Emergence of Digital Library Services in India

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Abstract

This paper emphasizes the significance of digital libraries in present information era and describes their superstructure and technological requirements. It mainly depicts various aspects of digital library development and different types of reference services being provided in digital environment which include: (i) personalized services (ii) web-based reference and information services (iii) search engine services (iv) digital reference services for general public as well as academic community (v) co-operative digital library service. This paper highlights present scenario of digital library services in India. It outlines the initiatives taken by the UGC, India, the INFLIBNET Centre, DELNET, IITs, RECs , National Research Organisations/ Institutions of India in the digitization of libraries and information centres in order to provide digital library services. Further it suggests that in a developing country like India where resources are limited, funds are inadequate the library and information professionals should develop their skill and proficiency to meet the challenges of technological developments and changes emerging out of digital library services.

Keywords : Digital library, Digital library service, Digital Information, Digital Library Management, Digital Library Development, INFLIBNET.

0.   Introduction

The digital library is an electronic or virtual library where information is selected, acquired, processed, organised , stored and retrieved in digital form. The developed countries have already digitized their libraries. The developing countries are in the process of digitization of their libraries. The users of digital libraries are the universal users who should have facility to access to all created and acquired digital sources of information in the form of electronic text, image, map, sound, video and multimedia. Thus the digital libraries are attributed to electronic databases and capable of handling large data and servicing users effectively in resource sharing environment.

1.   Digital library infrastructure

A digital library has certain technological requirements such as:

i.   Locally developed database

ii.   Local library system with adequate personal computers having LAN and CD-ROM Drives.

iii.   Electronic mail service

iv.   Network connection to have access to other data bases

v.   Various functions to coordinate, manage the entry and retrieve data.

vi.   Multimedia Kit

vii. Well trained manpower

viii. Computer Hardware with Audio-Visuals, Video Conferencing Kit, Pentium Web Server, Laser Printer, Scanner, Barcode Scanner, Barcode Printer, Digital graphic printer and UPS.

ix.   Software and its accessories.

The super structure of digital library rests on some important factors like: (i)the human need for information especially that is timely and relevant and (ii) accumulation of information, and all the supporting infrastructure that includes research community, professional associations, libraries and publishers, advances in methods and technology leading to developments in net working, information science, information storage and retrieval, hyper-media, human-computer interaction, artificial intelligence and other areas of computer science that make digital libraries a possible proposition.

2.   Digital Library Services

Always library services are followed by library works. But now the advancement in information technology has brought changes in the concept of traditional library work as well as service. The recent trend and change in the information related field especially in collection, storing, processing and dissemination of information have resulted in to the evolution of digital libraries . Now most of the reference books like encyclopaedias , dictionaries, directories, hand books, etc. are published in electronic form. Similarly about 50% of the existing secondary resources like abstracting and indexing services are available in electronic form for example, Chemical Abstracts Service, Index Medicus, Engineering Index. At present most of the digital libraries have been highlighted mainly on providing access to diverse digital information resources. The provision of personalized reference and information services is considered as one of the important characteristics of the library and information profession. However reference services include (I) Either finding the required information on behalf of users, or assisting users in finding information themselves; (ii) Instruction in the use of library resources and services, and (iii) user guidance in which users are guided in selecting the most appropriate information sources and services.

In this changing scenario, reference works of modern libraries are influenced by a set of related technical and economic factors, especially the increasing use of technology and techniques. To cite some examples, the recent developments in the INTERNET and in Web Technologies have brought significant changes in the concept of traditional reference services and a number of web-based "expert services" , that are now offered by many non-library organisation. Information services are provided to the users on demand as well as anticipating the user needs including various forms of current awareness and selective dissemination of information services. Such services are provided to the users to keep them abreast of the latest developments in their field of interest through on-line search services in digital information environment, even by the non-library organisations like Dialog.

3.   Personalized services

Most of the researches on digital library development have focused on access to and retrieval of digital information but they have overlooked the personalized service aspects, as primary goal of library information services. However the technology and information resources, on their own, can not make up an effective digital library. On priority basis the personalized services in a digital library environment would help the users to find information resources available in a digitally chaotic world. In a Delphy study it was revealed that (I) the primary roles library professionals play in digital libraries include organization of macro and micro-documents (Cataloguing and indexing), selection and acquisition and acting as gateways to the provision of information services, and (ii) the best reasons of developing a digital library include: increasing access to information serving and users needs and bringing organization to the unstructured universe of electronically available information. However there is a demand for end-user instruction on the use of digital libraries and the digital library professionals who are subject specialists should help users to formulate disciplinary search strategies and provide assistance in developing new digital information resources.

4.   Web-based reference and information services

Several reference and information services are now available on the web and many of these services are provided by non-library organization. Also a web site that provides a categorized listing of libraries that offer real-time reference services using specific software, live interactive communication tools, call centre management software, bulletin board services and other INTERNET technologies. Of course, most of these services are designed for registered users of some specific libraries in-digital information environment. HodgKin has made an aggregation approach to reference and information services. According to which more than one reference sources is made accessible digitally and also it is more practicable in terms of visibility and profitability than a single reference source. Further (I) it's reference service becomes much better known to professional users and thus easier to find, by providing access to several reference works, (ii) by tackling a number of reference works at a time, the publishers can achieve economics of scale in production and development (iii) the user's search session is likely to be much more powerful and fruitful.

According to Chowudhury and Chowudhury online reference and information services can be broadly categorized into three groups : (I) those from publishers , database search services and specialized institutions (ii) those provided by libraries and /or experts through the INTERNET and (iii) where the users need to conduct a search and find information through the web. Also they have listed several online information services that belong to the first category comprising various current awareness, and SDI services, for example :

a)   Contents pages services from commercial publishers, such as Elsevier's Contents Direct Service and IDEAL Alert from Academic Press.

b)   Information on new books available for free from publishers and vendors, such as Wiley Book, Notification Service from Wiley, and Amazon.com.

c)   SDI services from online search services providers, such as Dialog (Dialog Alerts)

d)   Current contents and ISI Alerting Services from ISI and so on.

However some of these services, particularly the contents page services from publishers of journals, are free, while for others, such as Dialog Alerts, or Current Contents from ISI, users need to register and pay for the services. There are also some web-based reference services where users need to conduct a search in order to answer their reference query. For example, the Internet Public Library (www.pl.org.), Britannica(www.britanica.com), the Electric Library (http/ask.library.com/refdesk.asp) and the Internet Library for librarians (www.company.com/inforetriever/). Most of these web-based reference services are available free of charge but some charge a small amount as fee. For example, the Electric Library charges an annual subscription fee.

5.   Search Engine Services

Sherman made a comparision among three web-based reference services like (a) Ask Jeeves, (b) the Electric Library, and (c) Information please and observed that:

(a)   Ask Jeeves (www.askjeeves.co.uk) basically a search engine, is useful for complex questions and is a good choice for searchers who lack Boolean or other searching skills, because of its strong natural language parser and question- and- answer template structure. The users can ask a question on a given topic and it comes up with a list of questions on the same or similar topics; the users can select any of those predefined questions and then it provides further answers. It processes each query syntactically (to analyse the grammer) and semantically (to determine meaning) and then its answer processing engine provides the question template response (list

(b)   The Electric Library is an excellent choice for a serious researcher in need of timely content from a wide array of otherwise unavailable sources. It provides access to various on line reference sources and allows users to either select a specific source or conduct a search on a range, or all, of the sources.

(c)   Information please is a suitable tool for students and other researchers, as an authoritative source of facts and pointers for further investigation.

Moreover Chowdhury and Chowdhury have suggested some other useful search engine services like (I) Web help.com (www.about.com) that claims to offer real time search assistance with a real live expert- any time, day or night, (ii) About.com (www.about.com) is a service that shows a number of pre-defined categories related to a search topic given by the user. For example, a simple search on 'e-commerce' not only produces a list of sites, but also provides a set of topics related to e-commerce, such as e-commerce- definition, e-commerce security, the advantages and disadvantages of e-commerce, e-commerce statistics and so on.

6.   Digital Reference Services for General Public

Today web-based digital reference services are being provided by a network of public libraries. The users make their query on an enquiry page and it is automatically routed to one of the participating libraries which records it as an e-mail message to the user containing necessary and available information. For example, the British Library, London provides special reference services for business, scientific, technical, medical, patent and environmental information which range from answering simple queries up to complex questions involving on line data base searches. Of course some of these services are free if users put simple queries, but for complex queries users need to pay at the prescribed rate which covers the costs of staff time, on-line searching and value added tax (VAT).The British Library provides STM (Science, Technology and Medicine) Search Service for which users need to pay (www.bl.uk/services/ current/stm-search.html). Similarly New York Public Library (Digital Library), American Library of Congress, Alexandria Digital Library, Berkeley Digital Library, Bibliotheque Nationale de France, Victoria State Library, Vatican Library, etc. are some other libraries which provide digital reference services for users.

7.   Digital Reference Services of Academic Libraries

Web based reference services are also now being provided by academic libraries, Recently a study report on web-based reference services reflects the current practices of digital library services in seventy academic libraries of USA. The study shows that university libraries allow their patrons to put reference questions in a variety ways: 99% offer e-mail reference, 96% offer reference services by appointment while 29% of the libraries offer real-time virtual reference. These libraries use customer relationship management (CRM) software packages for providing web-based reference services in the virtual reference environment.

8.   Co-operative Digital Library Services

The rising cost of digital reference sources and its proper processing by the trained manpower and also the initial infrastructural investment for introducing new services in libraries have influenced different

organisations to choose a co-operative model of digital reference services. As a result some co-operative projects have been launched for providing web-based reference services to the users who can ask for such services from a remote location at any time. The Library of Congress, USA has launched the collaborative digital reference service with a mission to provide the users, anywhere anytime through an international digital network of libraries. This network has three main components consisting of (I) Member Profiles (ii) Request Manager-Software for entering, routing and answering reference queries; and (iii) knowledge Base- a searchable database of questions and answer sets. In this network a participating library sends a question to the system on behalf of a user and the system looks in to the knowledge base for a match. Then a reply is sent to the relevant library through e-mail. Incase the question and its corresponding answer is not found in the knowledge base, then it is passed on to the Request Manager where using the profiles of participating libraries and their information resources collection, expertise etc, relevant query is passed on to an appropriate library. This library receives the query, finds an answer and sends back reply to the results store and answer to the knowledge base. Thus the Knowledge Base and Request Manager become able to provide reference service in digital environment. However, the Library of Congress and OCLC have developed a co-operative "Question Point" the advanced generation of collaborative Digital Reference Service (CDTS) in June 2002 which integrates local as well as global electronic reference networks.

9.   Present Scenario in India

All the six IITs (Indian Institute of Technology) created as centres of excellence for higher training, research and development in science, engineering and technology, have automated their libraries and now they have access to more than one thousand electronic journals. The Central Library IIT, Delhi has switched over to the Silver Platter's Electronics Reference Library (ERL) technology for providing access to bibliographic databases subscribed on CD-ROM. The technology facilitates simultaneous and integrated access to ERL complaint reference databases to multiple users across the LAN / WAN Via TCP / IP. This library offers network-based CD-ROM search services from the CD-ROM databases subscribed in the central library . Most of its databases have now been transferred to ERL technology and its CD-NET system has been installed for searching of CD-ROM databases on the campus intranet. This Library has started subscribing to the web-based full-text electronic journals with availability of high speed INTERNET connection and about 1330 electronic journals are accessible full text.

In most of the higher learning and research institutes in India such as the Regional Engineering Colleges (RECs), Tata Institute of Fundamental Research (TFIR), Indian Institute of Science (IIS), Indian Statistical Institute (ISI), Indian Agricultural Research Institute (IARI), Institute of Veterinary Research of India (IVRI), All India Institute of Medical Science (AIMS), Indian Institute of Management (IIMs), Institute of Physics, Institute of Life Science, Shaha Institute Nuclear Physics, The Medical College Libraries etc, have automated their library systems. Some of them are in the process of digitization of rare and valuable documents. Digital library services in India are in developing stage. At present most of the university libraries have taken steps to provide web-based reference and information services in digital environment in addition to their traditional library services. These services include:

- Access to library catalogues and union catalogues.
- Access to bibliographic databases
- Access to subject gate ways in specific disciplines
- Providing links to web sites
- Accessing and procuring e-reference sources
- Subscribing to e-journals
- Reference services provided by librarians and experts on the web

- Document delivery services
- On-line current awareness services
- Digitization of library resources, considering their intellectual value.

The University Grants Commission (UGC) of India has launched the major initiative for setting up nation wide communication network for Indian universities called UGC-Infonet. Each university was to establish a LAN in its campus linking all the teaching departments including library. ERNET of India and INFLIBNET Centre, Ahmedabad are conducting a series of training programmes for technical staff of each participating university library for managing and maintaining the network at their premises. The INFLIBNET Centre will administer and monitor the E-Journal programme and will have independent electronic access to all the publications to help with the process. The INFLIBNET Centre has carried out training programmes in various places to spread awareness and to develop expertise in the University community in the use of E-Resoures under the networked environment. The INFLIBNET Centre has developed and also recently released library automation software package new version for university libraries (SOUL) for building up digital library services. Soul is Windows based user friendly software, based on client server architecture with multi-user and multi language facilities which supports internationally known standards such as CCF, AACR-II andMARC-21, etc. Thus INFLIBNET centre is patronizing for digitization of college and university libraries and encouraging e-subscription and e-learning in Indian Universities and colleges.

The DELNET (Delhi Library Network) created as a metropolitan network in 1988, has changed its name to Developing Library New Work (DELNET) in 2000. The main objectives of DELNET are to promote resource sharing among its member libraries, develop a network of member libraries, collect store and disseminate information, offer computerized information services in digital environment .The DELNET presently avails the high speed satellite communication facilities of NIC spread across the country and its 620 member libraries can access about 35 lakh bibliographic records in machine readable form. Also it maintains an online union catalogue of books available in its member libraries in CCF format. Its union catalogue is continuously updated. DELNET has been networking the libraries of about 400 affiliated institutes of AICTE, New Delhi. DELNET presents two management software packages i.e. DELMARC and DELPLUS.

10.   Conclusion

The digital library movement in India is rapidly increasing and the traditional libraries are now on their way to digitization in a phased manner. Of course, the financial constraint of different institutions and government departments, creates problem to acquire necessary IT equipment and infrastructure. In India UGC and INFLIBNET Centre have taken steps to develop a consortium where college, university and research libraries can join for subscription to on-line journals. Similarly procurement of e-reference sources on CDs can be made and on-line current awareness service of the content pages of the journals subscribed may be provided on the Intranet. However in a developing country like India where resources are limited, funds are inadequate, the library professionals have to take careful and judicious decisions in selecting library materials for digitization. Also the library and information professionals have to keep on watch for newer technological developments and noticeable changes in the use of many information platforms such as Internet, multimedia and digital library. Thus the library personnel should develop their professional proficiency and communication skill in order to meet the challenges emerging out of digital library services.

11.   References

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