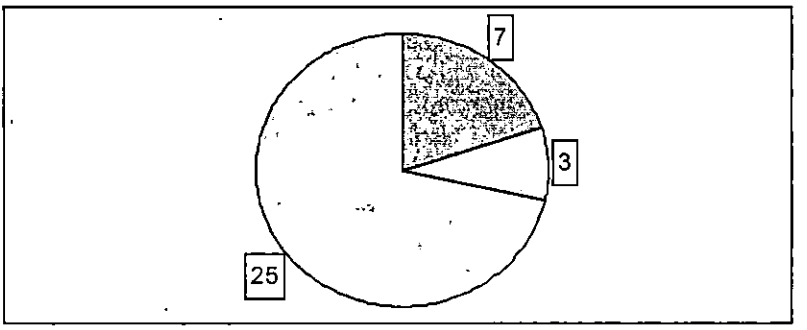


Diagram 6 Experience

6 EVALUATION OF REFRESHER COURSE

A form was administered to each participant as feed back. Responses of individuals have been analysed. These are given in this section. The facilities provided were evaluated on 4 point scale Not good, Just good, Good and Very good (good enough). The term used are relative and hide the scores to get answer from heart. Identification was optional to get frank and free answers. The table shows their responses and calculation has been done to obtain scores.

An overall score on the basis of response have been calculated 3 marks for good enough, 2 for good, 1 for just good have been provided for each item. On the basis of the calculation in all maximum 35 x 7 = 245 x 3 = 735 can be scored. Each individual participant can give maximum of 21 scores. These are analysed in this section.

T 7 Responses to Refresher Course

Overall contents	Not good	Just Good	Good	Very Partici-pants	NA	Total Scores	Scores Obtain-ed	% of Scores
Boarding	-	5	20	6	4	35	63	60%
Lodging	1	4	20	7	3	35	65	62%
Transport Facility	-	2	11	20	2	35	84	80%
Lectures	-	4	25	2	4	35	60	57%
Demo + Practice	1	1	21	10	2	35	73	69.6%
Library visit	1	2	22	7	3	35	67	64%
Sight Scene	1	3	17	12	2	35	73	69.6%
Total respon.	4	21	136	64	20	35	-	245
Total Scores	0	21	272	192	0	-	485	66%

Scores - Not good 0, Just good 1, Good 2, Very good 3

6.1 Boarding

Only 5 responded this facility as just good, 20 as good and 6 as very good. It scored 60%.

6.2 Lodging

It was not good for 1, just good for 4, good for 20 and very good for 7. It scored 62%.

6.3 Transport

It scored 80% highest of all other facilities provided. 20 participants reviewed it as very good and 11as good.

6.4 Lectures

It scored 57% with 25 respondents as good.

6.5 Demo and Practices

This facility also scored (69.6%). For 21 it was good and for 10 it was very good.

6.6 Library Visits

It scored 63% with 7 responses as very good and 22 as good.

6.7 Sight Scene

It scored 63.5% with 12 as very good and 17 as good responses.

6.8 Overall Scores

With the above analysis it is clear that transport facility was considered as extra ordinary facility provided by RCC, Ujjain followed by Library Visits, Sight Scene and Demo and Practice. On the basis of calculations, a sum of all responses has been calculated. The course received total score 485. It is divided by maximum score 735. Thus Overall score received is 66%. It means there are some areas which need to be improved to fulfil requirements of participants in new IT environment.

6.9 Other valuations

Besides the above scores a few direct questions were also asked to check their answers and find any deviations. They are discussed in following subsections.

6.9.1 Comparison with earlier Refresher Courses attended

To question number 13 - How do you compare this RC with earlier one attended by you ? Responses are that 18 have not attended RC or OC earlier. So this question was answered by 17 participants only. 11 compared as better and 4 as equal. Only 2 judged as poorer. To calculate scores 2 for better and 1 for equal have been assigned. So the question scored 26 out of maximum 34 (17x2). It is 76.5%. It is higher to 66% as discussed in T7.

6.9.2 Rejoining RC at Ujjain

Another question was asked - Will you prefer to join for another here once again refresher course, if given a chance ? It was asked to reevaluate scores. 13 did not answer and 22 affirmed to the question. It is 63% very near to over all score of 66%.

6.9.3 Boarding and Lodging Arrangement

At many places, RC allow all the participants to make their own boarding and lodging arrangement and pay them daily allowance as prescribed by a UGC. 26 (74.3%) responded that daily allowance should not be paid but arrangement like here should be provided. 2 wanted payment of DA and 7 did not answer this question. It is 74% very near to over all score of 66%.

7 EFFECTS OF REFRESHER COURSE

A question was asked that Do you feel refresher course really refresh your knowledge ? 13 answered yes and 16 said very much, 6 did not answer. So for 83% refresher courses are really fruitful.

8.1 Alternate to Refresher Course

Another question was asked about what should can be in lieu of refresher course. 46% preferred attendance and paper presentation in national conferences, 6% answered in favour of publication of books. 23% did not answer this question. 26% answered no alternate i.e. refresher courses can not be replaced by any other alternate method.

T8 Alternate to refresher course

S.No.	Alternates	No. of participants	%
1	Attendance in conference	12	34.3%
2	Paper presentation in conference		411.4%
3	Publication of books		25.7%
4	No alternate	9	25.7%
5	No answer	8	22.9%

8.2 Participant's Suggestion

Participants made following suggestion.

1. More renowned resource persons having current knowledge and also from IT field should be called.
2. More Demo and Practical of 2 lectures (3-4 hours) each day, possibly in the end of lectures should be conducted.
3. Provide synopsis of each lecture.
4. Provision of computer lab in the department and provision of demonstrator should be made.
5. More emphasis in Hindi language during lecturers should be given.

8.3 Conclusion

With the above responses and their analysis, it is clear that participants take keen interested in refresher courses. They are more in-

terested in training in new IT environment. The object of refresher courses are achieved by most of the participants

8.4 Suggestions

1. Refresher courses should be well organised providing good boarding and lodging facilities.
2. Library visits should be part of curricula for refresher course.
3. More emphasis should be given in computer practicals and library softwares and daily more time should be allotted for it.
4. Lecture synopsis before start of lectures should be supplied to the participants.
5. Refresher course may be converted into practical training in library automation programme and should be allotted only where computer lab facilities are available.
6. Refresher courses may be made optional with paper presentation in national conferences of repute.
7. Help from INFLIBNET may be taken for library automation so that librarians are ready for connecting their libraries with INFLIBNET.
8. UGC should sent circular to colleges for relieving librarians to Refresher Courses.

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REENGINEERING THE TRAINING AND DEVELOPMENT OF LIBRARY PROFESSIONALS

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1 INTRODUCTION

Electronic information has opened up new vistas for the users of the library. Electronic information can be electronically accessed using different technologies such as World Wide Web (www), gopher, ftp, telnet, e-mail or listserv. The information exists in an electronic format, which is accessible through online net works and even distributed in CD-ROM form. The electronic information has numerous advantages as they are space saving; they enhance the speed of communication; they provide powerful searching tools; they can provide immediate access to your desk and they provide facilities such as integrated text, hyper text links and multimedia that the printed information cannot offer. The major benefits of e-information are multiuser access, ease of search, currency of information, ability to download, reduction in theft and damage, saves shelf space, ease of browsing. The electronic format offers many advantages to both users and publishers which paper publication cannot match

2 ADVANTAGES

- Customization. Only the articles of interest are "delivered" and the user has some control over the appearance of the article both printed and on the screen.
- Integration with other work -As the capabilities of computers grow,

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a situation is rapidly developing in which many people do most of their work at personal computer . The two most important tools for scholars are probably electronic mail (e-mail) and word processing, but other activities, such as searching bibliographic databases, working with spreadsheets and feeling and creating personal databases, are all being done with personal computers.

- Full-text searching The retrieval capabilities of journals in electronic form are far better than those in paper. Every word in the article is a potential retrieval point so that even a caption of a figure can be used to find a half-remembered article.
- Speed of access Minutes or even seconds rather than hours or days.
- Speed and cost of publication Avoiding the printing and mailing process can easily drop two to three weeks off the current publication cycle. Machine-readable text from authors is gradually lowering cost and reducing time as authoring and publishing systems become better integrated and as electronic transmission is used more in the review process, hence, additional time will be saved.
- Availability Assuming an electronic version of a document is available at all, there is a much higher probability of a user actually receiving it than in a typical library where journal issues and individual articles may be in use, in the bindery or missing altogether.
- Hypertext links Existing articles contain a large number of links both within the articles and to other articles. These will gradually become "hot" links in the electronic version where a simple click on a reference will either lead one to where it was cited, to an abstract of it, or to the articles itself.
- Portability - Although it is hard to improve on the portability of a photocopy of a single article and electronic versions impose the burden of providing processing, communication and display support, the lightness and growing ubiquity of portable computers is rapidly closing the gap between electronic sources and paper.
- Less paper Paper has many excellent qualities, but electronic versions of documents consume fewer resource and are easier to manage.

Library collection no longer consists of only printed materials such as books, magazines, newspapers, pamphlets, reports, maps etc but with the advent of information technology, the new and repackaged published information and new formats of non print such as Video

Disks, CD-ROMs, OPACS replacing traditional card catalogues, allowing access to the holdings of libraries by interested users in remote access. Computer software programs such as word processing, database creation and spread sheets with dot matrix and laser printers helped in creating new information resource within and between libraries. So, there is an imminent need of reengineering the human resource development programmes of library to handle the electronic information economically and efficiently.

In the present scenario the approach of re-engineering stands true. Michael Hammer and James Champy has defined the concept of re-engineering as "Reengineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service and speed". Bob Smith has defined reengineering as "The radical redesigning of the business policies and practices within an organization in order to streamline an operation and adapt it to existing market realities".

Johnson A. Edosomwan has defined the reengineering process as "a coordinated, continuous improvement approach required to rethink, redesign, retool and reinvent new processes that will perform better than existing ones." He has identified six R's for organizational transformation and Reengineering:

- Realization: Recognizes that organizations and individuals must respond to new needs and challenges.
- Requirements:-Aligns its mission, vision, values and key requirements to satisfy and exceed customer expectations.
- Rethink: Examines all current and existing conditions of the organization, with special focus on process weaknesses and variations.
- Redesign:Process redesign can range from radical to incremental as dictated by a careful review of the entire system.
- Retool:Emphasis on the evaluation and adaptation of more competitive systems required to improve the production of products and services.
- Reevaluate:Focus on reevaluation of the entire process to ensure that the new process has met its objectives.

The training programmes should be chosen in accordance with athe library requirements. A variety of technology driven instructional

methodologies are available to accelerate the process of reengineering the training function. The human resource training module for library professionals needs a thorough reengineering, which should include.

- Microcomputer systems: hardware, microcomputer operating systems, microcomputer systems: applications software, text editing, word processing, desktop publishing, computer networks, Internet services, hypertext and hypermedia, image processing; graphics file formats, photo/image editing.
- Formats for computer-based cataloguing = MARC formats.
- Document collection development, consortia of libraries for the acquisition of electronic journals and databases, bibliographic databases, search strategies.
- Online information retrieval and database searching, online access databases about journal articles, electronic newsletters and journals, computer-network based interest groups. Patent information, online systems versus CD-ROM, software packages for local storage and retrieval of bibliographic information.
- Application of library packages: editing data, output of selected data to file or printer, developing a database structure, indexing data for fast retrieval, queuing theory.
- Citation analysis, citation searching, Scientometrics, theoretical and quantitative aspects of information retrieval, evaluations in information retrieval, evaluation of information retrieval systems.
- Library automation, Online Public Access Catalogues (OPACs), management of a library and information service.
- Archives and records management, archives in the domain of science and technology, interlibrary lending and co-operation, document delivery, development of a national or regional information network, copyright; information security; trans-border data flow, CD-ROM in a local area network, developing a web site, assessing the influence of scientific journals, methods for access to databases through Internet: Z39.50, Open Archives Harvesting protocol,Providing access to information through public Internet workstations,Client-server systems.
- Conservation/preservation of printed documents, conservation/ preservation of digital documents, developing co-operative community WWW sites, setting up an electronic newsletter, evaluating web sites.
- Downloading of information and record format conversion, downloading of information and record format conversion, an advanced application of MARC in ISIS. Programming in ISIS,

extensions of classical WWW. (Client-based and server-based).

- Artificial intelligence and knowledge representation in information science, electronic journals: implementation in a library, Integration of e-learning environments and library services, libraries involvement in scientific publishing

3 CONCLUSION

Technology has emerged as a critical component of systems thinking, as well as critical driver of the process of reengineering the training function. These new technologies provide the long awaited vehicle to accelerate the pace of continuos learning. The library can choose to make use of multimedia as an alternative delivery technology which enjoys multiple benefits such as greater return on investment, increased flexibility of training, greater user independence and more importantly, the use of technology in the workplace as a tool for new, faster and cheaper way to accomplish old tasks.

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THE ROLE OF HUMAN RESOURCE DEVELOPMENT IN ELECTRONIC INFORMATION CENTRES

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V T R Vijaya Kumar**

1 INTRODUCTION

One of the important and the key roles of human resource in modern libraries is development of human resources. This function is centered on individuals, roles, teams, teams, inter-teams and the total organisation. Development of human resources means "Employees of an organisation are helped to acquire essential skills, knowledge and other capabilities required by the organisation according to its standards in a planned process to meet the present and future expectations of the organisation on human side in a conducive environment with result orientation".

The technological impact on library information center is accentuating radical changes in library collection, techniques, services, products etc. Library automation and network have totally transformed the nature and function of library information centers. The library collection that is the media used for information has been changing from print to non print media such as microforms, electronic and magnetic media and multimedia etc. The use of better technology is accessing retrieval and dissemination of information is today's demand. The knowledge is propagated not only through print material but via various electronic media.

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2 ELECTRONIC INFORMATION CENTERS

Electronic Information is the dissemination of information in electronic form and its distribution to potential users either on electronic networks such as Internet and Local Area Network or in stand alone such as CDROMS and Diskettes.

Electronic information products include texts, graphics, audio, video, numeric and textual databases, reference sources such as directories, dictionaries, encyclopedia. and computer programs. If an institution or organisation or center provides information in electronic form, it can be treated as Electronic Information Center(EIC).Nowadays , Library Information centers are transforming to Electronic Information Centers.

Electronic publishing allows a faster dissemination of information than print technology because the step of printing on paper is eliminated altogether. Information is made accessible on electronic networks. Electronic resources improve the library services to their customers and make their internal operation more efficient .For instance, users can now search vast databases, print results of the searches, download papers and information of interest and further incorporate the electronic information into their regular day to day work

Any information required by users can be made easily and readily available and also can be copied very conveniently and comfortably in electronic media rather than in print media. More over such features enhance access to available and sought after information.

3 MAN POWER DEVELOPMENT

Normally, those who are engaged in manpower development perform important roles such as

1. Counseling & Collaborating
2. Competency &Creativity
3. Change Agent & Facilitations.

Among the three, competency and creativity focus on developing knowledge, skill, attitude and behaviour through training.

With the recognition of training as an important avenue for development during the last few years, the scope and application of training has been considerably widened even in the area of modern electronic informative libraries.

The term 'training' has been defined by experts in different ways ac-

cording to various situations with some common objectives. We can define training as "a mechanism adopted , implemented and practised by the people who have sufficient knowledge about human psychology and human science. The mechanism must have objectives towards human skills, knowledge, attitude and behavior. The outcome of the process and practices of the mechanism should give dynamic result- oriented changes on human performance in a better manner than the previous experience of the trained".

The outcome of all training programs point to the common objectives

- Developing potential knowledge of the trainees
- Improving the skills of the trainees
- Enhancing the efficiency of human beings
- Leading a systematic way of performing the assigned tasks, duties and responsibilities

In general, all the training methods are classified into three types known as 'on the job training' 'off the job training' and 'off-the campus training'. In order to develop the potential knowledge skills and efficiency of the library professionals proper training should be given to them through the above said methods.

Training for employees in libraries arises on account of the following important needs such as

- To match the employee specifications with the job requirements and institutional needs
- Employees individual growth
- Change in the job assignment
- To improve quality

And also training should be given to employees in libraries in the following areas

- Organizational Development
- Communication
- Leadership
- Vocational and Technical
- Motivation

- Total Quality Management

4 RE-ENGINEERING

Re-engineering means to redesign the process with the help of fundamental rethinking and analysis to reach and reap of better performance . HR plays a crucial role in successfully implementing a reengineering effort. Following are some important aspects of HR role

- Building commitment to reengineering and developing. This can be achieved by hiring employees with the right values and by providing the incentives.
- Team Building :It refers to making teams more effective, for instance, by providing carefully selected team players and the required technical training.
- Nature of the work :With reengineering jobs generally change from specialized tasks to multidimensional generalist work. HR is crucial here for hiring high potential employees and providing team with the training and development they require
- Empowered jobs. :People working in a reengineering setting are necessarily empowered to perform a broader set of tasks with relatively little supervision. This means that HR in reengineering must stress values in selection and training.

5 CURRICULUM DESIGNING

Information forms an essential link between intellectual and material activities. Therefore information transfer serves a wide range of activities to be performed efficiently. The library information science personal have to play the role of an agent and transmit the information for its proper utilization. The library information science schools shall have to produce personnels with necessary additional knowledge about the new technologies being introduced in libraries.

Restructuring of library and information science curriculum is a major issue of concern today. With the advent of new technologies, the situation in library and information center is transforming itself to electronic information center. These technologies facilitate better means of monitoring information use and the ability to make use of it for the management of information. Curriculum planners have to ascertain what new learning experience would be offered to learners to make education more meaningful to meet the challenges of modern times. Curriculum may be restructured in accordance with the needs of the electronic information centers.

6 CONCLUSION

Modern day information is enormous and complex and only the electronic media can stand up to the dissemination of this enormity and complexity. Libraries, as centers of dissemination of information, need to be competent enough to meet the challenges offered by the information revolution sweeping through the world. Falling short, the libraries would suffer stagnation and decay-accelerated by the slowness and morbidity of the dissemination of information .Libraries have to act, under such a situation, as centers of Electronic Information in tune with the demands of modern information revolution and make information more conveniently approachable and more easily available.

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TIPS FOR INFORMATION PROFESSIONAL IN 20TH CENTURY

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ABSTRACT

Information is a corporate resource, as important as the capital, labour know-how etc. and is being used for decision-making. Its quality, therefore, is required to be very high. A low quality information would adversely affect the organizational performance as it affects decision-making. So the quality of information is the result of the quality of the input data, processing design, system design, system and procedures, which generate such a data and the management of the data processing function. So the quality of a library management is determined with reference to context , its use , the user and the information manger. This paper highlights the library as an organization and value of information and its utility through proper library management.

1 INTRODUCATION

Library as an organization is vehicle ordained by the management to achieve outputs and its pre-determined objectives in effective and efficient way. Organization structure output is to be a structure of interpersonal relation. The most important role of library as an organization is to act as a mechanism to promote human collaboration. The structuring of an organization for management process requires the most innovative talents of the human resource and other activity centers towards the latent and futuristic needs of human resource in meeting the objectives of the organizations.

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Though theoretically, the Library organization may be modeled following a decision-making framework, bureaucracy concepts, social concepts, behavioral sciences, but it largely depends upon the mission, objectives, goals and structure of management activity. The most prevalent approach of organizational structuring is an integrated approach based on major sequential processors in management process of planning, organizing, staffing, directing and controlling.

Library as an organization operates through medium of information. Function of library management is served by systems. Library is input with men, money, material and information. So there are two types of controls that operates input and output of the library. These are internal and external. Internal Controls are more specific and manageable and therefore relatively easy to implement in operations of management and design. Financial accounting, costing, corporate ethics and employee's integrity are instances of internal controls. Internal controlling is provided for perusal of readers to appreciate its importance. External controls are more strategy oriented and modifiable.

The impact of information is common in our day-to-day works. In library management, information has a precise meaning and it is different from data because the information has a value in decision making while data does not have. Information provides clarity and creates an intelligent human response in mind. Data is always treated as raw materials while information is equivalent to the finished goods produced after processing the raw material. In recent years, the significant impact of information has been on planning and decision-making in organization, which lead to an ever increasing reorganization that information is a resource that has value and therefore needs to be organized and managed. It is found that every business is accustomed to deal with tangible assets such as money facilities and personnel which can be approved with precision where as they have found it more difficult to measure the value of information. Nonetheless, it is clear that if manager have good information, they are more likely to make sounds timely decision, which will have positive impact on business and organization. Conversely, if their information is poor, they deal with uncertain risk, and will be less likely to make good decision. So the emergence of information management is a crucial development in providing accurate and timely information to the potent users.

Information in a library can potentially take a variety of forms including numbers, texts, sounds, pictures and even video. Some of the

information in a library system may be created or modified with the system while other information may be received from other work system. In order to know the role of the librarian as information manager he must have clear distinction between data, information and knowledge. Data are facts, images or sounds that may or may not pertinent or useful for a particular task. In our daily life we get data from newspapers, television, from billboards and from colleague. We receive so much data every minute that our conscious minds can't possibly pay attention to all of it. Information is data whose form and content are appropriate for a particular use. Converting data into information by formatting, filtering and summarizing is a key role of information analyst or information manager. Again at the same time the information technology user who needs knowledge to use information effectively. So knowledge is a combination of instincts, ideas, rules and procedures that guide active network and shows why a library collects vast amount of data often fail to satisfy the users information needs.

2 LIBRARY AS AN ORGANIZATION

2.1. Planning

Planning includes strategy to select the course of action. In the course of planning, the following processes are needed in sequence.

a. **Forecast:** While introducing any new plan, a concrete plan is drawn to forecast the prospective use . It shows the effect on future of library.

b. **Set Objectives:** Objectives are the end result of management; the formulation of the strategies is the next step.

c. **Develop Strategy:** While formulating the strategy for achieving the objectives; the librarian contemplates the choice of channels, pricing through a strategical plans.

d. **Decide Programmes:** Programmes are the level of pricing and sequence of strategy. The programmer decisions are superimposed over the strategies.

e. **Set Budgets:** Budget is an allocation of resources. The idea is to allocate resources, which is of paramount importance. The budget has to be consistent with the implementation of the strategies in a programmed manner and the accomplishment of the objectives.

f. **Set Procedure:** Procedures are the specific standardized methods to be strictly followed for the smooth operation of the management process.

g. **Development of Policies:** Policies are the rules and regulations to govern significant recurring methods.

2.2. Organizing

Organizing implies that the work is arranged efficiently for accomplishing the plan. Organizing blends with the devised set of procedures and policies to evolve controlling.

2.3. Staffing

Staffing involves the selection of the people to accomplish specifically allocated task. In case a new organizational structure has to be setup for the design, production or marketing of the new products. Management must delineate the relationships between the new and existing structure, this requires defining explicitly and perspicaciously the lines of communications and liaison points. The creation of position, description and establishment of the positional qualification assist in evaluating the existing organization structure and decide the organizational expansions plans. The personnel have to be oriented to the plan objectives, strategies, procedures and policies. These personnel have to be trained in the necessary tasks to be performed.

2.4. Directing

Directing involves the steps associated with getting things done through people. The directing function involves the steps associated with getting things performed through employed personnel. Delegation of a signing of responsibilities and accountabilities is the foremost step. Here the impetus is on motivating the personnel to orient themselves to the sincere implementation of tasks according to the plan.

2.5. Controlling

Controlling involves the measures taken to carry out plan effectively and efficiently in pursuit of satisfactory implementation of action towards meeting the pre-determined goals of an organization.

Thus the Librarian in a library management must recognize the efficiency of the taskforce, its employees, who are the life and blood of organization. The stimulating environment with the organization

peps up the organizational efficiency to a great extent.

3 NEEDS OF INFORMATION IN A MANAGEMENT SYSTEM

- The fundamental tasks or the organizational goals of the management is the management of information.
- to revamp the organizational structure for attainment of the fundamental goals of the organization.
- to allocate resources for smooth functioning of the organization towards the goal of optimum utility of library.
- to maintain and manage responsibilities towards customers.
- to cope with and augment technological sophistication pragmatically, ethically and tactically.
- to cope with ripened aspiration of the customer as well as the employees.
- to maintain and manage cordial relationships with the social segments viz. technological services, government, employees etc.

3.1 Classification of Information

The librarian as an Information manager has to categorise or classify information in day-to-day management of library as a system. John Reardon of Harvard University classifies information into the following types:

- Action vs. no action-information
- Recurring vs. non-recurring information
- Internal vs. External information
- Planning information
- Control information
- Knowledge information
- Organization information
- Database information
- Operational information

3.2 Action vs. no action-information

The information which induces action is called an action information. The information which communicates only the status of a situation is no-action information.

3.3 Recurring vs. non-recurring information

The information generated at a regular intervals is a recurring information. The financial analysis or the report of market research study are non-recurring information.

3.3 Internal vs. External information

The information generated through the internal source of organization is termed as internal information, while information generated through the government reports, industry survey is termed as an external information.

3.4 Planning information

Certain standards, norms and specifications are used in planning of any activity. Hence such information is called as an planning information.

3.5 Control information

When there is a reporting of system through a feedback mechanism, is called controlled information. When any information shows a deviation from the goal or objectives, it leads to induce a decision or an action leading to control.

3.6 Knowledge information

When collection of information through the library reports and research studies to build up a knowledge as a information source for decision making is known as knowledge information.

3.7 Organization information

The information can also be classified based on its usage. When the information is used by everybody in the organization, is called organizational information.

3.9 Database information

When the information has a multiple use, its application is called database information.

3.10 Operational information

When the information is used in the operation of an organization is called functional or operational information.

3.11 Value of information

A manager or librarian or a decision maker uses his sensory receptors; his eyes, ears to pick up information and transmit them to brain for processing and storage. There are different methods for collections of Data and Information. In a decision-making situation, there is certainty when perfect information is available about various alternatives. But there is a lot of difference of individual responses.

1. **Personal dogmatism:** It refers to the degree of faith in beliefs, opinions, part experience, low dogmatism, for more information collection and processing.
2. **Risk Propensity:** The ability to take the risk, higher to take risk, the more information gathering and analysis.
3. **Tolerance for ambiguity:** Level of clarity is required in the information. The ability to read thorough information with right tolerance results more information collection and analysis.
4. **Manipulate intelligence:** The ability to manipulate the data and information vis-à-vis the stored information and knowledge. High manipulation gives less information gathering and more self-analysis.
5. **Expert in decision-making:** High level of expertise in decision-making helps to filter appropriate data and appropriate choice of decision-making process.
6. **Knowledge of the task, tools and technology:** Extent of experience at particular level of decision-making.

Thus each user has its own style of resolving or reconciling his internal view, and an understanding of the problems or environment of the process that these individual styles of gathering information accommodated fully.

3.12 Organizational Deficiencies

It has been observed most persistently that in spite of the most experience team of workers with their best efforts, sometimes, the end result of the organization is in a quagmire. The reason of pitfalls in management are many. It needs to discuss a framework of precautions in management of information system development. It

is pertinent to realize that information systems are not a sole solution for any of the management problems. It is imperative to correct the several deficiencies in the organization's infrastructure, participation and management process before pursuing with a process of MIS design for the successful implementation of the MIS project. The followings are some deficiencies and discussions to meet the determental effect on MIS development process.

(i) Organization does not have a reliable management system

It is observed that some organizations are devoid of a good management system if it lacks good planning and control and possesses disastrously poor organizational structure. In such an atmosphere, the management process is not in place and library managers and operational staffs are not competent to identify their information needs.

Sometimes MIS development team may be competent, but may lack to determine appropriately the information needs. So in this type of setup no degree of sophistication with a computer can place an appropriate MIS in such an organization. Therefore the organization opting for a computer based information system must at least possesses a rudimentary information system, manual or semi-computerized for the MIS development team. The management system ought to be suitably redressed prior to the implementation of any managerial system process.

(ii) Organizational lacks, its mission clearly

Again some library organization works without a mission due to incompetence of top management. So the library always remains in threat of becoming extinct on emergence of competent rival or changing scenario of management process or technological revolution or increasing complexity in the management process.

(iii) Organization objectives have not been specified

In case objectives of the organization are not specified, MIS development team fails to comprehend the scope of MIS design. The perception of the management about an ideal information system for its organization can only be narrated to the MIS development team if there exist certain guidelines of organization's objectives.

(iv) If management lacks interest

Management of library is viewed as a responsibility of the management at all levels including top managerial, middle management and

operational management. If the existing management does not participate in new technological development then there is every chance of collapsing in modern times.

4 FIVE PERSPECTIVES FOR GOOD LIBRARY SYSTEM

In a library system a good working system framework helps to gain a better understanding of an electronic based system, which is useful to view the system from five distinct perspectives. Their key features help the library professionals to analyze the system.

(i) Architecture of the Organization

It specifies the current process of information technology and organization work. For example information architecture refers to how information is organized within a library system, where as organizational architecture refers to how the people and departments are organized.

(ii) Performance of system

It includes how well the work system, its components or its products operate. Here the performance is monitorial quantitatively or qualitatively to provide guidance for process and product to improvement system performance. It depends on balance and alignment between systems components. It shows that improving the performance is just a part of the system, and may not affect the result of other parts, which are left uncharged.

(iii) Infrastructure of system

Infrastructure is not under the control of the system, it serves; yet it plays an important role in the system. In an electronic environment system, the technical-infrastructure typically includes computer network, telephone system, software for operation system and the manpower infrastructure i.e. the support of the staff which helps them operating effectively.

(iv) Context

Context is organizational, competitive, technical and regulatory realm within which the work system context helps to create incentives and even urgency for change but may also create obstacles.

(v) Risks

Risk consists of foreseeable events whose occurrence could cause system degradation or failure. As every organization has risks, many effort must build to change a system by identifying foreseeable risks.

library professional should know the concept of MBTI. Apart from this they should attend seminars, workshops like Human Relations and transactional Analysis (TA).

They should empathize over library users so that problem can be solved effectively &efficiently. They should act as a mentor by developing communicative and interpersonal skills.

They should be motivated by MSR (Money, Status, Recognition) factors. TQM (Total Quality Management) can be achieved only by people not by technology

By and large, this compendium presents the various facts of Digital Library over conventional Library. To cope up with the current IT environment, Library Professionals should have training for both in computer & HRD areas.

To move ahead in the age of the survival of the fittest, to cope up with the current IT environment, to succeed in the Library Profession, & finally to enrich our various skills related to Library Administration, the library professionals should learn more specialization with best utilization.

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Power point and Database. Invoices and inventory applications can be achieved in client-server Network, ABC analysis, and FSN analysis are the Salient features of Inventory. Quantity & Value of books can be estimated at the time of inspection and for Accounting purposes. Automatic numbering & location of books are also added advantage to this software.

Owing to the above rapid development in IT(Information Technology) Curriculum for Library and Information Science should be designed, distinguished experts. There is always mismatch between demand of skilled manpower and supply of traditional manpower.

Apart from multimedia, Internet, Office Automation Software, Librarian should be able to access Library Automation software. He should be aware of how to use the manuals & Software, features of software.

VBSE is also needed to develop notably the right brain curriculum based on HRD and also left brain curriculum based on academic.

The OBT (Object based training) for Library can be achieved by both updating the curriculum and imparting training to the Library user & professionals. The Current scenario is that digital environment is dominating the traditional paper environment.

2 DIFFERENT LEVELS OF TRAINING

Training in GD, Panel, Colloquy, Symposium, case method role-play, forum, and workshop should be conducted for both library users & professionals. Training can be in three domains level cognitive, Affective & Psychomotor. Cognitive is based on knowledge, Affective is based on emotional and psychomotor is based on body.

3 DIFFERENT HRD

Training should be imparted for HR-reengineering by using "ASK" method & "Dharma" method. Library professionals should develop their Attitudes, Skills, and Knowledge by taking different HRD Training. Library professionals should develop their HRD activities by defining "DHARMA". The "Dharma" stands for Duties, Habits, Attitudes, Responsibilities, Motives (objectives), Action plan for their skill development. The conflict among library users can be overcome by using MBTI (Myre Brigs Type Indicator) and Personal type can be caliber by using MBTI .So, to maintain the rapport between them,

Thus, there is a link between architecture and performance perspectives which are the core of any attempt to improve the work station. The user satisfaction is largely determined by performance of professionals, which the user evaluates in term of criteria such as cost, quality and responsiveness. In turn, work system performance is based primarily on work system architecture, and is also affected by human and technical infrastructure, organizational, competitive, and regulating contexts and foreseeable risks.

5 SYSTEM COMPLEXITY

Library as a system is relatively complex as compared to physical system. Therefore they should be handled property analyzing the liberation to understand design, develop and implement.

- To handle the complexity, the system can be viewed as an assembly of subsystem; each with a clear definition of the boundaries, interfaces, and their connectivity. All the subsystem must put in a hierarchical order to provide structural view showing the developmental path to the devisor.
- The second method of handling the complexity is to resort to simplification by clustering the subsystem together. But handling all the subsystems together with their inter connections is difficult because four subsystem interacting with each other always have six inter connections.
- When the number of inter connections increases there is an increase in number of sub-systems where each inter connections acts as a channel for the input-out communication. So there must be a process to reduce the complexity. Here the methods of simplification are as follows.
    a. Identification of the subsystem which have to be together for the functional cohesion.
    b. A cluster of subsystems is formed and identified for interconnection.
    c. Cluster of the remaining systems is formed.
    d. The cluster with an interface is connected.

The first step towards development is to analyze the existing system by

- Understanding the existing system.
- Understanding the objectives achieved by the existing system.

- Evaluating the system for computerization.
- Finding out whether the system is feasible technically and operationally.
- The cost of new design is justified to the value of information.

6 NEED FOR A LIBRARIAN IN MODERN LIBRARY SYSTEM

Many a times library as a system acts as an interface to other system. Hence through such an interface, it or activates or promotes some changes in other system. So it is necessary to understand the role of the system, as an interface, to safe guard the interests of the other system.

a. idea of participation of users

There must be a strategic purpose to seek acceptance of the people to grow a new development. Through system analysis process we can develop a system of participation to the people. It helps in breathing the resistance to the new development and it also insures commitment to the new system.

b. Understanding of resources

The analysis of the system helps in defining the resource requirement in term of hardware and software.

c.idea of analyzing system

Librarian as a manager analyst must analyze the system in the following way.

- the analysis of the system is to be started at a place where different systems are prevailing where it is accepted as one of the operating system.
- the key personnel's name who contributes to the system in detail is to be noted down.
- the difficulty of operating personnel is to be found out the system in detail observed.
- the scope of the system and its objectives are to be defined. Where the scope covers the boundaries of the system, the problems faced in the system, which cause difficulties in achieving the objectives are to be found out.
- all the documents from one point to another either in printed or hand written are to be collected.

- the statements, reports, to throw more light on the information generalities are to be collected.
- a list of rules, formulas, guidelines, policies etc., which are used in running the system are to be made.
- the check points are to be noted down.
- the flow of data in the systems in units, summary and aggregates from document to document from one stage to another are to be studied.
- a small system note as a base document and a discussion about the view and understanding on the head of the department are to be made. Whether he has any other objectives when the system should achieve may be ascertained from him.
- examining whether the achievement of the system's objectives is feasible in the present system; it means, examining whether adequate data exists, whether it can be processed by rules, methods, models already there to generate information.
- if there are problems in the feasibility of implementation, then examine whether the present system can be modified by introduction of documents, controls, procedures and system is examined. If this is not possible, the scope of the system and objectives is to be redefined in the light of the study.
- a revised system flow chart to indicate how the system runs the major steps of processing the information is to be drawn. It must include all the modifications, which had been suggested and accepted.
- discussion of the flow chart with other operating personnel should be made so that they can understand the system.
- impressing the other personnel that they should run the system as per the flow chart, and resisting any deviations, would cause a disturbance in the system should be made.
- the modified system should be explained in such a way that user would appreciate the changes.
- a list of statements and reports should be made.
- the requirements of information and reports from the utility point of view are to be analyzed to decide the utility based on the value of information.
- the costs of old and new systems are to be compared with the

benefits it offered.

- approval of the system from users may be obtained.
- a system manual for use of the people in the department is to be written.

7 DESIGNING A CYCLE OF DEVELOPMENT FOR MODERN MANAGEMENT

The library professional in the changing environment has to think globally taking into consideration of technology, user, and business it serves. He is required to make analysis to evolve the system, the technology strategy and configuring them to work for executing the business strategy through information support. Putting all the components together to achieve the information's processing strategy success is quite a complex job requiring a vision and a foresight. So the system development cycle for a new application may consist of five major stages.

- Defining the system and objectives.
- Development of the system.
- Installation of the system
- Operation of the system.
- Review and Evaluation.

7.1 Defining the System

It deals with the following objectives.

- Defining the system and its objectives
- Defining the system and its elements.
- Determining the system boundaries and scope.
- Defining the clarity to the users of the system and the system designer.

7.2 Development of the System

It clarifies more understanding of the real life situation, problems and weakness.

- Decision-making needs are identified and corresponding information needs area defined.

- Flexibility system is to be examined
- Conceptual design is framed
- Idea about popular surfing on Internet for sealing and disseminating information from the World Wide Web of computer networks and globalization of business processes.
- Ability for development of telecom technologies viz. cellular telephone, pagers, videophones, video conferencing, conventional communication by squeezing the area of operation.
- Designing a system output, input, processing design, procedure design are framed out.
- Flowcharting the system.
- Data base design architecture and application develop design are planned.

8 LIBRARIAN AS AN INFORMATION MANAGER

Conceptually, management comprises processes or activities viz. planning, organizing, controlling, directing and initiating operation of an organization for its smooth functioning and attainment of its predetermined goals through optimal utilization of its resources viz. men, materials, machines. So it is important to have thorough awareness and perspicacious understanding of management process bearing the role, objectives and goals of management.

Librarian as an information manager is a crucial individual in management system of an organization who is responsible for his own library management. In this age of information technology, electro use age the basic requirements of a librarian are to be shelled in functional specially such as information technology, legal and human resource.

- To be adopted in traditional function of planning, organizing, controlling and initiating.
- To be able to participate in design and utilization of computerized information system.
- From the view of R. Alec Mackenzie (1969), the librarian as a manager functions with three basic elements (Ideas, Things and People) say, conceptual thinking, administration of things (tangibles) leadership and analyzing problems. Conceptual thinking is the basis of devising plans for the foreseeable

opportunities. It is born out of intuitive ideas. Administrative of things relate to the details at which the management process is implemented. such as:

8.1 Leadership

Motivates the people in an organizational setup.

8.2 Reliability

Reliability of information is connected to the representation and the accuracy of what is being described. In providing any accurate information on a segment the samples must be collected. If the segment of sample is too small, the information may not give the correct and complete picture, so it is not reliable. Again the reliability is also affected if the data is not collected from the right source.

8.3 Consistency

During the dissemination or distribution of data the information may not be consistent if it is derived from a data which does not have a consistent pattern of period. Somewhere, the information must relate to the consistent behaviour or pattern. Consistency of data can be obtained by assessing the regularity in providing the information.

8.4 Period

Information is a resource like a power generator, but if the information is ole, it is not useful today. The currency of information makes all the enlightened. If the information is old, then it does not meet any characteristic of information, viz. update of knowledge, reduction of uncertainty and the representation.

The librarian being an information manager has to maintain all the parameters of information though the parameters pose a number of problems and the systems in the organization. A failure of maintaining the parameters at a high degree affect the value of information to the decision maker; so called librarian.

Set up to accomplish the business objectives of an entity.

- Librarian must have the capacity of analyzing problem, which is a paramount procedure is to be adopted to scrutinize the facts and evaluate alternative solution.
- In management process the process of making decision and communicating the decision to the people, must done in persistent to implement the decision efficiently.

- Realization of importance of information feedback and feed forward is required by the library manager.
- Librarian must have an idea of emerging understanding of automated decision-making.
- Implementation of techniques of management sciences and operational research permitting an experimental, intrinsic or situational approach to the complexity of problem combined with computational ability of computer.
- Ability to the use of advanced electronic computers for usage in data processing, generation of management information operated and operation of multimedia and application for educational, entrainment programme.
- Contact idea of progress in synergy of networking technologies viz. (LAN LOCAL Area Network) WAN (World Area Network), MANC (Metropolitan Network), ISDN (Integrated Services Digital Network), ADSL (A Semantic digital subscriber line), E-mail, EDI (Electronic data Interchange), VSAT (Very Small Aperture Terminal), CTI (Computer Telephony integration) and rapidly emerging global satellite technologies for communication of data image and voice and their distribution.
- Idea about popular surfing on internet for sealing and disseminating information from the World Wide Web of computer networks and globalization of business process.
- Ability to development of telecom technologies Viz. cellular telephony, papers, videophones, video conferencing, conventional communication by squeezing the area of operation.

9 CONCLUSION

There is always a distinction between external and internal performance, which deserves special emphasis in library system. This distinction between external and internal performance parallel the common distinction between effective use and efficiency.

Effectiveness involves doing the right things, whereas efficiency involves doing the right thing in right way. Effectiveness represents an external view related to whether the product is what the customer really wants. It is measured in terms of thing the user perceives directly

such as cost, quality and responsiveness. Efficiency represents an internal view rendered to the use of resources within the work system that produces a particular output. Typical internal performance of professional measure includes consistency, productivity and time. So the links between performance and product performance implies that effectiveness is usually related to efficiency even though each should be considered separately.

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