Digital libraries: Special reference to India

Shaista Muqeem and **Babasaheb Ambedkar**
Marathwada University, Library.
Aurangabad, INDIA
e-mail: muqista@yahoo.co.in

ABSTRACT

Digital Library has emerged as one of the most important application in information technology in modern era of information revolution. The Digital Library is an electronic library where the information is acquired, stored and retrieved in digital form. The paper describes definition of digital libraries, highlights and components of digital libraries, advantages and disadvantages of digital libraries and focuses on Indian digital libraries and the project in some detail.

Keywords: Digital Library; Electronic Library; Indian Digital Libraries.

INTRODUCTION

Developments in information communicate technology and advances in electronic publishing have brought dramatic changes in information society all over the world. The unprecedented achievements have changed the libraries. The growing impacts of information and communication technologies have compelled libraries and information centers to use these technologies effectively to reader competent services. The new technologies have facilities for the transformation of data into digital format and at the same time have created new methods and tools to support information access and management. Over the last few years huge amount of information has been produced digitally. And libraries have become major provides of information in digital format.

LITERATURE REVIEW

Krishan (2001) discussed in depth on informative overview of intellectual freedom in digital age libraries and on ethical issues of privacy, censorship, preservation and its transmission to future generation. Srivastava and Saxena (2004) described that India has the training programs for library development and continuing education for librarians will be included all levels. Nand (2008) concludes that the Internet has emerged as a boon to the academic community by facilitating access to a treasure of information on the web, which can be used for study, teaching and research. Carbonell (1997). A Carbonell, in comparing what a librarian does to the task performed in a digital library, sees some potential for automating the functionality of the digital librarian. A digital librarian is essentially a special type of

automated agent that combines functionality for information elicitation, planning, data mining and coordination of search, retrieval, and content summarization. Edie and Youngkok (2006) writes that the challenge for digital librarians is to continue to develop as information professionals in order to remain relevant in the changing information landscape in which they work. The Digital Library Conferences, especially the International Conference of Asian Digital Libraries (ICADL) gave significant opportunity to the professionals in the Asian Region to participate actively, exchange the experiences by way of presentations and to gain knowledge in creating digital libraries in their countries. It is necessary to look into the past decade of ICADL themes to enable us to know the coverage of areas and the confidence gained by some countries to participate in digital library activities.

- 1st meeting of Asian Digital Libraries, 1998. Theme: East meets West, held on August6-7, 1998 in Hong Kong.
- 2nd Conference of Asian Digital Libraries, 1999. Theme: Digital Libraries held on November 8-9, 1999 in Taipei, Taiwan.
- 3rd International Conference of Asian Digital Libraries, 2000. Theme: Challenging to knowledge Exploring for New Millennium, held on December 6-8, 2000 in Seoul Korea.
- 4th International Conference of Asian Digital Libraries, 2001. Theme: Dynamic Landscapes for knowledge Creation, Dissemination and Management held on December 10-12, 2001 in Bangalore, India.
- 5th International Conference of Asian Digital Libraries, 2002. Theme Digital Libraries: People, Knowledge and Technology held on December 11-14, 2002 in Singapore.
- 6th International Conference of Asian Digital Libraries, ICADL 2003. Theme: Digital Libraries: Technology and Management of Indigenous Knowledge for Global Access held on December 8-12, 2003 in Kuala Lumpur, Malaysia.
- 7th International Conference of Asian Digital Libraries, 2004. Theme: Digital Library: International Collaboration and Cross-Fertilization held on December 13-17, 2004 in Shanghai P.R. China.
- 8th International Conference of Asian Digital Libraries, 2005. Theme: Digital Libraries: Implementing Strategies and Sharing Experiences held on December 12-15 2005 in Bangkok, Thailand.
- 9th International Conference of Asian Digital Libraries, 2006. Theme: Digital Libraries: Achievements, Challenges and Opportunities held on November 27-30, 2006 in Kyoto, Japan.

10th ICADL 2007 is Asian Digital Libraries: Looking back 10 years and Forging New Frontiers held in Hanoi, Vietnam. This event was significant to review and examine the history and development of digital libraries, especially projects in the Asian region. New action plans need to be designed for future developments using the cutting-edge technologies in digital libraries. (Sujin and Rama, 2009).

RESEARCH DESIGN

Searches were carried out on Library and Information Science Abstract (LISA) using the term Digital Libraries. In addition, references of relevant articles found in LISA were used to identify additional sources. Searches were also carried out from library and information science books and periodicals, proceedings of conferences of Dr. Babasaheb Ambedkar Marathwada Universtiy, Library.

Digital Library

The digital library is an electronic library consisting of information in the digital the information structure technology and application (IITA) working group. Consider 'digital libraries as systems providing users with coherent access to a very large, organized repository of information and knowledge' (Lynch, 2003):

"Larson defined Digital libraries as "not single, stand alone and repositories of digital data instead they are a heterogeneous collection of network-based repositories using a variety of products for user (and repository) interaction, data encoding and transmission".

According to 'Association of Research Libraries' a digital library is "a single entity requires technology to link the resources of many, linkages transparent to the user. Permits universal access, not limited to document surrogates but extended to digital artefacts (Jeevan, 2003). Fox (1993), who has edited several special issues on the subject for the journal of ASIS and Communications of the ACM states:

A digital library is an assemblage of digital computers, storage, and communication machinery together with the context and software needed to produce, emulate, and extend those services provided by conventional libraries based on paper and other material means of collecting. Cataloguing, finding and disseminating information - a full-service digital library must accomplish all essential services of traditional library must accomplish all essential services of traditional libraries and also exploit the well known advantages of digital storage, searching and communication (Kochtanek and Matthews, 2004).

Digital library could be referred to as computerized network system where all the information is stored in electronic format which can be accessed and transmitted through networks enabling retrieval of desired information by a large number of users. Objectives of Digital Libraries are (Kumar, 2004):

- To capture, store, manipulate, and distribute information
- To provide need-based and retrospective search services to the user
- To have large number and database in CDS
- To access national and International journals which are being published only in machine readable form

- To digitize the documents for preservation and for space saving

Components Digital Libraries

Digital Library requires well tested and proven information technologies including the multimedia kit. It can be divided into the following five categories:

- Collection infrastructure
- Access infrastructure
- Computer and network infrastructure
- Digital resource organization
- Manpower training

Collection Infrastructure

The most important component of a digital library is the digital collection it holds or has access to viability and extent of usefulness of a digital library would depend upon the critical mass of digital collection it has. The collection in a digital library would consist of: (i) collection acquired in digital media (CD ROM/DVD ROM, magnetic media etc.) (ii) access brought for the external digital collections, (iii) converting datasets that are "Born Digital" (iv) conversion of existing print media into digital format, (v) creating portal sites or gateways to the electronic collections available on the web: and (vi) providing integrated access interface.

Access Infrastructure

Consisting of search and browsing interfaces, information retrieval in digital library and portal or knowledge gateways.

Computer and Network Infrastructure

A typical digital library in a distributed client-server environment consists of hardware and software components at server side as well as at client' side. Lot of software products are available in the market place.

Digital Resource Organization

There is a need to organize digital resources in a scientific manner with international standards. The concepts of URL, persistent URL, Universal Resource Name (URN) and Digital Object Identified (DOI) need to be taken into consideration. There is a necessity to have uniform resource characteristics or metadata in digital libraries.

Manpower Resources

Digital libraries need digital librarians. There is a need to completely restructure the library and information science portion so as to provide effective training to the potential LIS manpower in the new digital environment. On the other hand, there is an urgent need not

only to impart training to the existing professionals, but also to motive them to accept the challenges put forth by the new technology (Nand, 2008).

The librarian's mission is to work towards meeting the information needs of people by providing high quality information systems, services, products, based on the recorded human knowledge of the world through the utilization of current and emerging information technologies i.e. digital technology.

Indian Digital Libraries

India has the expertise to meet the challenge and to set up Digital Libraries in the country. The Digital Library of India is digitizing all the significant literary, artistic, and scientific works of mankind and making them freely available, in every corner of the world, for education, study and appreciation and for future generations. A number of biomedical institutions in the country have already made a start and notable among these are National informatics centre (NIC), all India institute of medical sciences in New Delhi; National institute of mental health neurosciences in Bangalore and MGR university in Chennai. There is also a strong component of digital library in the Virtual Centre for Technology Enhanced Learning (VCTEL) that focus on the role of technology in knowledge accumulation, storing and dissemination and education in three sectors of university, industry and government. VCTEL is proposed to be set up by the IITs, IIMs and Carnegie Melon University, aimed at providing Distance Education, Developing resources for Core Courses, conducting joint Ph.D. Programmers and setting up a Digital Library (Jeevan, 2003). One of the goals of the Digital Library of India is to provide support for full text indexing and searching based on Optical Character Recognition (OCR) technologies where available.

Archives of Indian Labour

The Archives of Indian Labour is a unique digital project initiated at the V.V. Giri National Labour Institute, in collaboration with the Association of Indian Labour Historians (AILH). The archive, which aspires to be the prime repository of labour related records in the country, was designed and instituted to address the urgent need for preservation of rapidly instituted to address the urgent need for preservation of rapidly decaying documents and material on labour.

Advaita Sharada Project

It is for digitization of ancient manuscripts other and south Indian Languages pertaining to the Vedas, vedangus, Upanishad and other sastric studies by Sri Sri Jagadguru Shankaracharya Mahasamsthanam Dakshinamanga Sri Sharada Peetham, Sringeri. Project has been completed and scanned data web enabled on www.newdli.ernet.in.

CSCS media and Culture Archive

The Centre for Study of Culture and Media Society (CSCS) was established in 1996 by a group of scholars interested in developing new approaches to studying culture in India.

Digital Library of Ayurvedic Medicine

Centers for Digital Archiving and creation of rare knowledge pertaining to Ayurvedic Medicine, integrating and show casing of the content created through Digital Library outlet for Uttaranchal State Govt. by C-DAC Noida have digitized manuscripts and information related to Ayurvedic and forestry. The project has been completed and the scanned data web enabled on www.dli.cdacnoida.In

Digital Library of Indian Institute of Management, Kozhikode

This digital library developed by IIMK library holds documents on management, economics, sociology, etc and IIMK staff publications.

Digital Library of Indigenous Knowledge

South Asian countries decided to create a digital library of the region's traditional knowledge and develop laws to prevent such knowledge being misappropriated through commercial patents. The plan was announced at a workshop held in Delhi by the South Asian Association for Regional Cooperation (SAARC). The aim is to create a composite digital library comprising individual Traditional Knowledge Digital Libraries (TKDL) from each country in South Asia.

Digital Library of IIT Kharagpur

Initiated as a modern in-house Electronic Library in 1994, it is renamed as Digital Library. It has involved various digitization activities of the old documents for digital archiving. It has large number of electronic resources such as EiTech index, Compendex, IEEE / IEE journals in full text, INSPEC, Current Contents, Chemical Abstracts, Biotechnology Abstracts, Agricultural Abstracts, Library and Information Science Abstracts, ASTM standards and ABI. A large number of video courses produced by the Centre for Education technology, 11T, Kharagpur are made available to the users for browsing by using a good number of VCRs.

Gyandoot

Gyandoot (meaning "messenger of knowledge") is a new intranet-based digital library in the Dhar district of the state of Madhya Pradesh connecting rural public cybercafés. With Gyandoot farmers can cut out the middleman and find the highest prices for their produce since Gyandoot gives them access to the latest market quotes, produce exchanges, and other information vital to farming.

Indian National Digital Library in Engineering Science and Technology (INDEST)

The INDEST Consortium is an initiative by the Department of Secondary Education and Higher Education, Ministry of Human Resource Development (MHRD), Government of India. The Ministry of Human Resource Development (MHRD) has set-up a "Consortia-based Subscription to Electronic Resources for Technical Education System in India" on the recommendation made by the Expert Group appointed by the ministry. The consortium is named as the Indian National digital Library in Science and Technology (INDEST) Consortium. "Shared subscription" or "Consortia-based subscription" to electronic resource through consortia of libraries is a feasible strategy to increase the access to electronic resources across Institutions at a lower cost. The consortia based subscription can be successfully deployed to meet the pressures such as diminishing budget, increased user's demand and rising cost of journals.

Kalasampada

The Indira Gandhi National Centre for the Arts, established in memory of Smt. Indira Gandhi, is visualized as a centre encompassing the study and experience of all the arts-each form with its own integrity, yet within a dimension of mutual interdependence, interrelated with nature, social structure and cosmology.

Muktabodha Digital Library and Archiving Project

The Muktabodha Digital Library and Archiving Project is an attempt to build a digital library in Indian Languages specially the ancient tests on palm leaves, birch tree barks etc. It started in 1995 as a manuscript microfilming project focusing mainly on photographing at-risk and rare palm-leaf Vedic Shrauta Ritual manuscripts from both private collections and from libraries. Since that time the technology used and the focus have evolved into digitally capturing both Vedic Shrauta Ritual and medieval Shaivite manuscripts.

Nalanda Digital Library

Nalanda is the result of the ongoing Digital Library nitiative at National Institute of Technology, Calicut Library. Nalanda Project aims at a full-fledged Digital Library at NITC to cater to the increasing demand for information resources from the Campus User Community as well as from Remote Users from rest of the Country. Some resources are open to all; otherwise they are resistricted to NITC campus and their recognized users.

National Resource Centre for Women

The National Resource Centre for Women set up by the Government of India is conceptualized as a Virtual Resource Centre on Women's issues. The portal would function as a decentralized, participatory and partnership oriented entity aiming at giving access to digital catalogues of different libraries dealing with women's issues, reports of diverse nature, statistics, events, legislations pertaining to women etc using different media to reach a very broad based clientele at different levels.

Periyar University Digital library

The Periyar University has signed a MoU with the Information and Library Network centre, UGC and ERNET for getting the UGC-Info net connectivity. In the first phase, Rs. 5 lakh has been allotted for subscription of online journals and databases. In the second phase, it is being planned to digitalize the university theses and dissertations.

Physical Research Laboratory Digital Initiative

The Physical Research Laboratory, Ahmedabad owes its existence to Dr Vikram A Sarabhai and his deep interest in scientific research, his initiative and his outstanding powers of organization and management. It was founded following an agreement between the Ahmedabad Education Society and the Karmakshetra Educational Foundation in November 1947. At present PRL – main campus, PRL-Thaltej, PRL- Mt Abu and Udaiput Solar Observatory (USO) at Udaipur (Ali, 2007).

Advantages and Disadvantages of Digital Libraries

Advantages:

- It makes the library collection for global use
- It saves the time of the users
- It solves the space problem
- It reduces the staff strength
- It facilitates the function of the library
- It precludes the problems of theft, defacing; tearing of pages and binding of library documents, which are universal
- It increases the life of the documents
- It provides the latest and accurate information
- Accessibility form anywhere (home, school, libraries, during travel, hotel etc.)
- The e-books and e-journals provide keywords, subject and various other searches
- It is a best tool for preservation of heritage
- Contain multimedia information
- It saves the space that is required for physical documents
- It saves the cost and manpower required for publishing and bringing out new editions
- Several libraries can form a consortium and access bibliographical database/full text journal online by spending only a nominal amount
- Remote access to expensive and rare material
- Access to electronic library resources
- Access to latest information
- Support wider range of materials
- Faster information retrieval
- No storage problem
- Increase in end users

A digital library is not confined to a particular location or so called building it is virtually distributed all over the world. The user can get his/ her information on his own computer screen by using the Internet. Actually it is a network of multimedia system, which provides fingertip access. The spoken words or the graphical display of a digital library is again having a different impact from the words that are printed.

Disadvantages:

- It necessitates for huge budget, which is not possible for small libraries
- Failure of current and telecommunication resist the use of digital library
- It entails recurring expenses for its regular use, which is costly affair
- Continuous use of digital library creates stress on eyes and brain of the user
- Information technology keeps changing and therefore solidarity of digital library is sceptical
- Computer virus is a growing threat and if permanent solution is not found then it can destroy the digital library
- Intellectual Property Right (IPRs) where the library authorities have to discuss with publishers and authors on their aspects to evolve some mechanisms, which became beneficial for library users, publishers and the authors
- Security is another problem, which include the piracy of databases virus invasion, and parallel satellite networking stress
- Technological changes are also coming very fast in which everyone is expected to be the shortcoming for implementing various programmers. So it is not feasible to change all the resources into digital forms by the common libraries
- There is also a lack of expertise as only limited suppliers are there for digital libraries over the whole world
- The computer viruses, lack of standardization for digitized information, quick degrading properties of digitized material, different display standard of digital product and its associated problem, health hazard nature of the radiation from monitor etc. makes digital libraries at times handicap

CONCLUSION

Digital Libraries are amongst the most advanced forms of information system. They present requirements involving collaborative support, rapid access, highly interactive interfaces digital document imaging, distributed database management, hypertext and information services. The main purpose of digital Library is to render instant access to digital information from remote database throughout the globe. So the information professional of digital Library should be equipped with proper and necessary skills.

India has the expertise to meet the challenges and to set up digital libraries in the country and at the threshold of breaking into cyberspace and navigate through Internet and World Wide Web. Through Internet it has now become possible to be a part of "Global Village".

With the advancement of new technology in the field of information librarians and information professional need to acquire new skills using new technology. They must also acquire the new skill automation technologies, digitization, networking and web based technologies, online searching of electronic databases, communication skills, managerial skills, business and marketing skills.

REFERENCES

Ali, A. 2007. *Digital Libraries and Information Networks*. New Delhi: Ess Ess Publications.

Sujin B. and Rama, R.E. 2009. Digital Library Activities In Thailand: Issues For Future Development. In Singh Jagtar, Malhan Indervir and Kaur Trishanjit. (eds.) *Library and Information Science in Digital Age*, Vol. 2, New Delhi: Ess Ess Publications.

Carbonell J. 1996. Digital Librarians beyond the digital book stack. *IEEE Expert Intelligent Systems and their Applications,* Vol.11, no.3.

Fox, E. 1993. Perspectives on Digital Libraries. *Journal of the American Society of Information Science.* Vol. 44, no.8: 440-91-14

Krishan, G. 2001. *Intellectual Freedom in Digital Libraries*, Delhi: Authors Press.

Jeevan, V.K.J. 2003. *Digital Libraries*, New Delhi: Ess Ess Publications.

Joseph, R. 2004. *Library Information on System. From Library Automation to Distributed Information Access Solutions*, Westport: Libraries Ultimated.

Kochtanek, T.R. and Matthews, J.R. 2004. *Library Information Systems. From Library Automation to Distributed Information Access Solutions*. Westport: Libraries Unlimited.

Kumar, P.S.G. 2004. *Information Technology: Applications, Theory and Practice*. Delhi: B. R. Publishing Corporation.

Nand, M.R. 2008. *Digital Library and Academic Society in India*. New Delhi: Asian Books.

Edie, R. and Youngkok, C. 2006. Digital Librarian for Digital Libraries International Conference on Digital Libraries. International Conference Papers Vol. 2. 5-8 December 2006 New Delhi.