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IMPACT OF ICT ON LIBRARIES

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INTRODUCTION

'Information technology' is two separate words when combined together mean 'the use of technology in communication of information'. "ICT is often use as an extended term for information technology (IT) but is usually a more general term that stresses the role of unified communication (forms of communications that are exchanged via a network) and the integration of telecommunications (telephone lines and wireless signals), computers, middleware as well as necessary software, storage and audio-visual systems, which enable users to create, access, store, transmit and manipulate information. In other words, ICT consists of IT as well as telecommunication, broadcast media, all types of audio and video processing and transmission and network based control and monitoring functions." (Wikipedia, Information and communications technology, 2016)

Definition

(Hamelink, 1997), defines "Information and Communication Technologies (ICTs) as encompassing all those technologies that enable the handling of information and facilitatedifferent forms of communication between human beings and electronic system. They are subdivided into five categories:

1. *"**Capturing Technologies:** Includes, keyboards, mice, trackballs, touch screens, voice recognition systems, bar code readers, image scanners and palm-size camcorders.*
2. ***Storage Technologies:** Includes, magnetic tapes, floppy disks, hard disks, RAM disks, optical disks (such as CD-ROMs), erasable disks and smart cards (credit-card sized cards with memory.*
3. ***Processing Technologies:** Includes, creating software for the performance of digital Information and Communication Technologies (ICT).*

4. ***Communication Technologies:*** *Includes, integrated services digital networks, digital cellular networks, local area networks (LANs), wide area networks (WANs, such as the Internet), electronic bulletin boards, modems, transmission media such as fiber optics, cellular phones and fax machines, and digital transmission technologies for mobile space communications (the new Low Earth Orbit satellite voice and data services).*
5. ***Digital Technologies:*** *includes, display screens for computers, digital television sets with automatic picture adjustment, set-top boxes for video-on-demand, printers, digital video discs (which might replace CD-ROM drives and audio CD players), voice synthesizers and virtual reality helmets."*

From the above definition, we can assert that ICT has transformed library and information centers as a global hub of information communication where geographical barrier does not exist and people of the world can acquire, process, transmit, and disseminate information without any delay.

Impact of ICT over Traditional Library

1. Entire housekeeping operations acquisition, circulation, serial control, OPAC, stock verification, and cataloguing is replaced due to Library Automation Software.
2. Manual and depth classification takes a lot of time whereas computerized classification can help professional to store the same classification number and repetitive classification can be avoided. Online classification schemes are Web Dewey (http://dewey.org), and Classify of OCLC (http://classify.oclc.org).
3. The Desktop Publishing systems (MS-Office, Open Office) are easier than traditional typewriters where there are no means of back-up and storage facility.
4. Manual searching of catalog is very difficult and cumbersome job whereas this has been replaced by web OPAC (Online Public Access Catalogue). Computer based searching is very easy and within a matter of few seconds, users can get the information about resources and location.
5. Reference service earlier has been replaced by Virtual Reference Desk (VRD), Portals, Subject Gateways, and Online Databases.
6. Manual CAS and SDI services replaced by electronic publication and the Internet resources.
7. Earlier a user must have to visit a library to get books or journals now due to the emergence of electronic and digital library a user can browse the library sitting at home.
8. Libraries use to close and open on time but the access to information through IT based libraries is anytime and anywhere.

9. A user is supposed to return a book in traditional libraries whereas e-books can be saved in computers.
10. Once the information is fed in the computer it can be accessed end number of times whereas in traditional library everything has to be maintained manually and repetitive handling further deteriorates the conditions.
11. Users face the problem of non-availability of books or sometimes have to wait for months to get a desired book. Whereas, if the book is available in electronic format it can be read by end number of users.
12. It was not possible earlier to deliver book oversea, but through the Internet and networking of libraries a user sitting anywhere in the world can read books and other resources.
13. In the traditional handling of libraries a bibliography of books cannot be exchanged due to standardization in bibliographic control. Now, this can be done electronically

Emerging Technologies

Advancement in ICT enabled libraries to transmit information at the shortest possible time. The classroom becomes a virtual classroom and e-education has been given preference over conventional mode of education. Similar is the case of Virtual Universities and Virtual Libraries where online utilization of information will matter rather than physical presence. Online admission, examination, interviews, government notifications, circular, policies are almost on the verge of complete sweep over traditional methods. Sharing of resources among libraries electronically compel libraries to create a network of libraries. It combines the efforts and resources of libraries into one unified force where unnecessary acquisition of resources can be avoided. In today's time, the more accepted system of resource sharing is Library Consortia. It enables libraries to meet the escalating cost of printed journals and purchase of online resources. The desktop is replaced by laptops and PDAs (Personal Digital Assistance). No wonder libraries will be called as wireless libraries with portable networks. Data Warehousing and Data Mining are getting an edge over Virtual Data Warehouses. There is a significant paradigm shift from Radio Frequency to Optical Frequencies due to the availability of higher bandwidths. Wireless technology such as 'mobile communication' is outdating 'landline phones'. Wireless Online Networking (WLANs) and Bluetooth are on the sprawl and their speed is constantly upgrading which is more feasible than wired network. LAN (local area network) and WAN (wide area network) are two constituents for data communication network. LAN is utilizing to connecting computers at campus level and WAN is a computer network that extends over a large geographical distance. But their rate of transfer of data is low. VSATs (Visual Small Aperture Terminal) can transfer the data at a higher rate but the

only difficulty is insufficient satellite transponders. The above innovations in ICT have taken place in the last decade. It is expected this advancement will be merged in next decade.

APPLICATION OF ICT IN LIBRARIES

ICT has transformed the way of services being offered to users globally. It has changed the process of collection, storage, dissemination and access of information. Traditional services are replaced and extended in a more renovated and refurbished manner under ICT. Technological advancements such as growth in information over the Internet, search engines, reduction in computer cost, high speed of computer processors, high-bandwidth, networking and an increase in the number of electronic publications assisting libraries to provide a variety of information sources and services to users. User expectation also changed due to ICT. They want easy access and quick response to their queries. In ICT scenario, libraries are moving at a dynamic pace. There is an exemplary shift from print media to electronic media, possession of documents to access to digital information, and from the existence of the specific library to electronic/ digital/ hybrid/ virtual/cloud libraries. Responsibilities of libraries are growing in terms of giving traditional and electronic services to users where the hybrid model of library is followed. It is mandatory on library professionals to be equipped extending services in ICT environment. Library professional should train themselves in the handling of library automation software; e-mails sending and receiving, online search and retrieval of information; multimedia handling; making online blogs, portals; templates, web pages in HTML and XML; uploading of information on the Internet creating digital libraries, training of staff for extending information services; encouraging networking and resource sharing at local level; listing of national and international journals which are freely available on the Internet and creating subject gateways to name a few.

e-Collection

Collection development is one of the primary requirements of a library. On the Internet, large numbers of electronic documents are available freely that include books, journals, encyclopedias and reports. Through library portal and content management systems libraries can link those documents for the benefit of users instead of downloading and giving access to their websites. These collections are very useful and handy for the users. They can download and have access to these resources offline on their personal desktops. Electronic collection saves the space and maintenance of books. Over a period of time, pages of books get brittle and it becomes difficult to handle and circulate. Whereas electronic documents can be used end number of times and multiple copies can be made. Users can access to electronic collection remotely, anytime and anywhere with

the access to the Internet. Library professionals must inculcate a habit of locating such websiteswhere the electronic collection can be developed and passed on to users. It will also benefit in reducing the cost of purchasing documents.

Procurement of Resources

The job of procurement of resources becomes fast, easy, saves time and energy due to the Internet. Apart, from documents libraries are also procuring CD-ROMs, multimedia tutorials and kits. The computer has made the task so easy before procurement of resources that it can check whether the document exists in the library, also cost verification and other details can be re-examined. Librarians can visit the websites of the publisher and can see books and journals. Placement of order and payment can be done online. Reminders and further formalities can be done e-mails.

Standardization in Technical Practices

Classification and cataloging is a technical job and is done by a professionally trained person. Today online classification system is available. A library can subscribe online classification system since Dewey Decimal is available online and OCLC is also offering this service. There are other national libraries for example: Library of Congress and British Library, who give ready-made classification number. Even their bibliographic details can be copied through Z39.5 copy cataloging facility. There are many cataloging standards made by different countries like MARC, UNIMARC, USMARC, CANMARK, etc. With the help of MARC (machine-readable catalog) tags, the bibliographic information of a book can be easily transferred through the Internet by library automation software.

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Online Public Access Catalog (OPAC)

The automation of library helps in sharing the OPAC. It shows the bibliographic details of holdings of a library. A library can put the OPAC on Internet or Intranet. The web OPAC enables users to see the availability of book existence in a particular library. They can reserve the book except the physical delivery which is impossible.

Library Networking and Resource Sharing

There are various networks available at national and international level. At national level INFLIBNET supports and imparts training regarding IT related problems to universities and colleges in India. There are other networks such as NICNET (National Informatics Centers

Network), ERNET (Education and Research Network), CALIBNET (Calcutta Library Network), DELNET (Developing Library Network) also available. There are also other networks available which work at state, countrywide and sectorial level. The ultimate objective of these networks is to interconnect information resources which will enable users to access information regardless of location, format and medium. Additionally, it will be useful for training, creating standards and databases, a union list of catalog, reference service, retrospective conversion and setting up communication facilities.

Library Consortia

A consortium is a relationship of two or more partners, individuals or institutions with the aim of sharing in a common or pooling their resources for attaining a similar objective. In similar way library consortia is a sharing of resources, collaborative activities, services and sharing of expertise. Library consortia also mean more users and lesser cost. Consortia based subscription to electronic resources allows access to wider electronic resources at lower and shared cost. The other benefits are the optimum utilization of funds, shared digital library, and shared CAS and SDI services. Some of the examples in India are INDEST consortium for IITs, CSIR consortium for all CSIR laboratories and UGC's INFONET consortium by INFLIBNET. This allows a unified network of information accessible to institutions of higher learning. It helps tremendously in teaching, learning and especially for research purpose.

ICT-Based User Education and Services

The effectiveness of ICT is very useful in imparting education and has a deeper effect on student's performance. New gadgets and technologies always fascinate the young generation and they readily accept the change. Their adaptive nature to technology raises many concerns to libraries. They require access to the latest updated information andaccess to ICT facilities at the fullest to utilize maximum for their studies. The numerous benefits that ICT are: it provides speedy access to information, remote access, anytime access, unlimited access to a wide range of information source through network, web access to OPAC and allows keeping a copy of electronic documents. In distance education, ICT proved an ultimate medium of instruction and study to users. Through website, course contents and syllabus can be facilitated to users. Through satellite channel and video conferencing learning has become hassle free.

Electronic Resources

There are various types of electronic resources available such as e-books, e-journals, electronic theses and dissertations (ETDs), patents, newspapers, photographs, motion pictures, music. The advantages of electronic resources are: it saves time; it's convenient, easy searching facilities, hyperlinking and sharing. It is convenient to store, maintain and cost effective. At the same there are various disadvantages to human, social and technological discomforts. Electronic resources are not comfortable reading on screen, poor Internet speed, outdated configuration of computer, deficiency in technical knowledge and expertise to handle electronic resources and disappearance of website or relocation creates lots of problems to users. A single search of the web harvests thousands of results and researcher need to filter what is required for him. This consumes a lot of time, although deep web search engines and federated search are handy but not best effective.

E-Books

A book in the digital form displayed on a computer screen is called an e-book (electronic book). With the help of an e-book readers like 'Kindle,' e-books can be read. There are other technologies like electronic paper and talking books (audio) also available for readers. The advantages include unlimited storage, unlimited access, a quick search of text, bookmarking, online availability, multiple copies of the same book, no shipping and postal charges and no mutilation and lost. In a library's point of view the advantages are cost saving in terms of circulation, binding, shelving, preparation of a list of book defaulters and collection of charges. Printing of books required pages and that is acquiredthrough the pulp of tree a natural disaster on the contrary e-books are eco-friendly and saves environment. Publication of printed book has to go through several processes that involve cost and energy whereas e-books can be published without the involvement of any third party and can be uploaded using different free web services and software.

E-Journals

The usage of an electronic journal is far superior to physical journals. Subscription and order placement of physical is a hectic job. A library supposed to keep track of delivery of journals issues and becomes a routine work for a library professional to constantly keep registering of received issues and to raise complain about missed and delayed issues. The circulation of physical journals, management and converting into bound volumes is a tiring job. Moreover, searching of an article on a particular topic, need to search multiple journals physically, is a very tough work. On the contrary, e-journals are easy to place order, no space requirements, no tension of pages becoming brittle, theft or loss of journals, online access to back issues, full-text search according to subject-wise author-

wise, title-wise, topic-wise, and publication-wise and downloading of end number of articles. There are many aggregators and database providers who supply hundreds of journal online such as Elsevier Science, Science Direct, Wiley Interscience, Emerald, EBSCOHOST, and J-Gate to name a few.

Electronic Theses and Dissertations (ETD)

Electronic conversion of theses and dissertations brought transparency in research work and became a helpful tool for curbing plagiarism. They have been considered as an important source of information by the UGC and under the supervision of INFLIBNET 'Shodhganga,' a national portal for ongoing research has been evolved using DSpace. The UGC Notification (Minimum Standards & Procedure for Award of M Phil. / Ph.D. Degree, Regulation, 2009) dated 1st June 2009 mandates submission of electronic version of theses and dissertations by the researchers in universities with an aim to facilitate open access to Indian theses and dissertations to the academic community world-wide. It will not only ensure easy access and archiving of Indian doctoral theses but will also help in raising the standard and quality of research." (INFLIBNET, 2015) Anumber of universities and institutions initiated this program and created their own ETDs. The other ETD portals are Vidyanidhi (Access to full-text theses and dissertations of Ph.D. / M Phil awardees of Indian universities) and ShodhGangotri (Access to full-text approved research proposals of Ph.D. /M Phil researchers of Indian universities).

References

1. Chauhan, B. (2004). ICT Enabled Library and Information Services. Winter School on ICT Enabled Library & Information Services, 1-10.
2. Digital Library Federation. (2011, January 11). A working definition of digital library [1998]. Retrieved January 10, 2016, from Digital Library Federation: https://old.diglib.org/about/dldefinition.htm
3. GIAN. (2011). Frequently Asked Questions on Patent. Retrieved January 29, 2016, from Grassroots Innovations Augmentation Network, North: http://www.gian.org/north/files/FAQ.pdf
4. Hamelink, C. J. (1997). New Information and Communication Technologies, Social Development and Cultural Change. Switzerland: United Nations Research Institute for Social Development.
5. INFLIBNET. (2015). Shodhganga a reservoir of Indian Theses. Retrieved Jauary 20, 2016, from Shodagands, INFLIBNET: http://shodhganga.inflibnet.ac.in/

6. O'Neil, E. K. (2001, May). Selective Dissemination of Information in the Dynamic Web Environment. *A Thesis Presented to the Faculty of the School of Engineering and Applied Science, University of Virginia*. United States of America, Charlottesville, VA: University of Virginia.
7. Putnik, G., & Cunha, M. (2008). *Encyclopedia of Networked and Virtual Organizations.* United States of America: Information Science Reference.
8. Wikipedia. (2015, Janaury 8). *Open archive*. Retrieved February 12, 2016, from Wikipedia, The Free Encyclopedia: https://en.wikipedia.org/wiki/Open_archive
9. Wikipedia. (2016, April 28). *Information and communications technology*. Retrieved January 15, 2016, from Wikipedia, The Free Encyclopedia.: https://en.wikipedia.org/wiki/Information_and_communications_technology
10. Wikipedia. (2016, April 26). *Patent*. Retrieved January 25, 2016, from Wikipedia: https://en.wikipedia.org/wiki/Patent