l Libraries : Need, Development, Services and Trends

Pradhan , Pranita D , Assistant Librarian ,
Symbiosis International University , Pune
Dr.Dahibhate , N.B.,
Principal Technical Officer , National Chemical Laboratory , Pune
Khandare, Dhanishtha S , Librarian , Tilak Maharashtra Vidyapeeth , Pune

Abstract

Advances in ICT and management has reflected on libraries and information centers which forced libraries to move from traditional environment to another phase using the benefits of different technologies. Similarly in the information age information explosion is at a very high rate and users expect fast qualitative information delivery irrespective of type and format of documents. The need of developing digital libraries (DL) is one of the best solutions for library professionals. This paper focused on the different aspects related to digital library issues, challenges and services provided using digital information resources. The need and prerequisite for developing digital library, advantages over traditional are highlighted in brief. Digital libraries are group of libraries built around internet and web technologies using electronic information resources. The increasing popularity and use of internet and web tools are catalysts to the concept of developing digital library. In the information age and ICT age users are interested in getting pinpointed global information for their study, research and knowledge and at the minimum time. This is made possible by digital libraries and opened new issues related to design, implementation, development, and its evaluation.

Key Words: Digital Library, Development, Challenges, Information services, digital resources, **Institutional Repository,** *Open Access, users services, data and resource sharing, data silos, Digital resource Management (DRM)*

1. Introduction

Libraries are the social institutes where information and knowledge is disseminated to the users whenever users need it. The information generation is much faster due to the applications of technologies. The growth of knowledge is doubling very fast and in different format and there is a need to transfer, communicate and filter the information for the researcher to conduct the research and help towards the development of information society. The basic function of the library is to assist users by providing right information, to right user at the right time (Dr Ranganathan's view) and for this purpose the librarians are adopting new technologies in the era of information technology and information explosion. Due to adoptions of the technologies the role of libraries and librarians are shifting continuously as and when new technologies are introduced in the libraries. The traditional role of preservation has shifted to the role of knowledge preservation and distribution. Applications of technologies brought drastic changes in the activities and functions of libraries. Digital Library is one which is an advanced and an appropriate approach to information storage, dissemination of information to users.

In developed countries like UK, USA and European Nations many libraries have already shifted to digital nature and they have further marched towards 'data silos' and developing courseware based on local and international resources and its proper integration to assist scholars over the desktop information support. Seaman (www.kc.tsukuba.ac.jp) director of digital library federation in his communication stated that the trends in DL is marching towards aggregation, integration and openness as well as resource sharing at different levels. He further added that the developing trend is towards the Digital Library Federation Management which helps in coordinating and integrating local and international resources. This is needed to provide better user services expectations of users are increasing from the libraries and they need streamlined, flexible, time saving, and integrated access to information. Similarly librarians are also in search of economical and cost effective collection development practices with better resource sharing. This is possible only when ICT is used more and DL initiation might be increased at various levels. A data silos concept is developing which is a set of information files not forming a part of organizational collection but accessed from other institutes resources. In such cases digital libraries plays a vital role of sharing information. data silo term is associated with repository. Shiri (2003) pointed out that emergence of DL was in 1990's and its overwhelming growth in recent years has opened up new horizons in LIS sector.

2. Digital Libraries: Meaning, Need, Purpose and Objectives

Digital Library (DL) is a library consisting of digital resources and provides services to users from this collection as well from the group of library's collection. Libraries are facing new challenges, competitors, demands, expectations, and variety of information services. User expectations from the libraries are increasing. Libraries are reengineering and redesigning their practices and services and developing

Traditional Library (TL)	Digital Library (DL)
Stagnant / Static information resources and slow growth	Holds dynamic resources and needs complex technology to handle it. growth is also dynamic
Mono media collection i.e. Print media	Digital Media and Multimedia concepts are included and available in different formats
Costly maintenance	Less maintenance and less involvement of cost
Limited access points for searching information, using catalogue	Maximum access to the information with the help of databases
Searching of information was not to the point	More and accurate access points for searching information and various techniques like Boolean, wild card, field search, browsing etc can be used while searching
Information services based on the printed media and hence the services like CAS, SDI etc were not current as required for the R and D researchers	Information services are advanced like Tailor made SDI, On line CAS, alert, digest services, and user centric services are possible with latest information
Resource sharing initiated but restricted to the Inter library loan, and to the limited geographic area	Resource sharing is achieved at maximum level by establishing library networks at various levels (LAN, MAN and WAN
Information flow is slow	Information flow is dynamic and quick due to use of digital media and Email facility adapted
Cost in purchasing the hard copies is more as compared to the electronic information	Cost is reduced due to digital media and various pricing models are developed for minimizing the prices of the digital information products
The access to the information is limited in the library premises and at fixed timings of library.	24/7 and 365 days /year is the concept of the digital library, and hence users are not deprived from getting any information available globally
Staff is loaded with the pressure of work at all the housekeeping activities, and performs more repetitive work.	Staff is relived from the repetitive tasks and majority of the manual tasks are shifted to the machines, and hence the time saved by the staff is used for providing better services to the users
The skills required by the library professionals restricted to traditional techniques of libraries like cataloging, classification, indexing, Library management etc	Along with the traditional skills advanced skills like ICT Skills, Designing skills, database development skills, networking skills, etc. are required.
The space required to stack the documents is more	Less space and powerful retrieval
The supply chain is long i.e. publisher to dealer to local vendor, to library and hence takes longer time to reach the documents to the library.	Digital documents have direct access to the users at their desk tops i.e. publisher to user connectivity
Document delivery or information delivery was very slow	Document Delivery is fastest as EDDS applicable
No links to other documents	The hypertext and hyper linking is the beauty of the digital media
Emphasis is on ownership	Emphasis on access to information
Prices of the documents fixed	Negotiations in prices as the structure and benefits given by the creator are varied from library to library

information products, incorporating new technologies, upgrading information resources, training people, and changing information objects. till recently scholarly contents were published in printed form but now publishing is shifting from paper to electronic media. Digital library has different connection for different groups for the information technology professionals it is a powerful tool and mechanism for managing distributed or remote information resources. Computer experts says it is distributed and networked information system with databases and services. Librarians means DL is a electronic version of traditional library and consist of digital contents. (Saikia and Sarma)

Different thinkers have defined DL in different ways. Whitten et al (2001) defined Digital Library as " collection of digital object (text, video audio)along with method for access and retrieval,(as far as users are concerned) and also for selection and maintenance (from the point of librarian) according to Lesk (1996) "a digital library is a collection of information that is both digitized and organized and which offers capabilities beyond those of the traditional library." Lynch and Grecia-Moline (1995), Fox (1995) has also defined digital libraries stating DL provides access to a very large organized information and knowledge repository. DL is a new way of carrying out the functions of libraries covering new type of information resources, new approach to acquisition, storing and preserving methods, developing networks, etc.

From these definitions it is deduced that DL is an extension to traditional library, and terms synonymously used are digital library, electronic, virtual library etc. The main concept behind DL is that, it is not a single library but a group of heterogeneous libraries and its collection is dynamic and accessed from users workplace and all library functions are automated using technologies. A digital library is not merely a collection of electronic information .It is an organized and digitized system of data that can serve as rich resources for its user community. The components of DL are different information sources published only in electronic or digital like technical data, numeric and graphical data, multimedia data, e-books and e-journals etc. In brief digital libraries supporting to the features like:

1. Providing access to primary and all types of information sources
2. Supporting multimedia content
3. Providing user-friendly interface.
4. Unique referencing to digital objects with hyper linking .
5. Supporting advanced search and retrieval.
6. Supporting publishing, annotation and integration to new information
7. Supporting both formal and informal learning.
8. Open Access facilities
10. Sharing of Information at any level
11. 24/7 availability
12. Economical generation and acquisition

This digital library or electronic library may not necessary be networked but contain digitized information along with print publications. Virtual libraries are without walls, spread across·the globe and search information through networked environment.

The objectives behind developing DL are :

-   Capture, store, and distribute information in electronic form
-   Provide existing services with enhanced concepts and initiate new services need based using digital information collection
-   Networking of libraries to achieve maximum resource sharing
-   Archiving collection for future generation

DL library is boon to information handling profession as access is provided through multiple searchable access points. Economic storage, acquisition and dissemination are few more benefits of DL.

3. Traditional V/S Digital Libraries:

Traditional libraries were performing best in the manual systems, but growth in information limited budgets, varied information needs do not perform the activities well and ICT changed the practices to support the user needs. An overview of comparison between traditional and digital libraries indicate the need of DL.

Thus it is noticed that digital libraries are boon to users. Varma and Srivastava(2003) has rightly pointed out the merits of the digital libraries as:

- Promote universal accessibility to information. Access to more information than traditional print media.
- Preserving rare books that are rapidly deteriorating due to over use and poor storage conditions.
- The e-books and e-Journals provides many access points and facility and provide multiple accesses through the campus LAN. Supports to multimedia content with increased manipulation of text and images.
- Saving the cost and manpower required for publishing
- One copy of the document could be viewed by any number of persons simultaneously
- Saving in space which is required for physical document
- It is a best tool for preservation of knowledge for heritage
- Support resource sharing among libraries

4. Pre-requisites for Building Digital Library:

For building digital library needs proper planning which covers IT infrastructure, digitization, information access, manpower, services, financial planning etc. There are two methods of building digital libraries one is extending or converting traditional library and another building direct digital library. It is a long term goal and planned properly with the help of committee. In planning factors like ICT infrastructure personal computers, Intranet (local network), software, digitization of information, data entry, information storage, information access, manpower development are to be considered (Lakshmi and Suma 1998) but now in addition to this digital information acquisition, collection development policy for e-subscriptions, new recruitments, library network planning, digital information based information services, user centric services are also to be considered while planning.

The requirements are analyzed and presented below.

4.1 Planning Stage -
- fixing policies for subscribing to e-resources
- proper utilization and distribution of budget and subscribing e-resources at economical method like joining consortia
- Identification and collection of contents to be digitized.
- Editing, formatting and storing of contents.
- Designing search engines to selectively search and access the contents.
- Publishing contents digitally for end user for quick access.
- Hardware (Servers & its Connectivity),

4.2 IT Infrastructure

Hardware Requirement	: Standard required
Operating System	: MS DOS (6.22), Unix, Windows 96
Library Automation management S/W	: LIBSYS or any other suitable library
DBMS	: FoxPro
Word Processing	: MS-OFFICE
Scanning	: Omini page Pro
Programming Language	: C++
Networking Operating System	: Novell NetWare or windows NT
Internal Tools	: Netscape, HTML
E-mail	: Supported by Internet provider

Separate server for library with the following configuration.

Server configuration – Windows NT server Pentium Pro, 64 MB ECC RAM, SCSI-II, Fast 2 GB hard disk, 14" SVGA mono monitor, SVGA card with 2 MB VRAM, Network Interface Card (Ethernet Card), 1.44/2.8 FDD, 2D/3D Graphics accelerator, 101 Key Board, 2 Serial and 1 Parallel Port.

Pentium	: 2 (for library functions—acquisition, Cataloging, serial control)
Pentium MMX	: 1 (for Internet services and multimedia applications)
Diskless terminals	: 4 (1 – Circulation, 2 – Catalog search for users, 1- librarian)
CD Server	: 1 (14 CD-ROM Drives)
Scanner	: 1
Printers	: 1 HP Laser jet. 1 No. Dot matrix

Backup device	:2 DAT
UPS	:1

4.3 Software
-Library Management (application) software (e.g. Libsys / Soul / etc.)
-Network software's (e.g .Windows NT)
-Digital Library software's (e.g. Koha, Dspace, Green Stone etc)
-Navigation software (e.g. Netscape, Internet Explorer, Mozilla)
-Page maker, Ventura, etc
-Adobe acrobat, Photoshop,
-Internet connectivity
-Antivirus Software's
-Spam Detectors

Other software's for protection and security, card swapping, fire and smoke detectors, power supply backup, Cooling mechanism etc are necessary to be considered and finally the digital Information resources.

4.4 Components required for the development of digital library :
- Technologies for the digital libraries
- Content for the digital library
- Standards for the digital libraries
- Digitization and OCR applications
- Preservation
- Digital Management Resources (DMR)
- Copyright issues
- Technical Issues
- Acquiring digital information resources
- Formats for the storage of information
- Security measures to protect the network

Apart from the above to develop DL, tools like scanners, digital cameras, movie cameras, voice recorder, high storage capacity units etc are also needed.

4.5 Impact of Digital Libraries:
a) User Community
b) Library professionals
c) Library Factions and Management
c) Library Services
d) Collection Development
e) Publishing Industry
f) Library Performance

5. Challenges for LIS Professionals:
In digital era, library and information professionals are facing many challenges to redefine their role and also redesign the information services. There is a marked shift from the need of information in academic quality to research organizations, industries as well as business houses today. The Library and information professionals have to gear up to face the user demands and changes in the profession. This is managed only through fundamental rethinking and radical redesigning of library process to achieve dramatic improvements in critical contemporary measures of performance such a cost, quality, service and speed etc.

The librarians and LIS professionals are facing the following challenges due to the technological developments.
- Technological challenges
- Challenges related to knowledge management and resource management.
- Service oriented challenges.
- Challenges related to preservation

5.1 Technological Challenges:

The different challenges posed due to computer technologies, advancement in processor and storage technologies, communication, media change like optical fiber, wireless technologies, multimedia technologies, network technologies, internet and web technologies. etc. faced by the library professionals.

5.2 Challenges related to knowledge management and resource management :

Management of information in the present era is very crucial and challenge to libraries. Managing information is complicated due to electronic information and varieties of storage media. Knowledge management and resource management is an important aspect in the present era.

5.3 Service Oriented Challenges:

Library and Information Science professionals are required to equip themselves to be able to work in a network environment and be capable enough to provide web based services as well. Under this category library services like Current Awareness Service, SDI , Reference are provided. Librarians and information professionals are now not only need to consult the computerized catalogue of his /her library but also the external sources through internet and other networks for providing effective services.

5.4 Challenges related to Preservation:

Preservation of variety of information sources both in print and digital media is necessary. Preservation and archiving is the important challenges for the LIS professionals. These mediums need a great deal of care from mechanical, humidity and dust.

6. Trends in Digital Libraries:

The trends in DL stated by Seaman (www.kc.tsukuba.ac.jp) are :

Digital Resource Management (DRM): Rajev (2012) discussed the concepts of DRM . DRM related to practice of managing data and metadata of digital resources obtained by digital information resource center. Due to centralization of resources DRM is more effective. Due to centralization of resources and access to it libraries are able to provide required resources to users. DRM also looks after streamlining of acquisition process of digital resources.

Use of DL for courseware systems : In many developed countries academic libraries have developed courseware systems, which helps teaching faculty to manage their teaching through course specific web sites or pages which supports to online discussion forums. e.g Blackboard and WebCT.

Web based Services: Arora (2001) described new dimensions in library services taking place due to digital resources and services provided using digital resources. The new web based services like webopac, virtual library tours, library map, library web site and links, library portal, FAQ, BBS are few of them.

Apart from this new developments noticed are patron validation, development of large databases, ownership access, just in time services from just in case, need based collection development from collection development, digital reference service, intermediary facilitator form information provider

7. Conclusion:

In digital library the role of librarian is changing from curator of information to information educator, information manager, information distributor, information analyst, information researcher, information broker, cybrarian, information consolidated etc. But the activities are shifting as role changes. There is a need to collect proper information at economical way and also organize the information resources systematically and provide value added timely services to the users from the collection. This is achieved when libraries become ICT tuned and redesigned to suit digital. Technology based libraries are necessary, developing DL at initial level it is costly but looking in to the benefits of DL later it is more economical.

References:

♦ Arora, J(2001) Web based digital resources and services : trends and Innovation. CALIBER 2001

♦ Fox, E A et al (1995) Digital libraries: Introduction. Communications of ACM vol 38(4)Apr.
♦ Lakshmi, R and Suma P (1998) A step towards developing a digital library. Library science with a slant to documentation and information studies. Vol 35(1) pp 25-36