

ICT RESOURCES AND SERVICES IN UNIVERSITY LIBRARIES

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Abstract

ICT has long standing influence in almost all areas of human activity. It acts as a catalyst in all spheres of science and technology. ICT has become within a short time one of the basic building blocks of a modern society. The impact has been rather well-known in case of service activities such as banking, health, transportation, education and libraries. ICT is significant to the libraries to achieve its goals for management of information, effective services and extension of boundaries from the four-walls to the globe. They offer access to books in every possible form and format. You can visit them in real, but you can also visit them via internet. The advent of digital computer advances in telecommunication and audiovisual technologies has opened up new ways of collecting, organizing and disseminating scientific and technical information.

Keywords: India, University libraries, Information and communication technology (ICT).

1.0 INTRODUCTION

The availability of information at right time and in the right form is of utmost importance in the development of knowledge as well as in all the development activities. It has become very difficult to manage the information manually due to the explosive growth knowledge. ICT is significant to the libraries to achieve its goals for management of information, effective services and extension of boundaries from the four-walls to the globe. Information and communications technology have changed the academic library in a profound way. Computers and networked electronic resources had become an integral part of the academic library the past decade. Information and Communications Technology (ICT) have transformed Library and Information services globally. The Internet has provided universal access to information. Technological innovation has dramatically increased the rate of conversion of knowledge, information and data into electronic format. Developments in the software arena has generated powerful knowledge management software which has

transformed the way knowledge is organized, stored, accessed and retrieved (Tam & Robertson, 2002:2).¹

ICT has become within a short time one of the basic building blocks of a modern society. Many countries now regard understanding ICT and mastering its basic concepts as part of the core of education (UNESCO, 2002b). In Uganda, Government has established a fully-fledged ICT Ministry since 2006 to stress the importance of ICT in promoting economic growth and development.² Academic libraries, mostly attached to universities and research institutions as centres of information services, have largely benefited by the rapid changes in technology. Emergence of internet as the largest repository of information and knowledge, changed role of library and information science professionals from intermediary to facilitator, new tools for dissemination of information and shift from physical to virtual services environment and extinction of some conventional information services and emergence of new and innovation web based.³

ICT is a term used to describe a range of equipment (hardware: personal computers, scanners and digital cameras) and computer programs (software: database programs & multimedia programs), & the telecommunications infrastructures (phones, faxes, modems, video conferencing equipment and web cameras) that allow us to access, retrieve, store, organize, manipulate, present, send material and communicate locally, nationally & globally through digital media (Dunmill and Arslanagic, 2006).⁴

1.1 ICT RESOURCES AND SERVICES IN INDIAN UNIVERSITY LIBRARIES

The development and availability of information and communication technologies (ICTs) in libraries have today not only increased and broadened the impact of information resources at their doorsteps, but also placed more emphasis on effective and efficient services. Their applications in libraries, commonly known as library automation, have indeed continued to ease & promote quick & timely access to and transfer of information resources that are found dispensed round the globe. The various services provided in the libraries are complimented by available facilities, some of which are technology driven. In modern library, technology application in the provision and performance of library services provided by libraries to patrons. The utilization of emerging technologies in recent times in libraries worldwide has proved beyond reasonable doubt, that a library, whatever its services can perform better when facilities are adequately provided to enhance access to the content of the library.⁵

Chisenga (2004) quoted that ICT came about as a result of the digital convergence of computer technologies, telecommunication technologies and other media communication technologies. Some library users are adopting electronic habits, making increasing use of the new ICT including computers, the Internet, the Web, Intranet, Extranet and other technologies. As a result, library users are placing new demands on their libraries. They require access to the latest information, updated information resources and access to ICT facilities that they could use in their work (Islam and Islam, 2006: 814).⁶

The following are some of the ICT facilities or resources that can be used for effective library operations and services:

- **BAR-CODING TECHNOLOGY:** A barcode reader (or barcode scanner) is an electronic device for reading printed barcodes. Using barcode equipments for circulation and stock verification is becoming more common, efficient and time saver.
- **BULLETIN BOARD SERVICES:** A Bulletin Board System, or BBS, is a computer system running software that allows users to connect and log in to the system using a terminal. Once logged in, a user can perform functions such as uploading and downloading software and data, reading news and bulletins, and exchanging messages with other users, either through electronic mail or in public message boards.
- **CAS & SDI SERVICES:** A selection of current-awareness services in the form of Table of contents' (TOC) alerts, List of new arrivals of journals and Books, Press Clippings, Research Digest, including Abstracting and Indexing Service have been started by the library. Selective Dissemination of Information refers to tools and resources used to keep a user informed of new resources on specified topics.
- **CHAT SERVICES:** Online chat may refer to any kind of communication over the Internet, which offers an instantaneous transmission of text-based messages from sender to receiver. In Libraries, it can be used for online reference service and real time consulting service. Online chat may address as well point-to-point communications as well as multicast communications from one sender to many receivers.
- **COMPUTER TECHNOLOGY:** The dramatic development in the information transmission process in every field of human endeavour has been made by the widespread use of computer technology. Computer can be referred to as the backbone, nucleus or hub of ICT application. In virtually all ICT applications, the computer is interfaced with other devices in order to function effectively.
- **DATABASE SERVICES:** A database is an organized collection of data for one or more purposes, usually in digital form. Libraries provide access to a variety of bibliographical databases and full-text resources that are typically organized to model relevant aspects of reality, in a way that supports processes requiring the information.
- **DOCUMENT SCANNING SERVICES:** Scanner is important equipment in modernization of library. It is useful for scanning text, image and content pages of books and providing great help for establishing digital and virtual library.
- **ELECTRONIC BOOKS:** The elements that are considered as importing for the use of E-books in an academic library are the Content, Software and Hardware Standards, Protocols, Digital Rights Management, Access, Archiving, privacy, market, pricing and features. Electronic books (e-Books) are one way to enhance the digital library with global 24-hours-a-day and 7-days-a-week access to authoritative information, and they enable users to quickly retrieve and access specific research material easily, quickly, and effectively.

- **ELECTRONIC DOCUMENT DELIVERY SERVICES:** At present, a document delivery service typically involves a combination of paper, digital and electronic media; document delivery is a "hybrid" medium. Libraries are implementing ICT-based interlibrary lending system using electronic networks to deliver copies of journal articles and other documents in digital format [mainly in Portable Document Format (PDF)] to library users' desktops.
- **ELECTRONIC JOURNALS:** Electronic journal may be defined broadly as any journal, magazine, newsletter or type of electronic serial publication which is available over the internet and can be accessed using different technologies such as World Wide Web, Gopher, ftp, telnet, e-mail or listserv. Many publishers who offer subscriptions to print journals, sometimes also offer subscription to the electronic version of the journal free of charge. Some of the publishers who are providing e-journals include Emerald Elsevier, Kluwer, Springer, Highwire, John Wiley, etc.
- **ELECTRONIC MAIL (E-mail):** This medium can also be used to send and receive mails. This is commonly and widely used with the internet facilities. E-mail is very useful for sending messages to and from remote areas with enhanced network. Further, it is also useful in various aspects of library environment. Thus, it may be stated that e-mail may play a significant role in information dissemination services.
- **ELECTRONIC RESOURCES:** The e-Resources on magnetic & optical media have a vast impact on the collections of university libraries. The commonly available electronic resources are accessed electronically through traditional medias like CDROMs, or through internet as electronic journal, online database databases, e-book, or in the form of OPACs, blogs, wikis, podcasts, etc.
- **FAX (FACSIMILE TRANSMISSION/ TELE FAX):** It is used in some academic libraries for document delivery and other scholarly communications. It is a method of converting an image into electronic signals that can be transmitted over a communication link and converted back into an image at the receiving end.
- **INDEXING AND ABSTRACTING SERVICES:** An indexing and abstracting service is a service that provides shortening or summarizing of documents and assigning of descriptors for referencing documents.
- **INSTITUTIONAL REPOSITORIES:** An institutional repository is an online archive for collecting, preserving, and disseminating digital copies of the intellectual output of an institution, particularly a research institution. For a university, this includes materials such as journal articles, both before (preprints) and after (post prints) undergoing peer review, as well as digital versions of theses and dissertations.
- **INTERNET:** As a source of serious subjects of the universe of knowledge, has become information super highway and opened the floodgates for scholarly communication. Internet is truncated version of internetworking, which refers to interconnecting two or more computer networks. Internet is described as a worldwide network of computer and people. It is an important tool for global on line services. The emergence of Internet offers very high bandwidth, which will widen the scope for information processing and dissemination as never before. Internet connects universities, colleges, schools and other educational institutions for information

- sharing and exchange. Access to information through Internet has changed the total scenario of librarianship.
- **LIBRARY MANAGEMENT SOFTWARE PACKAGE:** Software consists of the step-by-step instructions that tell the computer what to do. In a University Library, the most common computer software used are library automation software, database management software, antivirus software and application software. Many software packages for various applications in the field of library & information services and management are CDS/ISIS, SOUL, LIBSYS, KOHA etc. used for automation purposes.
 - **LIBRARY RETRIEVAL SYSTEMS:** This involves using Compact Disc Read Only Memory (CDROM) technological mechanism of acquisition of specialized CD-ROM databases in various courses such as sciences, law, technology, agriculture, social sciences, medicine, humanities etc. They are available commercially.
 - **LIBRARY WEBSITE:** A library website provides a library with a website to offer its services and to tell its story to its community. In most of the library website online catalogue is included. A library web page or Universal Resource Locator (URL) facilitates single window access to various web enabled library services.
 - **MICROGRAPHIC & REPROGRAPHIC TECHNOLOGY:** These technologies are still widely used technology in libraries globally. Most of the research libraries have reprographic machine and provide photocopies of any document on demand. Microform is a generic term for all information carriers which use microfilm or similar optical media (including study) for the high-density recording and storage of optically encoded information in the form of micro images of printed document, bit patterns or holograms.
 - **NETWORKED ELECTRONIC INFORMATION RESOURCES:** Networked electronic information resources are new vision of information of the future. These are the mainstay and life blood of present day information centres. Libraries are providing their users with access to networked information resources, i.e. databases, electronic scholarly journals, encyclopaedias, public government information, etc, provided by various publishers or suppliers.
 - **NETWORKING TECHNOLOGY:** The important function of network is to interconnect computers and other communication devices so that data can be transferred from one location to another instantly. Networks allow many users to share a common pathway and communicate with each other. The networks include the local area network (LAN) in library housekeeping and resource sharing and wide area network (WAN) that covers wide geographic area such as a country or state, that covers limited geographic area such as campus, or building e.g. - DELNET, INDONET, INFLIBNET, MALIBNET, NICNET, ADINET etc are major WAN in India.
 - **NPTEL SERVICES:** NPTEL provides E-learning through online Web and Video courses in Engineering, Science and humanities streams. The mission of NPTEL is to enhance the quality of engineering education in the country by providing free online courseware.

- **ONLINE FULL TEXT SERVICE:** A full-text database is a compilation of documents or other information in the form of a database in which the complete text of each referenced document is available for online viewing, printing, or downloading.
- **ONLINE INSTRUCTIONS:** Libraries are also implementing online based bibliographic or library use programs. These include online tutorials on searching online resources and virtual tours of library collections.
- **ONLINE PUBLIC ACCESS CATALOGUE (OPAC):** It is the computer form of library catalogue to access materials in the library. It is an online database of materials held by a library or group of libraries. It is a computerized library catalog available to the public. Most OPACs are accessible over the Internet to users all over the world.
- **ONLINE READERS' ADVISORY SERVICES:** Libraries are implementing Web-based versions of readers' advisory services and reference services. It helps to find the right information/reading material for the right person at the right time and provide the best information that matches their needs, interests, and reading level.
- **OPEN SOURCE SOFTWARE:** Open Source Software or the OSS is freely available computer software, which allows altering the source code and customizing the software to anyone & for any purpose. In the last few years we have seen the development of a number of ILS products in the open source world such as Integrated Library Systems (ILSs) like Koha; Digital library software, like Greenstone; Digital Repository Software, like DSpace; Content Management Software, like Moodle, etc.
- **PRINTING TECHNOLOGY:** A printer is a device that converts computer output in to printed images. There are a number of different kinds of printers used in library such as Dot Matrix Printers, Laser printer, Inkjet, Bubble-Jet, etc.
- **RFID TECHNOLOGY:** RFID (Radio Frequency Identification) is the latest technology being used in modern libraries to prevent theft the library materials. Radio frequency identification is a term used for technologies utilizing radio waves for identifying individual items automatically. It is a fastest, easiest, most efficient way to track, locate & manage library materials and being used in the libraries for automatic check-in and check-out circulation process and also in stock management. It is an emerging, more effective, convenient, and cost efficient technology in library automation and security. RFID is used very similar to bar codes. Developments in RFID technology continue to yield larger memory capacities, wider reading ranges, and faster processing.
- **SMART CARD FOR MEMBER IDENTIFICATION:** A Smart Card is a polyvinyl plastic card (like a regular credit card) with an embedded chip on which data is stored. Smart cards can provide identification, authentication, data storage and application processing. Smart card readers are used to read smart cards. It can store multi applications and can be used for services like electronic purse/ debit card/ credit card/ health/ insurance/ loyalty etc.
- **STORAGE TECHNOLOGY:** Optical disc storage technology is the most recent computer technology to enter the library community. CD ROM developed in 1985

has ability to represent various media such as text, graphics and animation, video clips and sound files into a digital environment. Digital video disk or digital versatile disk (DVD) is the next generation of CD. The main feature of DVD is the compression technology and storing data on multi layer sides, stores 17 GB data is currently the only credible true multimedia format.

- **TELE TEXT SERVICES:** Tele text is a television information retrieval service developed in the United Kingdom in the early 1970s. It offers a range of text-based information, typically including national, international and sporting news, weather and TV schedules. Teletext information is broadcast in the vertical blanking interval between image frames in a broadcast television signal.
- **TELECONFERENCING:** Teleconferencing is a generic term that denotes the combined use of telecommunications and electronic technologies as an alternative to in-person meetings.
- **VIDEO CONFERENCING:** Videoconferencing is a method of holding conferences by transmitting and data communication networks, so that participants can both see and hear each other. It is convenient and less expensive for conducting a conference between two or more participants situated at different remote locations.
- **VIDEOTEXT SERVICES:** Videotext is a newer technology, but as in the on-line information retrieval, the information is stored in computer files and accessed through a telecommunication link. Videotext is any system that provides interactive content and displays it on a visual device, typically using modems to send data in both directions.
- **VOICE MAIL:** also known as voice mail, voice message or voice bank is a computer based system that allows users and subscribers to exchange personal voice messages. Voice mail acts like a telephone machine that digitizes the incomings voice message and store for retrieval later. It is an alternative system of e-mail.
- **WEB TECHNOLOGY:** The World Wide Web was developed in 1989 by Tim Berners Lee and by 1995 web has expanded to global proportions. The World Wide Web (WWW) is a client server based, distributed hypertext, and multimedia information system on the Internet.

1.2 CONCLUSION

Information and communications technology (ICT) have brought unprecedented change and transformation to university library and information services. It has created an environment where rapid continuous change had become the norm. Gone are the days when the library's collection was its pride and determined its value. ICT has reduced the library from its stature as custodian of our literary heritage to being a competitor among many others in the information society. The concept of the university library as a physical entity is being eroded by online access and the rise of virtual university libraries. Access has replaced ownership and the Internet has made remote access to databases possible 24 hours 7 days per week. The university library finds itself in a time of tremendous challenge but it is also a time of boundless opportunity to use ICT creatively to enhance service delivery to the user.

University librarians should through research and consultation with their users find ways to add value to the user's information retrieval experience.⁷

Until a few years ago the automation of libraries was a great dream for many libraries in the third world. Now more and more libraries in developing countries are working with online and/or CD-ROM databases, the Internet and OPACs. Libraries can collaborate with each other more than before and can exchange information much more easily and faster. Internet usage has grown in the whole country, and at the university libraries students are able to use the Internet whenever they please.⁸

REFERENCES

- 1) Smith, Michael Quinton (2005), "The impact of information and communications technology change on the management and operations of academic libraries", Bellville: Department of Library and Information Science. University of the Western Cape. Retrieved from <http://etd.uwc.ac.za/handle/11394/208>.
- 2) Geoffrey, Opira (2010), "Effects of information and communication technology on students learning: A case of Gulu University", Dissertation. Nigeria: Makerere University.
- 3) Krubu, Dorcas Ejemeh and Osawaru, Kingsley Efe (2010), "The impact of information and communication technology (ICT) in Nigerian university libraries", Library Philosophy and Practice (E-Journal). Paper 515. Retrieved from <http://digitalcommons.unl.edu/libphilprac/515>.
- 4) Siddike, Md. Abul Kalam (2010), "Use of information and communication technology (ICT) for automated networking and resource sharing in the selected public and private university libraries in Bangladesh: A study", Thesis. Dhaka: Department of Information Science and Library Management. University of Dhaka.
- 5) Afolabi, A.F, Abidoeye, J.A (2011), "Integration of information and communication technology in library operations towards effective library services", Ondo State: Department of Educational Technology. Journal of Educational and Social Research.
- 6) Ibid, 4.
- 7) Ibid, 1.
- 8) Engstrom, Martin (2001), "Use and development of information technology at two university libraries in Costa Rica", Thesis. Uppsala University: Institutionen För ABM.