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Modern Library: An Overview of ICT Based Services
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Modern Library: An Overview of ICT Based Services

2.1 Introduction

It has been man's continual quest to be able to identify and record the wider portfolios of knowledge. The excavations which lead to the discovery of earlier civilizations also indicate the maintenance of records of administration and achievements as well as the techniques of preservation used by the early man of civilization. The purpose appeared to be posterity and not for dissemination of knowledge for the general public. Traces of repositories of knowledge have been reported during the Indus valley civilization. However, proliferation of libraries took place after the Public Library act was passed in the United Kingdom in 1850.

The daybreak of the twentieth century has witnessed changes in the administrative set up of libraries and now it has started becoming technical in outlook and humane in approach. People came to know the importance of knowledge and its use in the overall growth and development of a nation. Libraries are now no longer simply the libraries, but these are known by various names such as documentation centers, information centers, knowledge repositories, etc. and accordingly the professionals are known as Documentalists, Information Scientists, Knowledge Managers etc. Apart from this, the era of 'Internet' has changed the overall perspectives of libraries. Today libraries are coming out of their four walls to the doorsteps of its users.

Advent of Information Technology has drastically changed the shape of the libraries with regard to their collection and services. Today, we are dealing with multiple forms of information/ knowledge which may be in print, electronic, audio, video, e-books & e-journals available online and offline. The phenomenon has led to the development of Digital Libraries and Virtual Libraries. A digital
library is an organized collection of digital documents along with the allied services on the web, that are available to geographically dispersed users without the location and time barrier. A digital library is a real library since its collection is organized, selected and well presented. Its documents are processed and administrated and their access can be controlled. On the other hand, a virtual library is a library where documents are virtual, i.e. without a stable support. The virtual libraries are fundamentally websites that provide links to internet based e-resources. The holdings are found in electronic stacks. It is a technological mode to bring together, both internal and external resources of various libraries and information services at one place. They are more like an index of relevant specially selected links to web-based resources. The only matter that differ virtual libraries from digital libraries is the physical existence of digital libraries.

Apart from that, the phenomenon of ‘Open Access’ has emerged by the turn of the 21st century. With the result, a lot of open source software platforms for developing digital libraries as well as for automating library procedures are available freely. As a sequel to this phenomenon, institutions wish to put all their publications on the web to increase their institutions’ visibility, giving rise to the concept of ‘Open Access Repositories’ that emerged by the turn of the century.

Open Access Repositories are digital collections of scholarly articles that have been self archived by their authors. Open Access Repositories may be institutionally-based, or they may be centralized or subject-based collections. Institutional repositories are digital collections of the scholarly output created within a university or research institution. Even as the purpose of repositories may vary, in most cases they are established to provide Open Access to the institution’s research output. The concept of open access repository has established its roots in developed countries, but it is however still in its infancy in developing Nations.
2.2 Origin of the word ‘Library’

The word library is derived from a Latin word ‘LIBER’ which means ‘Book’. The Library used to house a collection of clay tablets, papyrus and scrolls long before the concept of the book emerged. An individual cannot afford and maintain all the scholarly resources needed by him/her for assistance in research and other scholarly works. Hence, the concept of library came into being. Today Library implies, a body of recorded information brought together to provide right information to the right user at the right time. A Library is an organization that selects, collects, organizes, conserves, preserves and provides long term access to information.

According to Oxford English Dictionary, Library is “a building, room or a set of rooms, containing a collection of books for the use of the public or of some public or of some particular portion of it, or the members of some society or the like; a public institution or establishment, charged with the care of collection of books and the duty of rendering the books accessible to those who require it”. (“Library”, 1989)

According to Prytherch, Library is “a collection of books and other literary material kept for reading, study and consultation. A place, building, room or rooms set apart for the keeping and use of a collection of books. etc.A collection of films, photographs and other non-book materials, plastic or metal tapes and disks, computer tapes, disks and programs. All of these, as well as printed and manuscript documents, may be provided in departments of one large library or they may be collections restricted to one type of material”. (Prytherch, 2005)

Collins English Dictionary & Thesaurus defines Library as “a room or set of rooms where books and other materials are kept. A collection of literary materials, films, CDs, etc., kept or borrowing or reference. The building or institution that houses such a collection: a public library”. (“Library”, 2000)
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Ranganathan\(^1\) (1961) defines library as "a library is a public institution or establishment charged with the care of a collection of books, the duty of making them accessible to those who acquire the use of them and the task of converting every person in its neighborhood into a habitual library goer and reader of books."

Sharma\(^2\) (1992) defines "A library is a place where the greatest creation of the greatest creation are housed in an organized way for the use of one and all."

Arns\(^3\) (2010) describes "While generally defined as collection of materials organized so that they may be easily identified and used by an individual or group, libraries have actually taken many forms over time, reflecting the cultures in which they are embedded and propelled by technological innovations and social currents."

2.3 Traditional concept of Libraries

The precise origin of libraries is difficult to trace, although excavations made by the Archaeologists gave the hints of some particular libraries on certain locations. The earliest ideas about libraries emerged when the invention of language, however symbol, was used for writing. Consequently, the interest to preserve the records for future generations was developed. The library thus, meets a vital social obligation by gathering accounts of the human experience. The growth and development of libraries may thus, be categorized broadly into the following three groups as:

- Ancient libraries
- Medieval libraries
- Modern libraries

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2.3.1 Ancient Libraries

The ancient period was the era of intellectuals. The early man had just invented speech and writing and there was a curiosity to preserve the written records for future use. The creation of archive rooms what we call as libraries today, possibly began with the Sumerians who flourished during the fourth millennia B.C. in the region of Mesopotamia. During the seventh century B.C. king Ashurbanipal (669-633 B.C.), the ruler of ancient Assyria had established a great library in his capital city called Nineveh. The library had emerged as an encyclopedic collection of human knowledge and researches have shown that there was a proper library classification system (probably the first) which existed to organize and accommodate writings. The growth and development of ancient libraries is at its height in the epoch of ancient Greeks, who had great interest in literacy and intellectual life. They expanded the taste of collection of books and erected a number of Greek temples that featured libraries. These libraries were well established organization systems. The fascinating thing about the system was that it somehow was akin to the cataloguing system, presently found in the Library of Congress, United States (Arns, 2010).

The ‘Royal Library of Alexandria’, in Egypt founded by Ptolemy I in the third century B.C was the most significant library in the world. It was basically a museum accompanied by the library opened to those who had proper scholarly and literary qualifications (Irwin, 1968). The library became the premier site for the learning and scholarship. “The famous Greek poet and scholar named Callimachus (310/305 BC-240 BC) produced a bibliographic work based upon the holdings of the Library of Alexandria, called ‘Pinakes’ in 120 volumes, one of the first known documents that lists, identifies, and categorizes a library’s holdings”¹. Another considerable library was established by Attalus I (269-197 B.C.E.) and his son Eumenes II (197-159 B.C.E.). Later on, its volumes were absorbed into royal

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library of Alexandria. By the middle of the second century B.C., the Roman Empire came into existence. The Romans not only showcased the importance of books at home, but also expanded the concept of the library by creating their version of the community-center (or public) libraries. A significant contributor to the ancient Roman library was the wealth of the people of Rome. Learning was a big deal and more interesting thing was that the 'Learned men' were eager to impart their knowledge. The Roman’s eminent scholars like Cicero and Seneca had created large private collections. The Roman king Asimius Pollio had established a great public library in Rome. The library was divided into two sections, one for Greek and one for Latin, which served as a model for subsequent Roman libraries. Arns (2010) noted that “the emperors named Augustus, Tiberius, Vespasian, Trajan and Hadrian had all established libraries in Rome during the first two centuries. Trajan’s Bibliotheca Ulpian served as the Public record office until the fifth century. Much of the interior of the Trajan’s library is still found today. The Byzantium Emperors, Constantine (280-337 C.E.), Julian (331-363 C.E.) and Justinian (482-565 C.E.) established scholarly libraries at Constantinople”.

In South Asia, the Aryans had established themselves in the Indus valley during the middle of the second millennial B.C. They had promoted the growth of Jainism and Buddhism religious movements with sacred rules. Libraries were also emerged to organize and preserve this ample literature. In China, the Han emperors encouraged the writing of literature and developed a painstaking record keeping culture. The classification system created by Chinese is a seven part scheme that organized knowledge into seven groups. Later on, this classification scheme was revised and appeared in four parts such as:

Classics, History, Philosophy and Miscellaneous works

With the fall of the Roman Empire, libraries of the ancient period also came to an end, but the efforts of countless scribes and copyists over the centuries had
made possible the preservation of intellectual heritage from the ancient world which became the landmarks for the subsequent generations. (Arns, 2010)

2.3.2 Medieval Libraries

As the time progressed, the society got chaos with the decline of the ancient libraries. The next era was dedicated to the preservation of knowledge. The traditional libraries of this phase were typically created and maintained by religious groups. With the advent of Christianity, Christian monastic libraries emerged throughout the Eastern and Western Europe which were overseen by learned monks. Monasteries were provided space for the library and for the Scriptorium where copyists carried out their expertise to obtain the copies of the manuscripts. The format of book had changed both in structure and in type of surface upon which words were written. The scroll was changed to codex and the papyrus was transformed into parchment and vellum. The term ‘Librarian’ came out to denote the one who worked with books in an organized collection.

“The first important library of the church was established by Origen and Pampheas at Caesacea in around 250 AD. In the West, Church libraries were documented by St. Jerome, St. Augustine and Paulinus of Nola. In the early middle ages St. Benedict of Nursia (c.a.480-547) had established rules for transcribing and maintaining manuscripts and general guidelines for library maintenance which later on modified by Flavius Aurelius Cassiodorus (502-597). These rules existed for the next several centuries”¹. The Carolingians and imperial patronage in Visigothic Spain and Ostrogothic Italy maintained libraries which were dedicated to the preservation of the ancient Latin and Greek works. The diligent monks had painstakingly copied numerous classical writings, thus preserving the wisdom of the ancient world. In the Eastern Empire, Diocletian (245-312) and Constantine (280-337) had encouraged the creation and maintenance of imperial libraries at

Nicomedia and Constantinople. The Justinian (527-565) had compiled famous code of laws and Photius of Constantinople (820-893) regarded as influential reference work named ‘Myrobiblion’. The Myrobiblion was the classified abridgment of 280 works. In the Byzantine era, over the centuries, it became the common practice for imperial and cathedral libraries to organize and preserve collections that included secular as well as religious works. In the medieval period libraries were reported to exist in great cities and in small villages. (Arns, 2010)

Meanwhile, in the south from the sand of Arabia, another vibrant civilization came out which is also based on the importance of books i.e. Islam. The holy Book Qur’an encouraged the acquisition of learning and knowledge and it was essential for Muslim scholars to maintain a private library. In due course of time, many small libraries were absorbed into larger Mosque libraries. “The most famous library of the time was that of al-Azhar in Cairo, founded in the ninth century. In the early 800s, the Dar-Al-Hikmah (House of wisdom) was established in Baghdad under the Abbasid Caliphate. The other most important Islamic Library was the court library of the Umayyad rulers of Cordoba, Spain (750-1031)”1. The sound growth of Islamic libraries continued under Seljuks (1037-1300) and the Ottoman Turks (1299-1923). A number of libraries were constructed and opened for public by the end of the first millennium. The Muslim scholars had translated Greek and Latin manuscripts into Arabic, thus preserved them for the future use. The Muslims also acquired knowledge of Chinese papermaking and transmitted it to the west.

During the eleventh and the twelfth centuries, production efficiency was on the rise and hence it reduced the cost of books. As a result, libraries were able to acquire more volumes. The monastic libraries had reached the apex of their achievement in the twelfth century, after which a gradual decline was set in. In the thirteenth and the fourteenth centuries the place of monastic libraries was taken by

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the new Universities such as Bologna, Oxford, Paris and Cambridge. These new Universities had set up their own libraries which played an important role in obtaining duplicate and cheaper editions to distribute freely to their young scholars and also keeping extra copies for preservation.

In the fourteenth century, Vatican librarian Bartolommeo Platina (1421-1481), during the Papacy of Sixtus IV had reorganized the collection of Vatican Library which had been repeatedly sacked by Rome’s invaders. In the later middle ages, the Libraries had begun to flourish in the royal residences of kings. Arns (2010) reported that “the French King Charles V had installed a library on three floors of the Louvre, which later became ‘Bibliotheque Nationale’ [national library, Paris]”. The Kings had spent much to obtain books for their royal libraries and consequently princely collection had emerged in the distributed fashion. Henry VI of France had donated some of his private collection to the Kings College in Cambridge. Resources of these libraries further enriched research libraries in the later era.

2.3.4 Modern Libraries

2.3.4.1 The Seventeenth and the Eighteenth Century

Seventeenth and Eighteenth centuries known for scientific revolution mark a golden phase for all kinds of libraries. By the mid of seventeenth century, value of information for research had well-established. In fact by the turn of seventeenth century, two kinds of libraries appeared on the scene. They are personal/private libraries and libraries of government institutions.

In France, Gabriel Naude (1600-1653), director of Juleus Mazarin’s Private Library wrote a modern treatise that laid the foundation for arranging and managing libraries. He led emphasis on the organization of documents by subject.
to serve scholarly interests. Later on, "Mazarin’s library was open for public in 1691 which formed the basis for Bibliotheque National".  

Among major libraries that appeared in the early seventeenth century was the Bodleian Library at Oxford University (1602). In addition to Bibliotheque Nationale and other national Libraries were also emerged during this period. August, Duke of Braunschweig (1579-1666) founded his library in 1604 that later became the Herzog August Bibliothek at Wolfenbuttel, one of the finest libraries in Europe. A library assembled by Friedrich Wilhelm of Brandenburg was established in 1659 and later became the Prussian State Library. The British museum in 1753 came out by merging the private collections of Sir Hans Sloane (1660-1753), Sir Robert Cotton (1571-1631), Robert (1661-1724) and Edward Harley (1689-1741); it was further enlarged by the addition in 1757 of the British Royal Library, containing books collected by the kings of England beginning with Edward IV (Arns, 2010).

In due course, some valuable libraries emerged in America e.g. the University libraries of Harvard, Princeton, Yale; the New York Public Library; the Library of Congress and the American Antiquarian Society. Meanwhile in North America, the movement of social and subscription libraries was underway. Benjamin Franklin (1706-1790), a scientist and scholar had established the library company of Philadelphia in 1731. By the mid-eighteenth century social and subscription libraries were established in Europe. In the Far East, the Qing Dynasty reigns of K’ang Hsi (1662-1772) and Ch’ien-lung (1736-1795), had issued instructions regarding proper maintenance of imperial library. Western works on science and astronomy were translated and added into the imperial library. Ch’ien-lung’s Four Treasures Library was the greatest contribution to China. It had the collection of 36,000 volumes in Chinese, Philosophy, History, Literature and other subjects. Social libraries that were established during

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eighteenth century demonstrated the value of reading to sophisticated citizenry of the times and became the predecessors to the present tax-supported free public libraries.

2.3.4.2 The Nineteenth and the Twentieth Century

In the early nineteenth century, two major developments took place, viz concept of free public libraries and establishment of National libraries. Consequently, a few national libraries such as those of Lisbon (1796), The Hague (1798), Washington, DC (1800), Budapest (1802), Buenos Aires and Rio de Janeiro (1810), Oslo (1811), Santiago de Chile (1813), and Reykjavik (1818) came into being (Arns, 2010). The National libraries had gradually assumed the role of keepers of the cultural record as well as leaders in organizing collections and services. They were also entrusted with the training of library staff.

Around the turn of the nineteenth century, libraries had grown in size, but their growth had been messy, administration had become weak, standards of service were almost nonexistent, funds for acquisition tended to be inadequate and organization of collection lacked proper methods. Despite all this, the University library at Gottingen, Germany was a remarkable exception which took library functions fully beyond custodial and scholarly interests.

By the middle of the nineteenth century, new ideas of the purpose and scope of learned libraries were taking shape everywhere. Within few years, the scenario of library services had changed. Antonio Panizzi (later Sir Anthony), who began working for the British Museum in 1831 had updated library administration. He observed the importance of a good catalog and to this end elaborated a complete code of rules for catalogers.

Meanwhile, the public school movement led by Horace Mann, Henry Barnard and others had gained momentum and the benefits of extending public education provided an influential argument for the establishment of free public libraries. In 1850, Public Library Act was passed in England to enable local
councils to levy a rate for the provision of free library facilities. By the end of the nineteenth century, a separate section for children had also been added in public supported libraries. (Arns, 2010a)

The Twentieth century had resulted in the liberalization of ideas. Libraries experienced a dramatic growth after World War II. The ideas of John Stuart Mill, who had elaborated John Milton's idea of 'free press', heard in official documents of library practice in democratic societies. The society in the twentieth century had turned into the information society, hence special and research libraries emerged all around the world, which served as the vital part in the enhancement of Research & Development (R & D) activities and led the nations to improve their cultural and educational society.

The growth of R&D activities sought new ways of communication and made the library an essential and popular institution in the society. There was a gradual change in the functioning of libraries from 'closed access' to 'open access'. The idea of bibliographic control of library's holdings had developed over the centuries culminating in today's policies and tools for classification and complementary means of bibliographic description. Arns (2010b) describes some of the landmark developments that had taken place for proper functioning of libraries in the area of library cataloguing is 'AACR' (Anglo American cataloging rules), which was developed in 1967 and revised as 'AACR 2' in 1988, 1998, 2002. In 1974, standard for monographic description ISBD (International standard Bibliographic description) was developed and applied to non-book materials. Besides, a number of classification schemes were developed to facilitate location of documents in a specific library such as Dewey Decimal Classification by Melvil Dewey(1876). The library of Congress (LC) had developed its own classification system, Colon classification was devised by S.R. Ranganathan (1933) etc. In the pioneering days, libraries were only meant for posterity and preservation of records, but the system had gradually changed. Now with the preservation of
records, access to information had also become important. By this time, Libraries had developed as the intellectual workshops to serve the purpose of higher learning.

2.3.4.3 Libraries of the Twenty First Century

The innovative environment obtained by the advent of information and communication technology is the outlook of this century. Libraries today look enormously different as compared to the previous ages. The biggest challenge to libraries in the twenty-first century is to balance traditional roles and services with the new roles and services afforded by digital information technology. It has opened a new range of services, created new population of users and made possible new modalities for carrying out the unchanged mission of libraries to support learners of all kinds.

To keep pace with the fast occurring changes, new technologies are developed to store the treasures of knowledge in the form of magnetic tapes, optical fibers, computerized databases, compact discs, microfiches, microforms, online information retrieval systems, etc. Now a huge amount of knowledge can be packaged in a very tiny microchip or magnetic tape. CD-ROM databases containing valuable knowledge and the same can be distributed to the end users. Adaptation to electronics by the libraries offers opportunity for the upheaval of the libraries from the traditional to the modern as well as advancement of services provided to their users. E-publishing of books has reduced the span of time required for publishing. Today multiple books can be converted into electronic forms and stored into tiny electronic devices. This technical change has changed the set up of libraries. Libraries are now called by the names as electronic libraries or hybrid libraries, where besides manual systems most of the work is done by computers and where with print form of documents, electronic materials are also kept in the libraries for the users. In the 21st century more scientific and more organized reference services are being provided. Information services such as
Abstracting and Indexing services, Compilation of bibliographies, Online services such as Online Information Retrieval Systems, Online Public Access Catalog (OPAC) also came into existence. The style of services is totally electronic. Libraries are being computerized or automated to perform the various housekeeping functions and provision of services to their users in the minimum possible time, thus saving the time of the users and keeping pace with the contemporary needs. The 21st century is the era of networked libraries. With the advancement in the information technology, networking of libraries is being done increasingly to share the resources among libraries, so that the required information may be accessed while residing or working in any part of the world.

At the same time the concept of Digital Libraries came into existence and initiatives had been taken globally to establish and develop Digital Libraries. The Digital Libraries seemed very beneficial to the users, as they can go online to locate, order and retrieve the required documents without leaving their workplace. The origin of Digital Libraries make the work much easier, quicker and it also overcome the geographical as well as time handicap. Users can visit the Library anytime, residing anywhere on the globe via internet.

Although the development of Digital Libraries signifies that users do not have to go to a building for some kinds of information, they still need assistance in locating the information they require. Hence, the concept of Libraries and Librarians as well can never be demolished.

2.4 Role of ICT in Libraries

Libraries which earlier used to be considered as the storehouses of knowledge, are now shifting their role from the custodian of traditional information resources to the provider of service oriented digital information resources. The introduction of ICT in the libraries has made a tremendous improvement and has changed almost all the functions and activities of libraries. The libraries which were performing all their operations manually with so much of
exertion and strain, are now being carried out easily, smoothly, expeditiously, effectively and pin pointedly.

Information and communication technology (ICT) can be defined as the integration of computing, networking and information processing technologies and their applications. ICT comprises of two major technologies i.e., Computer and Communication technologies which are also known as 2Cs. Computer technology is used for digitizing and processing of information whereas Communication technology helps us to transfer and disseminate this digital information to the end user. Computerization of libraries or automation of library activities is going faster and faster to keep pace with the advancing world. As this is the era of information explosion wherein it is difficult to store, preserve and process all the information and disseminate it pin pointedly & exhaustively to satisfy the user needs manually. ICT provides the solution for all these problems. E-journals, CD-ROM databases, online databases, e-books, and web based resources and a variety of other methods of information and communication are used to satisfy the diverse requirements of the users.

2.4.1 Use of Computers in Libraries

Computers were introduced in libraries in early 60s especially in developed countries. In fact the experimentation to automate library activities started mostly in Special and University Libraries. In 1970s computers not only performed the routine tasks of the library but also they were networked for the purpose of resource sharing. By the end of first decade of the twenty first century computer is being used in libraries to perform various functions.

2.4.1.1 Library Automation

It means the application of machines to perform different routines, repetitive and clerical jobs involved in the functions and services of libraries. Computers are used in libraries basically to perform two types of operations:
1. **Housekeeping operations**: These are those functions or tasks which are done in the background of a library so that it may fulfill its goal of 'service to the users'. The housekeeping operations include acquisition, cataloguing, classification, bar-coding of the source materials as well as serial control. In an Automated library, these functions are performed by computers.

2. **Information Retrieval**: Information Retrieval deals with the techniques and processes of representation, storage and retrieval of information pertaining to source materials which can be documents, serials, microfiche, microfilm, CD ROM/DVD ROM databases etc.

   Besides, the automation of libraries has made various library and information services very simple and economical. It has also made the CAS (Current Awareness Services) and SDI (Selective Dissemination of Information) services for the users very easy and active and many queries and demands of the users are fulfilled by it.

2.5 **Internet in Libraries**

   The internet is an umbrella term under which different networks, small and big, freely exchange information all over the globe. Hence, the Internet can be defined as a worldwide network of computers communicating via protocols. The internet has become a vital part of library environment today. It has transformed and completely changed the overall outlook of the library system and the way in which we view the library resources and services. With the help of web based library services, users can access the library resources round the clock and across the globe. The internet provides instant access to billions of information sources which include e-books, e-journals, sound and video recordings and a variety of other sources. It also provides links to various library sites. The internet has integrated nearly all library activities ranging from housekeeping activities such as selection of titles, ordering of books, payment of bills, circulation, technical processing of documents, to information retrieval and document supply services.
Libraries create their own websites to keep abreast their users about various products and events. A range of services such as bulletin board services, ready reference services, e-mail services, bibliographic database services, etc. are also provided by these library websites. Web OPAC helps the users to locate the library resources residing anywhere on the globe. Various other web pages can be created by libraries such as library portals, library blogs, gateways, etc. which provide useful information to the users.

2.5 Online Services

2.6.1 Content Alert Service: The library can provide the Article-Alert service to its users by downloading e-journals in which some of them are available freely and can be uploaded on to the intranet. Elsevier’s Science Direct is an example of this kind of service. The other major publisher, who provides Alert services (like ASAP Alert and Table of content Alert), is The American Chemical Society (ACS).

2.6.2 E-Translation Service: Most of the important scientific and research output is available in non-English languages which is also of utmost importance for the Scientists, Researchers, Engineers, Managers, Doctors, etc. To make available this foreign literature, libraries provide them translation services. Now translation service has also become automated in view of the emerging electronic environment which is termed as E-Translation service. Some software systems are also available which can translate the text from one language to another.

2.6.3 Web-OPAC Service: In the digital environment, library holdings are not only confined to library premises but it can be made available for the global access via the World Wide Web. Regardless of physical location, information is always at the fingertips of the users whether they are homebound or a remote student. Web OPAC provides full searching options by author, title, subject, keyword and browse and many other functions through full customizable options.
2.6.4 Audio / Video Services: Libraries provide audio video services to serve the purposes of the users. Audio/ videocassettes/ CDs can be loaned as well as accessed within the library to their users. Mainly these services are provided to disabled users. Certain print books are accompanied by Audio/Video CDs to serve users better.

2.6.5 Online Reference Services: Now a days reference services are also provided online via e-mails or FAQ's through library website. Users can post their queries through email and library provides appropriate solutions to their queries. There are various online reference resources on the Web. Library make use of them for the benefit of its users. Some of the online reference services are as follows:

- **E-mail Reference Service**: e-mail is the best way to provide reference services to the users. Some modern libraries have maintained the E-mail services. These are the personalized service in which user individually contacts the reference librarian via E-mail while the librarian provides answers to their queries in the best possible way.

- **Chat- Reference Service**: In this service, the user does not wait for the answer to the query. A growing number of libraries are now launching chat reference services. Libraries use sophisticated software systems for the online interaction between the user and reference librarian to make chat reference services more rich and useful.

- **Video- Reference Service**: This is also a kind of reference service less successful than the above two. A reference interview can be conducted through video conferencing and user can get appropriate answers to their queries.

- **Online search Services**: Libraries provide various online services to cater to the information needs of different user categories. The online search services of the library provide access to a wide range of databases which
supplements the databases searchable through library catalogues or library websites.

2.6.6 Current Awareness Services (CAS)

Current awareness service is provided by the libraries in anticipation of the demand to keep abreast their users with the new arrivals in the libraries. CAS is provided in the form of Routing of journal contents, Research in progress, bulletin boards etc. Now these services are provided through computers.

2.6.7 Selective Dissemination of Information (SDI)

H.P. Luhn in 1961 proposed a project to use computers in the provision of Current Awareness Services (CAS) and Selective Dissemination of Information (SDI). Selective dissemination of information is the service that provides on demand, the exact tailored information to their users. SDI service has four phases that are Selection, Notification, Feedback and Modification. It is for scientists, researchers, managers, who have very less time and cannot waste their time in literature searching to get the required information. There are three types of SDI:

- **Batch SDI**: It is known as offline SDI. In this service requirements of many users are combined together in batches and then the database is searched.

- **Online SDI**: In this type inverted files are used which provide direct access to any portion of the file.

- **CD-ROM Based SDI**: In this, the required information is searched from the internet, downloaded on CD-ROM and distributed to the required users in offline or online mode.

2.6.8 Bibliographic Database Services

These services would enable library staff to search bibliographic databases developed by different information centers. In order to disseminate the current
information and retrieve retrospective information, there are three types of bibliographic databases\(^1\) given as under:

1. Retrospective database in core areas built on the computer facility at the sectoral and other information centre: These databases comprise bibliographic citation abstracts of world information on magnetic tapes which are acquired from foreign databases producers as well as locally produced machine readable databases of Indian bibliographic information.

2. Retrospective database in peripheral low users: there are no usage areas available through international search Systems like DIALOG, BRS and ESA which can be accessed through appropriate gateways.

3. Retrospective database on CD-ROM for secondary information: they are available for useful and thrust areas from which service could be generated nationally.

Some examples of databases in various fields in core areas are as follows:-

**Science and Technology:**

- CA search for chemistry
- BIOSIS for biological science
- INSPEC for Physics and Engineering
- COMPENDEX for engineering
- MEDLARS for bio-medicine
- AGRIS for agriculture
- GEOREF for earth Science

**Social Science and Humanities:**

- Sociological Abstracts for Sociology
- ERIC for education
- INFLIBNET is the regional level unified database which captures all forms of information

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2.6.9 **Subject Gateways:** Subject gateways offer sets of webpages that includes lists of links to resources on a defined subject area. These provide easy access to resources on a particular subject. According to Place (2000) “Subject gateways are Internet-based services designed to help users locate high quality information that is available on the Internet. They are typically, data bases of detailed metadata (or catalogue) records which describes Internet resources and offer a hyperlink to the resources.” The subject gateways are meant to assist the users locating relevant and high quality information on a defined subject. There are number of subject gateways available on the web for different subject areas such as Subject Information Gateway in Information Technology (SIGIT), INFLIBNET subject gateway on Indian electronic resources (INFOPORT) etc. SciGate: Science Information Portal (IISc), AeroInfo: Aerospace Virtual Library (NAL) etc are some of the open access subject gateway services.

2.6.10 **Web Portals:** A portal is a Web site or Web service that provides information content to serve a specific community such as a community of cancer research. Web portals allow individuals to receive news, find and talk to one another, build a community, and find links to other Web resources of common interest. Library portals are basically the subset of web portals that serve specific academic research communities. These provide links to an institution’s resources by listing them for users and creating a direct link to the native interface of each resource (Sadeh & Walker, 2003). Biotech Portal @ IIT Delhi, Library Portal @ IIT Kharagpur are the examples of Library portals.

2.6.11 **Blogs:** Blog, short for Weblog, is a Web site that contains brief entries arranged in reverse chronological order. Blogs are of numerous types ranging from personal diaries to news sites that observe developments on anything from Outer Mongolia to copyright law. A blog can be created individually or by group or community. Libraries are seeking blogs as a means to market library resources. (Fitcher, 2003)
2.7 Electronic Books (E-Books)

E-Books or Electronic Books, constitute the new trend in the world of paperless media. These are available on CD-ROM or on Web. E-Books are defined as ‘a term used to describe a text analogous to a book that is in digital form to be displayed on a computer screen’. E-Books offer significant advantages to the reader as it can be easily accessed anywhere at any time. It is possible to download many e-books to Personal Digital Assistants (PDAs) or other handheld devices making them truly portable and redistributed for non-commercial use. (Secker, 2004)

E-Books are very beneficial from the perspective of libraries because unlike print books they don’t not require shelf space. There are many publishers who are offering E-Book services to the libraries or directly to the public. “Michael Hart at the University of Illinois started a project for the free availability of E-Books in 1971, under the name ‘Project Gutenberg’. But it gained momentum only in 1991 and was the oldest project in the area. Some other sources are also offering free e-Books such as, the electronic text center at the University of Virginia established in 1992”¹.

Some commercial E-Book services are given as under:

- **Netlibrary**: It is found to be the first e-book service launched in 1998 by OCLC. It offers services to academic, public, special and corporate libraries. Netlibrary has the e-books from publishers such as McGraw Hills, IT Press and Oxford University Press. “On 17th March 2010, this service of OCLC had been taken over by EBSCOhost, the comprehensive integrated eBook and database service. Now NetLibrary is discoverable through the EBSCO host platform and WorldCat.org as well”².

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- **Questia**: It came into existence in 1999. It has been called the world’s largest online library of e-books. It gives the facility to search at no cost to locate books and journals. It also offers other facilities to students such as to make notes in books they own, create personal bookshelves and create formatted footnotes and bibliographies using a variety of citation styles etc.

- **Amazon Kindle e-books**: It allows uploading e-books from Word docs to the Amazon Kindle reader sales program. Amazon now offers a Kindle program to allow anyone to read a Kindle e-book via the web.

Besides, many other free e-book services are available such as Get free e-books, NewFiction.com, Lending Library, etc.

2.8 Electronic Journals (E-journals)

Electronic journals have brought the revolutionary changes in the world of scholarly communication. The e-journals are simply serial publications, which are made available in electronic form by two media CD-ROM and Internet. Nowadays, most of the publishers are publishing both versions of the same journals, print as well as electronic journals. Some publishers such as Sciencedirect.com, Blackwell synergy, etc. offer online journals only.

Two versions of E-journals currently in the market are:

i. Offline CD-ROM version

ii. Online or Internet based journals

Many libraries are acquiring **CD-ROM versions**. CD-ROM has a very high storage capacity. Many users can share the same data via networking at a single bit of time. **Online or Internet based** journals are those, which are provided through online hosts such as DIALOG online, MEDLARS, etc. The main advantage of these journals is that they provide timely access without any delay.

Online or Internet based journals are of two categories such as **Classic E-journals** or **Internet E-journals**. These are originally distributed via web. Classic e-journals are available free of cost and were initially distributed through e-mails.
Others are Parallel E-journals that come with the print journals. These are simply an e-form of the print journals and contain the full text of the journal.

2.8.1 E-Journal Consortia

Rising cost of journals and dwindling library budgets are the main problems due to which many libraries are unable to buy all the required journals for their users. Thus libraries are now adopting a new way of sharing resources to overcome this problem in the academic interest of the users. This new trend is called as "consortium" of libraries to achieve common objectives. Library consortia aggregate libraries in order to share and benefit from the collections of their e-resources.

Merriam-Webster dictionary defines a consortium as "an agreement, combination, or group (as of companies) formed to undertake an enterprise beyond the resources of any one member".

Consortium is all about the sharing of resources and improving access to information. It is a coordinated and cooperative effort of two or more information agencies bound with the formal agreement for sharing E-journals and achieving mutual objectives. Publishers are also finding it easy and convenient to transact with the group rather than communicate with individual libraries. Apart from the licensing of electronic resources, Library Consortium provides many other facilities including union catalogues, cooperative collection development, digitization, preservation, shared human resources and also shared expertise.

Some prominent library consortia that are functional in India are:

2.8.1.1 CSIR Library Consortia (Council for Scientific and Industrial Research): Also known as National Knowledge Resource Consortium (NKRC) came into existence in the year 2009 by National Institute of Science Communication and Information Resource (NISCAIR). It is a network of libraries and information centers of 39 CSIR and 24 DST institutes. Today, NKRC facilitate

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access to 5,000+ e-journals of all major publishers, patents, standards, citation and bibliographic databases. Apart from licensed resources, NKRC is also a single point entity that provides its users with access to a multitude of open access resources. (CSIR, 2013)

2.8.1.2 UGC-Infonet Digital Library Consortium: UGC-Infonet E-Journals consortium initiative was undertaken by the Indian University Grants Commission (UGC) to facilitate free access to scholarly journals and databases in all fields and disciplines by the research and academic community across the country. The programme is wholly funded by the UGC and executed by the INFLIBNET (Information and Library Network) Centre, Gandhinagar. All universities including 14 National Law Schools come under the purview of UGC have been provided UGC-Infonet connectivity and access to scholarly e-Journals and Databases. The consortium provides link to around 25 e-resources containing approximately 9081 titles, 6 Bibliographic databases and 4 open access resources.

2.8.1.3 INDEST Consortium (Indian National Digital Library in Engineering Science and Technology): recently named as INDEST - AICTE Consortium was set-up by the Ministry of Human Resource Development (MHRD) on the recommendation made by the Expert Group appointed by the ministry under the chairmanship of Prof. N. Balakrishnan. The Consortium has an active mailing list and a Web site hosted at the IIT Delhi. The INDEST consortium at present provides link to 24 Full-Text e-resources that includes 37045 titles, 5 bibliographic databases and 4 open access resources. All electronic resources being subscribed are available from publisher's website.

Apart from this, there are other consortium functional in India to cater to the need of e-journals of various institutes such as FORSA library consortia, N-LIST consortium, DRDO consortium, etc.

2.9  Electronic Publishing or E-Publishing

Electronic publishing or E-publishing is another important development of ICT. It is a process of submitting the information in electronic format or digital format and published online via the Internet and local area networks (LAN) or in stand-alone formats such as CD-ROMs and diskettes.

E-Publishing is actually an agglomeration of Electronic technology, computer and communication technology, and publishing all together comprising electronic publishing technology. It may be represented as follows.

E-technology + Computer and Communication + Publishing = E-Publishing

Electronic publishing plays an important role in library and information centers. It speeds up dissemination of information and improves the services of libraries. There are two categories of E-Publishing namely:

- **Off-line E-publishing**: It is of purchaser control in which purchaser can use the product a number of times without any charge.

- **Online E-publishing**: It is of publisher control in which purchaser has to pay charge each time for using the products.

Among **off line E-publishing**, the DTP or Desktop Publishing has revolutionized the field. The DTP comprises of word processing elements and computerized page layout and software including multifunctional personal computer.

The **online E-publishing** is further categorized as Videotext Transmission Systems and Teletext Transmission Systems

- **Videotext Transmission Systems**: It generally interconnects the user with a remote computer database by wire so as to search the database actively for information.

- **Teletext Transmission System**: It allows TV broadcast station to transmit screens full of text and graphic information.
2.10 Digital Library

A paradigm shift has occurred in the manner of using, creating, distributing and management of information with the introduction of digital libraries. Digital libraries provide wider benefits to the users worldwide. With Digital Libraries, the search functionality has been improved and access to information has become quicker. Users can get required information and services beyond the boundaries of time and geographical locations.

The essential growth of the activities in the field of digital library development was seen in the early 90s, when technologies and informational means of secure preservation, operative processing and effective use of large volumes of information in different formats were invented. It was at this time that projects of digital libraries were being prepared in a number of countries. Some of them served as a basis for the existing National and International programs.

2.10.1 Definitions

According to Lesk\(^1\) (1997) "Digital libraries are organized collections of digital information. They combine the structure and gathering of information which libraries and archives have always done, with the digital representation that computers have made possible".

Arms\(^2\) (2001) defines digital library as "A digital library is a managed collection of information, with associated services where the information is stored in digital formats and made accessible over a network."

Digital libraries make possible the availability and accessibility of the worlds’ most important literature and information sources available in different format, which formerly libraries could not collect and deliver comprehensively. Digitization of materials meant for the lifelong preservation of valuable resources as well as the nation’s cultural heritage. The aim of the Digital libraries is the easy


availability of the latest information to the end user through a variety of platforms on twenty-four hour basis.

Digital libraries vary on the basis of their implementation. They are interchangeably called by the names as follows:

1. **Institutional Repository (IR):** It is an academic or research institution where digital library is used for organizing and preserving internally generated resources.
2. **Document Management Systems (DMS):** These are implemented in corporate intranet systems to manage documents generated in the institution.
3. **Content Management System (CMS):** They are implemented in corporate institutions to collect, organize and preserve different types of communications like e-mail & messages, discussion lists, etc. having technical content between the employees. This again forms a valuable knowledge management activity of the institution.

### 2.10.2 Objectives

Digital libraries play an important role and solve major problems of the geographically distributed users. Digital libraries provide much of the opportunities to the learners to store the information as well as the proper use of it. The two primary goals of digital libraries are 'to digitize the material for preservation' and 'access digital information via communication channels'.

### 2.10.3 Software

Software is a set of programs which enables computer to execute different tasks. Broadly Software systems are categorized into two categories i.e. Proprietary software and Free or Open source software. Proprietary softwares are those in which legal rights remain exclusively with the copyright holder whereas free or open source softwares are those in which source code is available free to users for modification and use. Open source softwaresystem is freely available on the web, easy to download and offer the solutions to construct customized

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applications for handling and providing digital collections. Due to customization and modification facilities, librarians generally look for Open source software system for establishing Digital Libraries. Some digital library software packages are DSpace, Greenstone Digital Library Software (GSDL), GNU E-prints, Ganesha Digital Library Software, Libraonix Digital Library system, etc.

2.10.4 Metadata

Metadata is structured information associated with an object for purposes of discovery, description, use, management and preservation. Metadata is a new word based on old concept and is used in the realms of digital library because it is the key to resource discovery and use of any document. Some metadata standards useful for the development of digital libraries are (i) Dublin Core metadata, (ii) MODS (Metadata Objects Description Scheme), (iii) METS (Metadata Encoding transmission Standard), (iv) EAD (Encoded Archival Description), (v) PREMIS (PREservation Metadata Implementation Strategies) etc. Dublin core is the prominently used metadata that facilitates the meaningful sharing of metadata between repositories and thus increasing interoperability.

2.10.5 Interoperability

Interoperability is the ability of the information and communication system to support data flow and to enable the exchange of information and knowledge so that the users of one library can be able to access and view material housed in another library. In other words, Interoperability allows to access information across digital libraries around the world. It is an essential feature for federated information architecture to work in diverse settings and is a key concept for large scale persistent digital libraries.

2.10.6 Digital Preservation

Preservation of digital documents is an important issue in building digital libraries. Digital preservation is a broad term used to describe both the upholding and safeguarding a digital resource into the predictable and the distant future. It is
a crucial part of the creation and administration of any digital collection. Harrod's Librarian's Glossary defines Digital Preservation as "the methods of keeping digital materials alive so that they remain usable as technological advances render original hardware and software specifications obsolete".1

In the preservation of digital materials, the real concern is technological obsolescence. Technological obsolescence in the digital age is like the deterioration of paper in the paper age. There are three types of "preservation" as follows:2

- **The preservation of the storage medium**: The media used to store digital materials become obsolete in two to five years, because of availability of better technology. Consequently, materials stored on older media could be lost because over the years, there will no longer be the relevant hardware or software to read them. Thus, libraries will have to keep moving digital information from one storage medium to the other.

- **The preservation of access to content**: This form of preservation involves preserving access to the content of documents, regardless of their format. While files can be moved from one physical storage medium to another, what happens when the formats (e.g., Adobe Acrobat PDF) containing the information becomes obsolete? This is a problem perhaps bigger than that of obsolete storage technologies. One solution is to do data migration, that is, translate data from one format to another preserving the ability of users to retrieve and display the information content. However, there are difficulties in migrating data because data migration is not only costly business but also there are as yet no standards for data migration. In addition to that, distortion or information loss is inevitably introduced every time data is migrated from one format to another.

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The preservation of fixed-media materials through digital technology:

This type of preservation involves the use of digital technology as a replacement for current preservation media (say microforms). Again, there are no common standards for the use of digital media as a preservation medium. In this regard, digital preservation standards need to be developed to facilitate the constant storage and sharing of digitally preserved materials.

2.10.7 Access to Digital Contents

Accessibility to the documents/information is important for the user's point of view. Proper quick and easy retrieval of information enhances the quality of services provided by the digital libraries. A text search can be conducted by entering a single search term or a phrase comprising more than one term. Keyword search is the simplest search facility offered by a digital library retrieval system. There are various types of searches such as Boolean searches, Truncation, Proximity search, etc. which are provided by digital libraries to access their content for the maximum use of their material. Besides that, there is an important search facility provided by digital libraries called as Federated Search facility.

Federated search also known as meta-searching allows users to search multiple databases with a single query. Libraries nowadays are subscribing a number of research databases. It is quite difficult to know for the user which database will meet their query. To search dozens or hundreds of databases, the popularity of the federating search system is growing in the libraries which contain a large number of electronic resources unlike simple search engines. Federated search engines translate users' input to the native search syntax of databases developed by multiple vendors. Federated searching technology is still developing rapidly and expected to improve in the coming future.
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2.10.8 Copyright Concerning Digital Libraries

Copyright is the most troublesome barrier to the development of a digital library, because of it, libraries are unable to freely digitize and provide access to material which comes under copyright restrictions. Digital objects are less fixed, easily copied and remotely accessed by multiple users simultaneously, hence there are certain mechanisms called ‘Digital Rights’ management that allow digital libraries to provide information without violating copyright, these are: (Agnew, 2008)

- Authentication: It authorizes users and ensures that they are who they claim to be.
- Authorization: It is the process that determines whether an authenticated user may access a particular resource or perform some actions.
- Identity management: This makes it possible to customize the library familiarity for each user and make library services more convenient.
- Providing copyright status of each digital object and the restrictions on its use or the fees associated with it.
- Handling transactions with users by charging them for a copy or by passing the request on to a publisher.

2.10.9 Digital Library Initiatives in India

Digital Library projects in India started on a large scale in the mid 90s. Various government and non government agencies, Institutions, NGO’s, associations, corporate agencies, etc. are being digitized by converting their material from analog to digital. Some major digital library initiatives are as follows:-

2.10.9.1 Social Science Cyber Library¹: The Aligarh Muslim University has taken a pioneering step under the leadership of Prof. Shabahat Husain (a Professor of Library & Information Science), Dean of the Faculty of Social Sciences under

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the patronage of Lt. Gen. Zameer Uddin Shah (Vice Cancellor) to establish the first Social Science Cyber Library in the world. The same was inaugurated by His Excellency Shri Pranab Mukherjee, the President of India on 27th December, 2013. The library is aimed at providing access to the freely available e-resources in form of e-books, e-journals including in-house publications, web courses, video lectures of eminent scholars, web sites, Data bases, Subject Gateways and a host of software packages, pertaining to the Social Sciences. The cyber library is expected to serve the social scientists across the globe. The interface is in English. It is established on CALIBER software. The contents is in many languages such as English Hindi, Guajarati and Urdu.

2.10.9.2 Vidyanidhi: E-Scholarship Portal & Digital Library: Vidyanidhi (Sanskrit word meaning ‘Treasure of Knowledge’) is the earliest digital library project for electronic Theses and Dissertations (ETDs), initiated by the University


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of Mysore in collaboration with the Department of Scientific and Industrial Research (DSIR), Ford foundation and Microsoft India. Its aim is to enhance visibility of Indian Doctoral research to global audience. DSpace open source software has been used for developing Vidyanidhi. It consists of two types of databases, a bibliographic database and a full text database. It is multilingual offering services in three languages, Hindi, English and Kannad. The collection of Vidyanidhi is 5482 items till date.

![Vidyanidhi home page](image)

**Figure 2.2: Vidyanidhi home page**

2.10.9.3 Kalasampada: Digital Library Resources of Indian Cultural Heritage (DL-RICH): Kalasampada, a digital library of indigenous cultural heritage, was established by the Indira Gandhi National Centre for Arts (IGNCA)

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with the support from India’s Ministry of Communications and Information Technology. DL-RICH serves as a means to preserve as well as access to the distributed fragments of Indian Arts, aesthetics and culture. The digital library provides online access to rare books, paintings, sculptures, handicrafts, rare photographs, monuments, manuscripts and textual, graphical & multimedia resources as well. It also hosts a Sanskrit repository named ‘Gaudia Grantha Mandira’ that includes more than 400 chapters from different oriental texts. The repository is also functional in Hindi language under the name ‘Cultural Heritage Digital Library in Hindi (CHLDH)’. Kalasampada has received the ‘Golden icon’ award by the Department of Administrative Reforms and Public Grievances, India, under the category, best documented knowledge and case study, for its exemplary implementations for e-governance initiatives for the year 2007. The Total Collection of Kalasampada as on (30-09-2013) includes over 50 Lakh folios of manuscript, over one lakh slides, 4000 photographs, IGNCA published books, Kalakalp (IGNCA’s Journal) and Vihangama (IGNCA’s Newsletter), over 400 hours of audio and video and approximately 50 Walkthroughs.
2.10.9.4 Traditional Knowledge Digital Library (TKDL): TKDL is a well-known Indian digital library initiative set up in 2001, by National Institute of Science Communication and Information Resource (NISCAIR), Council of Scientific and Industrial Research (CSIR), New Delhi in collaboration with the Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy (Deptt. of AYUSH), Ministry of Health & Family Welfare, Government of India. It deals about medicinal plants and formulations used in Indian systems of medicine (such as Ayurveda, Yoga & Naturopathy, Unani, siddha). The project TKDL aims to protect the ancient and traditional knowledge of India from misuse through bio-piracy and fake-patents. TKDL has documented the traditional knowledge in electronic form and classified as per International Patent Classification Systems (IPCS). It is a representative database, as reported through its website, containing 1200 formulations selected from various classical texts of Ayurveda, Unani, and Siddha systems of medicine that are used to treat about 186 diseases. At present it provides access to 2.50 lakh Medicinal Formulations, available to patent offices only under TKDL access agreement.
2.10.9.5 Digital Library of India (DLI): It is the greatest digital library project in South Asia, hosted by Indian Institute of Science, Bangalore. It is a part of Universal Digital Library project (UDL) and Million Books Project, hosted by Carnegie Mellon University, USA. It is accessible through three portals, hosted in three big cities, i.e. Bangalore, Noida and Hyderabad.

DLI project started establishing Regional Mega Scanning Centres (RMSCs) and other scanning centres across the country for balancing digitization of rare books, rare periodicals and other literature, including manuscripts and copyright-free or out-of-print books. DLI established five RMSCs across the country at Hyderabad (IIIT Hyderabad), Kolkata (C-DAC Kolkata), Allahabad (IIIT Allahabad), NOIDA (C-DAC Noida) and Bangalore (IISc Bangalore). All RMSCs started networking with source libraries in their localities for obtaining the books required for digitization. Majority of books selected for digitization were Indic language books published in all official languages of India, including in English (Das, n.d.). It covers all major Indian classics published before 1900 for free availability to Global users. As on 2013 (September 20), DLI had scanned 475945 books. The Project has also been started in Maulana Azad Library, Aligarh Muslim University, Aligarh since 2009.

![Digital Library of India](http://www.dli.ernet.in/)

**Figure 2.5: Digital Library of India**

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2.10.9.6 Digital e-Library (Dware Dware Gyan Sampada/providing books at your Doorsteps): The project was initiated by the centre for Development of Advanced Computing, Noida (CDAC, Noida). The goal is to promote literacy by providing, initially, with the target of approximately one million digitized books at the doorsteps of common citizens. Digital e-Library project consists of a mobile van which is equipped with internet connectivity, multimedia laptop, laser printer, Automatic book-binder and other necessary accessories. Schools in villages, Adult learning centers, Local Panchayats and other remote areas are covered under this program. It covers the states such as Delhi, Uttar Pradesh, Haryana, Madhya Pradesh, Himachal Pradesh, Uttarakhand, Punjab, Rajasthan and Bihar. It provides full text e-books in English and Hindi language. (Das, 2008)

2.11 Conclusion

Expeditious and enormous growth in the literature and increasing information thrust of the people lead to the drastic changes in the collection, organization, storing and dissemination of information in libraries. Libraries are no more store houses of books but have become intellectual centers. The introduction to information and communication technologies to the library and information centers has completely changed the way the information is organized, collected, stored and disseminated. Computer handles almost all the activities of libraries such as Acquisition, Issue, Return, Technical processing, Serials management, etc. Internet/World Wide Web has also solved many problems and helps in providing the value added services to the users. The advent of digital libraries has reduced the geographical handicap by enabling the globally dispersed users to access dispersed knowledge contents anywhere and anytime. New and modified services are provided by these libraries and the vice-versa links to other resources, Blogs, Subject Gateways, Portals are also possible.
References


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