LIBRARIES IN THE ICT ENVIRONMENT : A CASE STUDY OF G.N.E. COLLEGE LIBRARY

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Abstract :

Mostly effectiveness of a library services is now largely depends upon information and communication technology (ICT). Due to information technology traditional libraries moved to digital libraries or paperless libraries. This study is identify various components of ICT, which are used or being used in libraries and information system. This paper describes the ICT infrastructure available in the GNE college library and its application for various library operations and services.

Keywords : ICT, ICT-LIBRARIES, GNE LIBRARY.

1. INTRODUCTION :

Information and communication Technology (ICT) is a comprehensive concept and parallel concept with information Technology, that denotes not only a single unit of technology but an assemble of technologies like telecommunication equipments, data processing equipments, semi conductors, consumer electronics, etc. The concept has brought a phenomenal change in the information collection, preservation and dissemination scene of the word.**1** The computer, networks and other digital technologies have replaced traditional library operations.

So ICT covers any product that will store, retrieve, manipulate, transmit of receive information electronically in a digital form.**2**

1.1 Objectives of the study :

This study is designed and carried out with the view to determine the following objectives:-

- To explore various components of ICT used in libraries.
- To explain the need of ICT in libraries.
- To find out the ICT infrastructure in GNE college library.
- To trace the Advancement of ICT in libraries.
- Impact of ICT on library services.
  To know the services provided by the libraries.

1.2 Scope of study :

The present study is confined to The Guru Nanak Dev Engg. College, Punjab,which is affiliated to Punjab Technical University, Jalandhar.

2. ICT – CONCEPT AND MEANING :

ICT incorporates a range of technologies used to support communication and information. ICT includes both networks and applications. Networks include tried wireless and satellite telecommunications, broadcasting networks. Well-known applications are the Internet database management systems and multimedia texts.

So we can say that ICT as the use and application of computers, telecommunications and microelectronics in the acquisition, storage, retrieval transfer and dissemination of information.

2.1 Information and Communication Technology and Libraries :

The organization and function of libraries has been changed with the acceptance of information technology in the libraries. The latest microprocessor technology enables libraries to store and process vast amount of information in infinitely smaller amount of space. Technical services in libraries now able holdings. Accessible through the generation of machine-readable records of documents. Public services after access through computers to many sources of information from the local catalog to remote databases.**3** Due to phenomenal growth in information at in exponential rate, there is a "paradigm shift" and accessing and utilization of vast mass of information has become a major problem. Developments in computers and communication technology have revolutionized the modes and methods in information storage and retrieval. In fact the impact of information technology is visible in every activity of the library.**4**

3. COMPONENTS OF ICT IN LIBRARIES :

The libraries around the world have been adopting and making me of ICT, in particular the computer technology to automate the wide range of administration and technical process. The wide spread and application of IT in libraries has created a profound impact on all aspect of present day library environment. Information technology frequently used in library and information centers are as follow:

A computer Technology and communication technology and reprographic micrographic and printing

technology.

Computers Technology :

The dramatic development in the information transmission process in every field by the widespread use of computer technology divided into following categories.

(3.1) **Mainframe computers:-** These are large computers and needs a air conditioned room space. The memory size of these computers is 1 mega-byte to 128 mega-byte . These computers can easily deal with complicated scientific or business problems.

(3.2) **Super computers:-** Super computers are most powerful. These computers can execute 10,000 millions instructions per second. The memory size of these computers is 8 mega byte to 256 mega byte. The high speed of these computers is due to numbers of microprocessor working together.

(3.3) **Micro computers:-** The memory size of the micro computers is up to 256 kilo byte. These are called micro computers because they are small in size. Microcomputers generally have a single silicon chip. The storage capacity of these computers is up to 10,000 word of the speed up to 5 lakes byte.

(3.4) **Minicomputers:-** Mini computers of this category are at least five times faster than microcomputers. The memory size of there computers is in between 256 kilo bytes to 12 mega bytes.**5**

(3.6) **Software technology:-** It is important to note that a computers cannot do anything on its own. It must be instructed to do a desired job. So it is necessary to specify a sequence of instructions that a computer must perform to solve a problems. Such sequence of instructions written in a language that can be understood by a computer is called a computer program. Software means a collection of programs whose objective is to enhance the capabilities of the hardware machine.**6** Many software packages are available in he field of library and information. Services and management. Some of the important library package given below.

- Alice for windows soft link's Alice is fully integrated library management software. The dos version is known by OASIS.
- CDS/ISIS- This software is develop by UNCSO in a menu driven. The window version of CDS/ISIS is called WINISIS.
- Delemarc and Del plus: delpus (formerly Delsis) an integrated module package developed by Del net to support complex cataloging and union catalog functions.
- Easylib: static's for entire automation system for libraries.
- Lib sys : it is fully integrated library management system developed by lib sys corporation, New Delhi. It is a multi user system capable of running on DOS, Unix Xenix, vms and windows platform.
- Soul University libraries software. Infilbnet center has developed a windows-based library management software, which provides total solutions for library management.**7**

4. COMMUNICATION TECHNOLOGIES :

Communication Technology are used to transmit information in the form of signals between remote location using electronics medias as :

(4.1) **Local Area Network (LAN) :** Local area networks is a private network linked with an office or building or with in a university / college campus. So we can share information with in the proprietary private network.

(4.2) **Metropolitan Area Network (MAN) :** MAN is a combination of a number of lan's. We can simply define/design this is for a city. Its bandwidth is high compare to LAN.

(4.3) **Wide Area Network (WAN) :** Wide area network provides greater flexibility compared to LAN and MAN. It is basically covers a geographical area.

(4.4) **Telephone Network :** The telephone is a one of the longest established methods of electronic information transfer especially to transfer the voice.

(4.5) **Audio/Video Technology :** Audio is a mixture of text numbers or images. It is continuous and not discrete. As discussed earlier audio data user the concept of analog or discrete format. Video can be produced either as a continuous entity or it can be a combination of images each a discrete entity arranged to convey the idea of motion.

(4.6) **Facsimile Transmission (FAX) :** It is a method of converting on image into electronic signals that can be transmitted over a communication link and converted back into an image at the receiving end.

(4.7) **Email :** Email is a system of exchanging message in electronic format. It is most useful tool on the Internet, It has brought a revolutionary changes in communication.

(4.8) **Web pages :** Today's the role of computer in every field the web pages are most important tool for shearing the information. In the library and information services the web page on library are more useful for accessing any information regarding library holding.

(4.9) **On line Chat :** On line chat is most important tool on Internet for communication many peoples at a time.**9**

(4.10) **Teletext :** This is a non-interactive form of video text. Teletext broadcast center store data in their computer in the form of frames and transmit them continuously and cyclically on unused portions of the bandwidths. This can be received by using domestic television sets with special decoders.**10**

5. REPRODUCTION TECHNOLOGY :

(5.1) Reprographic Technology : Reprography is a term used to refer to photocopying as well a duplicating documents whereby one or more copies of the same size or in reduced or enlarged form are produced. Documents reproduction methods can be conveniently grouped in to two: (1) Photographic copy (ii) Micro-recording.

(5.2) **Micro graphic Technology :** Microforms are those where the images are reduced considerably and require magnification devices for viewing and reading. Microform is a generic term for all information carries which are in microfilm, microfiche and ultra fiche storing information.**11**

(5.3) **Printing Technology :** A printer is a device that converts computer output in printed images. The numbers of printer are available in the market such as Dot Matrix, Laser Printers, Ink jet and Bubble-jet etc.

6. WHY THE ICT NEEDED IN LIBRARIES :

Many factors have contributed to bring about change from traditional to ICT based library operations. Basically ICT is needed in libraries as following reasons :

- The library is growing organism the fifth law of library science. So many documents are added year by year but the space of every library is limited. No library can think of getting additional space every year. So the ICT is more useful to store more information in the form in Cd's, microfilms etc.
- Library operations due to potential growth of the information could take many hours to perform manually.
- Due to knowledge explosion the society is faced with multifaceted and multidimensional information to such an extent that not only its storage has created challenge.
- The speed of computer can carry out on instruction in less then a millionth of a second. Searching of information compilation of bibliographies, current awareness services, indexing and storing can be processed by computer in few hours.
- Computers can storage numbers of data and retrieval in few second.
- Accuracy of computer can also perform function very fast.

7.ROLE OF ICT IN LIBRARIES :

The use of IT in libraries has created a profound impact on all aspect of present day on library environment. This is the trend of transition from manual to electronic system.

(7.1) Library House Keeping Operations :

The computer are used in the library for functions and activities such as acquisition, cataloging, circulation system serial control, information storage and retrieval, management, current awareness services and selective dissemination services and provision to access to on line catalogue. The use of computer in the library is improving the efficiency of internal operations and accessing local and outside library resources.

(7.2) Integrated library systems :

The ILS or the library management system (LMS) is a software consisting of a set of integrated modules for acquisition, cataloguing, circulation, serial control and dissemination of information. The LMS is an essential tool for the libraries to manage collections, services and to produce reports and statistics, which aid in the decision making process for overall improvement of the library effectiveness. The library software are Libsys, Soul, Cds /ISIS, Alice for window etc., are available as integrated library systems for understanding library automation activities. There are also same open source software for automation library such as Koha and NewGenlib etc.

(7.3) Collection Development :

Internet is a great boon for acquiring digital material worldwide. Librarian can access online the electronic journals via internet. In addition to the journals there are number of electronic books including several encyclopedias available on the net. Acquisition of documents in e-form is becoming the order of the day. As now a days there is a remarkable shift from the concept of ownership to accessibility to information with the following advantages.

1. Space saver (2) Support and reconsecrate search (3) No postage binding and transportation cost.

(7.4) Information Storage and retrieval :

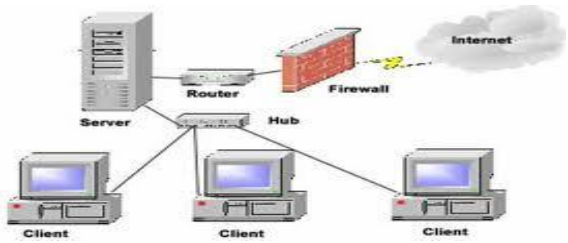
With the advent of optical storage technology the publishing house world wide house started distributing their databases on Cd s/DVD for off line access to a number of information resources. Optical technology is a important medium for storing information. Yet another technology which could replace there storage technologies is the Blu-Ray , which has the capacity to store 50 gigabyte of data.**12**

(7.5) Home page creation :

The role of ICT in libraries , the librarian can create own library home page to provide better information to the users. Today's due to ICT the numbers of social networks are providing online information to the users. The basic role of social network is to provide information to its users for their required interests. For Examples : www.ning.com, www.facebook.com , www.blog.com , www.twitter.com ,etc.

(7.6) Networking and resource sharing :

The information sharing through computer networks and document delivery in the form of electronic media are helpful to the user community in the libraries. Today's The library and information science (LIS) community has often discussed Web 2.0. asserted that many people associate it with terms such as blogs, wikis, pod casts, RSS feeds and social web. He claimed that Web 2.0 is a place where everyone can add or edit information and where digital tools allow users to create, change, and publish dynamic content. For Web 2.0 is participative and presents the value of user-generated content. It is about sharing and communication; it opens the long tail that allows small groups of individuals to benefit from key pieces of the platform while fulfilling their own needs.**13**



(7.7) OPAC (Online Public Access Catalogue) :

A computerized system to catalogue and organize materials in a library (the kind that contains books). OPACs have replaced card-based catalogues in many libraries. An OPAC is available to library users (public access).**14** Catalogue of an increasing number of libraries are now available for searching online. These are known as Online Public Access Catalogue (OPACs). Such OPACs may be searched from a terminal within the originating library or at a terminal elsewhere in the organization or remotely via national or international telecommunication networks.

(7.8) E-Journals :

Libraries have been exploring easy to cope with the problems of ever increasing prices of the journals, space requirements and decreasing level of usage as the journals get older. Nevertheless, libraries are required to maintain back issues of the journals, usually in bound form. Electronic Journal helps the librarians in addressing these problems to a great extent without significantly affecting the service levels. Electronic Journals can be accessed via internet from any web enabled PC. Depending on the type of subscription, one or more users can access the service simultaneously, either directly from an independent web enabled PC or in a local area network through a proxy server (IP addresses based access). Electronic journals also offer benefit of full text searching and downloading of articles. Many publishers of electronic journals offer their journals through consortia of libraries at much lower rates. *INDEST (Indian Digital Library of Engineering, Science and Technology),* and *INFLIBNET* are two such consortia operating in India. Access to articles in electronic journals can also be made through aggregator services which offer searchable databases of contents of e-journals from several publishers, and links to journal site for full text. Emerald, OCLC and J-Gate are some of the example of e-journal aggregator services.

(7.9) E-Books :

E-Book has been described as a text analogous to a book that is in digital form to be displayed on a computer screen. E-books can be read just like a paper book, using dedicated E-Book reader such as *GemStar e-Book* or on a computer screen after downloading it. There are also some newer technologies developing such as electronic paper, which is much like paper, except that the text can be changed, and talking books in MP3 format. E-book offer advantages like portability, 24 hours access, text search, annotation, linking, and multimedia and self-publishing possibilities. Development of e-book is still in the infancy stage and issues like compatibility, e-book readers, availability and intellectual property rights are to be addressed before it can be implemented on large scale.

(7.10) Electronic Theses and Dissertations (ETD) :

Dissertations and theses produced at universities are important sources of information and knowledge for further research. A large number of universities have converted their theses and dissertation collection into digital libraries and have made it available on Internet for global access. A number of universities have also implemented Electronic Theses and Dissertation programmers, where researchers submit theses in electronic format. Some initiatives such as *Networked Digital Library of Dissertation and Theses (NDLTD) (*www.ndltd.org) in development of web based union catalogues of ETDs submitted over 100 libraries throughout the world are worth mentioning. **15**

8. ICT –BASED USERS SERVICES :

In these days mostly library users are adopting electronic habits making increasing use of new ICT including computer, Internet, web page, etc. Use of ICT in libraries enhance users satisfaction. Some of ICT based users services are given below :

- Provide speedy and easy access to information.
- Users can access their information every where like out of the library.
- Accessing on line catalogue (OPAC).
- Electronic document delivery.
- Provide access to unlimited information from different sources.

(8.1) Functions of ICT based library system :

Since the 1950s ,use of ICT in libraries has basically gone through four stages. :

- Improving the efficiency of internal operations.
- Improving access to local library resources.
- Providing access to resources outside the library.
- Interoperability of information systems.

10. ICT INFRASTRUCTURE IN GNE COLLEGE LIBRARY :

(10.1) GNE College :

Guru Nanak Dev Engineering college was established by the Nanakana Sahib Education Trust[NSET].NSET was founded in memory of the most sacred temple of Nanakana Sahib, birth place of Guru Nanak Dev ji. Shiromani Gurdwara Prabhandak Committee, Amritsar a premier organization of universal brotherhood was the main force behind the mission of removal of economic backwardness through technology. Guru Nanak Dev Engg. College was established in 1956. The trust deed was resisted on 24th February 1953 with a commitment by the Nanakana Sahib Education trust to uplift the vast weaker section of Indian polity comprising rural India by admitting 70% students every year from rural areas. The commitment was made to the nation on 8th April 1956. The day when foundation stone of the college building was laid Dr. Rajinder Prasad ji, the first president of India. Nearly 10.000 graduates and 300 P.G. Engineers have passed out from this college during last 50 years. The college is now ISO 9001-2000 certified, NBA accredited and have signed MoU with IOWA University[USA] for exchange of students and faculty. The college is affiliated with Punjab Technical University, Jalandhar to run B.Tech, M.Tech. (Regular & Part time) MBA and MCA.**17**

(10.2) GNE College Library :

The college has a well equipped library having near about 61,000 books on its collection. This collection consists of the following disciplinary i.e. CSE/IT, EE, ECE, MECH, PROD, CIVIL, MBA,MCA and general books. The collection is further divided in general books, book bank and donated books. The reference section consists of 2870, 515 thesis and 350 cd's . Reference section includes encyclopedia, handbooks, conference proceedings, text reference books and thesis. The journal section consists of 618 journals (Print and on line) and 76 magazines. The college library have also a multimedia system with DVD and system is link with Edusat for delivered lectures on different subjects. Students also access on line journals like : IEEE, ASME, ASCE and Science direct in the library.

(10.3) Applications of ICT in GNE library, Ludhiana :

The library has semi automated its house keeping operation using "E-Granthalya" software the product of NIC, New Delhi. The activities covered are acquisition process, cataloging, Circulation, serials control, OPAC.

11. CHALLENGES :

GNE Library has, however, met with challenges in the provision of On line information system. The challenges include the following:

1. Limited computers and equipment to expand access to digital information.

2. Limited bandwidth, which results in slow down load times.

Library is making do with what is available at the moment, whilst finding means and ways of improving dissemination of digital information. These efforts may be small but they have played a vital role before sufficient resources are in place.

12. FUTURE PLANS :

GNE library try to extend their building area and construction a new reading hall and rack area. The library also tries to share their journals with NISCAIR were the users can find out their desired back volumes journals.

Conclusion :

ICT is changing the work of libraries and information centers. Increased the numbers of users a greater demand for library materials an increase in the amount of materials being published new electronics format and sources and the development of new cheaper computers are some of the reasons for the growing need of ICT in the libraries.

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