CHAPTER - 1

INTRODUCTION

With the invention of printing in 1450, there have been many advancements in human life and information record, store and reproduction. It also developed photography and telephony. During the end of 20th century the beginning was mass production of digital information. New technology also enhanced the methods of information handling and digital devices, i.e. CD, CD-ROM, DVD, Pen drive etc. The information computer technology has been a mean of storage manipulating and modifying data. ICT has ability to communicate with others through communication networks.

Digital libraries are different with traditional libraries. These are more valuable or value-added libraries and opened up new doors for electronic access to information. Such libraries are also known as paperless, electronic, hybrid, gateway, virtual, digital library. The digital libraries are limited to websites and information storage. Digital libraries play an important role in creating literacy knowledge in community. The technology has urged the libraries to make drastic change in their functions. Library is an important media in higher education. It organise the information in a systematic and well structured way.

There are many elements which constitute a digital library:

(a) **Digital information:**

The information which is acquired through digitalised process is Digital information. The contents are in digital form. The digital library will need to span both in print and digital material. Digital contents may be in machine readable form or converted form from print format to e-print format.

(b) **Accessing:**

In digital library access may be intellectual, timeless, location less, coherent and boundary less and receive relevant current information. Digital library use such mechanism which access such information which is stored, organised and delivered in digital form.
(c) **User community:**

Digital libraries should be available to access information by academic community. It is a component of communities in which individual user interact with each other, using data and information resources. It also provides database services.

(d) **Library system:**

Digital library apply specific systems like retrieval system, distribution system and storage system and provide access to large collection of resources.

(e) **Services:**

The service aspect is an important element. Digital library provides storage, retrieve and disseminate information services. Digital library provides value-added services, i.e. access to full-text material in multimedia form.

(f) **Networking:**

Digital libraries have connectivity with networks using variety of networks including internet and www for access globally.

(g) **Organised information:**

Digital library organise information through institutional repository and consortium to manage information. The quality and ability of accessibility depend on organised information like indexing and abstracting services.

(h) **Search mechanism:**

Digital library should apply better process of retrieving, browsing and search mechanism. Users are given better search engines for normal or advance search.
(i) **Library staff:**

Digital library needs skilled staff as they handle computers, phones, video and audio, CD-ROM. It needs latest technology with library professionals. Digital library provides digital resources to be accessed by the users, which needs proper guidance and awareness to users.

(j) **WWW:**

Web is a powerful tool to search the information. It is an important component of digital library.

(k) **Databases:**

Databases are the group collection of information at one place or in one format like CD-ROM/DVD or other online databases which may be accessed through internet.

(l) **Metadata:**

It is an extended version of catalogue. It is defined data about data which attributes of resources. It is meaningful data which describes another data object. Its main functions are (i) facilitating identification (ii) facilitating location (iii) retrieving the data (iv) manipulation of data (v) using the digital objects, in internet environment. Metadata is used by digital libraries to organise information. Various standards have been developed for represent various types of information resources.

1.1 **DIGITAL LIBRARY IN ACADEMIC INSTITUTIONS:**

Due to emergence of information and communication technology, the traditional way and systems have been changed in the field of teaching, learning and research methods. It has also encouraged the library professionals to use ICT for modernisation of academic libraries and accessing the resources and providing library services. Internet and web
technology have been proved an effective tool to deliver or access information resources. Internet has been a media to the publishers to offer their publications for marketing of products mainly to scientists and technologists.

Electronic resources have become so popular that their impact on traditional libraries have been tremendous that libraries have prepared themselves to make provision of budget for either procuring information resources or converting print resources in electronic resources and accessing the web based online. Mainly the academic and research libraries are funding towards digital information services. These libraries are also acquiring digital resources and build their own digital collection.

Digital library is a centre of digital services and information which is a computer process and the library operations are also automated in housekeeping operations and also preservation of digital resources through digital technology. Digital information are not limited to textual information but also in other forms of clipping, audio-visual formats and other information seeking activities. Such libraries also disseminate information across the network and facilitate quick handling of information and provide user interface for easy use. Digital library is library in which access of available information is done electronically. It is an online system providing access to contents and services.

1.1.1 Need of Digital Library:

The main users demand is to access information of their choice, while the responsibility of library is acquire, store and process information in digitalised format. Today the information of printed form has become obsolete day by day and users are motivated and aware about electronic format through online i.e. internet and networks. This objective can be met by digital libraries, being significant and value-added services. No doubt print format cannot be thrown out of market but a solution may be searched to deal with, especially by converting print format in electronic format for quick delivery of information.

Moreover, digitalised resources are also cheaper than print format. The retrieval of information and dissemination of information process is also easy to provide specific
information to the customers. The other reason of need of digital library is the space saving, time saving, which has been possible due to invention of internet and web technology as a media of dissemination of information. Internet give online services and allow rapid access to large variety of information resources with uniform interface to large number of users.

The web is hypermedia based system and link information among the e-resources. It also conserves and preserves old, fragile and deteriorated documents of high scholarly value and making them available to accessibility. It also manage the information, organise it easily within a short space. Digital library reduce barriers of distance, easy search to location, timeliness and shared resources and content delivery.

1.1.2 Capabilities of Traditional and Digital Libraries:

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<tr>
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<th>Traditional Libraries</th>
<th>Digital Libraries</th>
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<td>3. Indexing</td>
<td>Bibliographical control.</td>
<td>MARC based cataloguing (Metadata).</td>
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<td>4. Search</td>
<td>Browsing through subject, author and title.</td>
<td>Through quarries or referral process.</td>
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<td>5. Retrieval</td>
<td>Circulation system and document delivery system.</td>
<td>Global access, download information with options.</td>
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<td>6. Storage</td>
<td>Stacks, shelf lists and weeding process.</td>
<td>Preservation and dissemination of information, i.e. E-resources.</td>
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<td>7. Protection</td>
<td>Library rules and regulations.</td>
<td>Intellectual property rights, licensing agreements</td>
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<tr>
<td>8. Services</td>
<td>Discrete, independent services.</td>
<td>Integrated form of online services.</td>
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However, digital libraries have following specific features to identify its significance.

1. Documents in digital format,
2. It facilitate immediate access,
3. Multiuser,
4. Meet the challenge of global resources.

1.2 DIGITAL RESOURCES:

There has been a strong move to digitalise the traditional resources in academic libraries. There is also heavy demand of the users to make all in-house resources available on internet and network so that these can be accessed. Such resources are Thesis, Annual reports, books and fragile journals, video courses, extension lecture, proceedings of seminars and conferences. University libraries have made efforts in this regard. Libraries are engaged in automation activities to seek the objectives of the organisation. There are many automation activities, i.e. CD-ROM networking, standard software, interactive websites, web based services, digitised reference service, OPAC service, web based access to full-text e-journals, virtual class rooms (Smart class) etc. In India the research and development in the field of Digital library is at initial stage. Ministry of HRD has provided funds to INDEST for online access facilities.

The present scenario of digital library world has developed softwares, hardwares and networking facilities. The more important creation is World Wide Web (WWW) which has captured the ground of digital world. Moreover, increasing popularity of internet and www technology has paved the new ways for speedy access to digital resources in academic institutions.

The digital library involve the following tools and resources:

1. **Computer infrastructure:**

   (a) **Hardware:**

   (i) P.C. latest configuration, i.e. Pentium II, III and IV;

   (ii) Laptop,

   (iii) Server,
(iv) Dot-matrix or Laser printer,
(v) Scanner (Flatbed, Handheld),
(vi) Multimedia projector,
(vii) Colour TV,
(viii) VCR/VCP (Video Cassette Recorder/Video Cassette Player).

(b) **Software (SOUL, LibSys etc.):**

(i) Database Management Software,
(ii) Open Source Software (Greenstone, DSpace etc.),
(iii) Barcode Software,
(iv) Oracle based software,
(v) IRIS Software (CD-ROM Networking),
(vi) OCR and other common softwares.

(c) **Acquisition digital resources:**

(1) CD-ROM Databases

(i) IEEE
(ii) INDEST
(iii) UGC-Infonet
(iv) LISA Plus
(v) BIS
(vi) Others

(2) Online Databases

(i) Full-text sources
(ii) Bibliographical Databases (Compendex, Inspec, SciFinder, MathSciNet, Open J-Gate, EBSCO consortia etc.)

There are many publishers offering electronic version of print version. There are also many new vendors offering new products and services. These agents also
work as aggregators like publishers, scholarly societies having their pricing model. Pricing models are many for subscription of e-journals (i) Subscription linked with print subscription (ii) Electronic subscription on campus licenses (iii) Bundled e-subscription (iv) Pay per book (v) Electronic version only (vi) Consortium license.

(d) Born digital datasets:

The digital material which neither analogue nor equivalent to converted material in digital form. In other word, digital form created by converting from print version or digital material which has been originated from digital source.

(e) Gateway to e-journals on web:

The portal or gateway direct the users to the holders of digital material. It also guide or provide its indexing and search services and it may be combine original resources. Homepage also provide an organised guide to e-resources.

(f) Conversion of print resources into digital format resources:

Libraries today know how to convert print resource into digital resource form.

(g) Networking:

With the development of information communication technology, University library and institutes access information. LAN, WAN technology are equally important for mining of digital library. Library should have fiber optics ATM network with connectivity with all departments through internet.

(h) Preservation of digital resources:

During 19th and 20th centuries library experts have much concern about the preservation of the cultural heritage of India, which was in print form. But the
last decade of 20\textsuperscript{th} century and the 21\textsuperscript{st} century was the change in preservation technology. Traditional techniques have been replaced by electronic technology. The major challenge and rapid obsolescence of the hardware and software required interpretation to digital information necessarily involves copying or transforming digital documents to run on current media, software, hardware and operating systems.

The libraries started and initialed to preserve digital resources for long term use by applying modern preservation technology. There are many approaches to preserve the e-resources, i.e.

(i) Electronic record,
(ii) Refreshing,
(iii) Reformatting,
(iv) Migration,
(v) System preservation,
(vi) Emulation,
(vii) Encapsulation.

\textbf{1.3 USER’S SERVICE:}

Digital library collection offer an opportunity to provide a large audience with new access to library collection and material. The digitisation of library material (text, images) can be made accessible online via the internet. The libraries create digital collection and web help in their search through search engines. Digital collection like images, audio-files, archives and non-text based resources are not easy to be searched by search engines, without direction of quality, textual description and subject indexing and other related description.

Digital library service should take into consideration meta tag handling of the search engines. It will also help the users to find those objects made available through digital collection.
(a) **Searching:**

It is one of the important services which is internal search systems, or tools. They help users to find the digital collection. Web search engines and indexing the contents is also important.

There are two access points of web search engines:

(i) Home page as main entry point,

(ii) Individual record in the collection, which is also accessible by search engines due to bandwidth concerns.

(b) **Linking service:**

The majority of the libraries follow search engines techniques. But more appropriate is linking techniques which are:

(i) Link between record and search engines,

(ii) Separate web page for individual entries,

(iii) HTML title element,

(iv) ‘add URL’ which some search engines do not have. Search engines are more likely to indexed and new URL where find link between ‘add URL’ from web pages that are already in their database.

(c) **Meta tag service:**

Meta tag help search engines in retrieving information. Meta tags appears in header portion of a web page. These are visible when viewing a web page. But Meta tags are less frequently indexed.

(d) **Web service:**

Web services are new emerging technology which expose internet hardware and software sources, i.e. wireless, mobile and pervasive computing.

(i) Web services are well contained,
Web services are self describing,

Web serving programming provides standard approach to problems.

1.4 OBJECTIVES OF THE STUDY:

The objectives of the study are:

(a) To identify different types of digital resources,
(b) To study the purpose of using digital resources,
(c) To access user’s opinion towards digital resources,
(d) To study digital services provided by University libraries,
(e) To suggest suitable measures to improve digital resources and services for the benefit of the users.

1.5 SCOPE OF THE STUDY:

The study will include all important Central University libraries of Northern India.

1. Delhi University : Library system, Delhi : DULSD
2. J. L. Nehru University library, New Delhi, : JLNLD
3. Jamia Millia University library, New Delhi, : JMULN
4. IGNOU library, New Delhi, : IGNOUN
5. AMU library, Aligarh, : AMULA
6. BHU library, Varanasi, : BHULV
7. Punjab University library, Chandigarh : PUULC

We have not included Central University of Haryana and Rajasthan as it has been established recently and in developing stage.

1.6 RESEARCH METHODOLOGY:

The study has used survey methods using questionnaire to collect data.

There will be two questionnaires prepared:

1. For librarian for collection of data.
2. For users (Faculty, Research Scholars, P. G. Students, U. G. Students) to collect data about library services provided to them.

The questionnaire will be distributed by mail to the librarians but, personally to users by approaching them to fill up the questionnaire to the best of their knowledge.

After collecting the questionnaire, the data collected has been analysed and interpreted in the form of tables and diagrams, to highlight the actual position of the library resources and services.

1.7 HYPOTHESIS:

The following hypothesis have been evaluated whether proved or null (disapproved) in the study:

(i) University libraries have sufficient digital resources,
(ii) University libraries are providing services to the satisfaction of the users,
(iii) The library staff is suitable to deal with users,
(iv) The libraries have taken all steps to aware and orientation of the users.