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Information and Communication Technology (ICT) in Libraries: A New Dimension in Librarianship

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Abstract: *Library is a knowledge store that is indispensable to the success of any functional education. Education without the services of a library is half-baked and can only produce narrow minded individuals who would not be productive to their communities. The literatures on library and information science indicates that Libraries started off as store houses, where books were more preserved than utilized and librarians acted like custodians and their interaction with users were minimal. Later on there was a shift in all components of library system, especially the users, the services and the staff as a result of information communication technology. Effectiveness of library services now largely depends upon the Information and Communication Technology (ICT). The advent of digital computer, telecommunication and audiovisual technologies has opened up new ways of collecting, organizing and disseminating scientific and technical information. Therefore, in a bit to justify that ICTs plays a central and critical role in library operation, this paper attempts to give reasons for libraries using ICTs, highlight the impacts of ICT on librarianship as well as identify the modern technologies used in the libraries .Problems inhibiting the deployment of ICT infrastructure and facilities in Nigerian libraries and the way forward were identified and discussed.*
Keywords: Information Communication Technology (ICT); Libraries; Librarianship

INTRODUCTION

Information and Communication Technology (ICT) is a comprehensive concept that denotes not only a single unit of technology but an assembly of technologies like telecommunication equipment's, data processing equipment's, semi-conductors, consumer electronics, etc. According to Kude (2016), the term ICT includes any communication device or application, encompassing, radio, TV, cellular phones, computers and network, hardware and software, satellite systems and so on, as well as the various services and applications associated with them. Hamelink (1997), provides a useful and clear definition of ICT. According to him ICTs are those technologies that enable the handling of information and facilitate different forms of communication. These include capturing technologies (e.g. camcorders), storage technologies (e.g. CD-ROMs), processing technologies (e.g. application software), communication technologies (e.g. Local Area Network) and display technologies (e.g. computer monitors). On the contrary Marcelle (1998),argues that ICT is a heterogeneous collection of industry and service activities including information technology equipment and service, telecommunication equipment's and services, media and broadcast, Internet service provision, libraries, commercial information providers, network based information services and related professional specialized services. Whatever may be the definition of the concept, Pradhan, (2004) noted that the concept has brought a phenomenal change in the information collection, preservation and dissemination scene of the world.

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Furthermore, Eboka (2000), noted that records that formed part of the early libraries fall into four categories: Temple collections; Government or royal archives; organized business or economic records; and family or genealogical papers. Traditional librarianship is all about sitting down in the midst of books and expecting people to come and read. If they do not come, then, the librarian closes at the end of the day. This is the daily ritual.

But ICT has brought tremendous changes in Library and Information Science. It has revolutionized the traditional concept of libraries from a 'store house of books to an intellectual information center' connoting the concept of electronic library. It has opened up a new chapter in library communication and facilitated global access to information crossing the geographical limitations (Nasiruddin and Roknuzzaman, 2002). According to Daniel (2000), Nancy Schiller was one of the first writers to use the expression "virtual library" which she defined in 1992, simply as "libraries in which computer and telecommunications technologies provide access to wide range of information resources possible". Today, the concept is referred to variously as "digital library", "electronic library", "community network", or simply "library without walls" (Ogunsola, 2004). What is happening to librarians, therefore, can be called a paradigm shift, and it is transforming them from armchair librarians to thorough bred information professionals who now provide information services to users in different locations. This change has helped them to break the barriers of place, time or format.

Be that as it may, Akintunde (2006), opines that "many libraries in Nigeria still operate in the traditional service pattern where librarians are in charge of the main service points of circulation, reference, serials, acquisition, cataloguing and documentation without any emphasis on academic disciplines" This is a sad affirmation of a similar complaint several years ago by Afullo (2000),that Nigeria was rated among the lowest in Africa in telecommunication infrastructure and so not much is expected of libraries in Nigeria.
In the light of the foregoing, , this paper attempts to give reasons for libraries using ICTs, highlights the impact of ICT on librarianship as well as identify the modern technologies used in the libraries. Also the problems inhibiting the deployment of ICT infrastructure and facilities in libraries in Nigeria and the way forward were discussed.

Reasons for using computer and related technologies in libraries

The organization of information/knowledge is an essential preliminary to its effective exploitation and dissemination. As the quantity of knowledge expands, the need to organize it becomes more pressing (Issa et al. 2011). A vast number of different means of organizing information have been devised and exploited since the earliest times. With the vast output of new information and ever-increasing degree of specialization in all areas of human knowledge, heavy demands are being placed on library information storage and retrieval systems, which can be scarcely met by the traditional methods except with the use of ICT devices. The improvements and changes in computing and telecommunications and the integration of the two fields have had a huge role to play in the methods of information

processing and dissemination in libraries; thus improving the quality of use to which such libraries are put.
Similarly, Islam and Islam (2006) noted that various factors have contributed to bring about change from traditional to ICT based library operations. They pointed that, basically ICT is needed in libraries for the following two main reasons:

In terms of various problems faced by the traditional library systems: The manual performances of library functions were getting difficult because of the following main reasons: The size of recorded information is ever growing whereas space available at the disposal of each library is limited. No library can think of getting additional space every year, although the collection will grow continuously; 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, but the organization of this bulk of information has also become unwieldy; Library operations, due to potential growth of information, could take many hours to perform manually; Due to information explosion, all sorts of housekeeping jobs and information works can be performed manually with less effectiveness and less accuracy.

In terms of various facilities provided by computers and related technologies: The advantages of using computers in libraries are manifold. Some of the advantages are as follow:
Speed: A computer can carry out an instruction in less than a millionth of a second. Searching of information, compilation of bibliographies, and preparation of current awareness bulletins, indexing and sorting can be processed by a computer in a few hours.
Storage: Human brain can store pieces of information to some limitation whereas computers can store voluminous data.
Accuracy: Computers can perform functions very accurately.
Reliability: Computers and all related technologies have long life if maintained properly. The data gathered in it are also reliable.
Repetitiveness: A computer can be used repetitively to process information.
Compactness: The present day computers are laptop/palmtop, which do not occupy more space.

Impact of ICT based in library system.
Several studies have adequately addressed the impact of ICT facilities in library operation and more have seen the need to use ICT facilities, especially in areas of creating digital libraries in order to make access to information or document faster and easier for users at lesser cost than it used to be when using the traditional manual system. Ogunsola (2004) explained that the pace of change brought by new technologies has had a significant effect on the way people live, work and play worldwide. Information and Communication Technology (ICT) has brought many revolutions in the human life. One very important, impressive and effective revolution is the enhancement in the speed and span of information production, sharing and recycling. It has changed the basic concepts of proprietorship into

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sharing and preservation into access. Librarianship among other fields have been influenced by this revolution. It has been transformed into information science and information centers. Formal tools and techniques have been replaced by the modern technologies. Information and communication technology has become an integral part of the modern libraries. Databases are replacing the huge amounts of inventories. Resource sharing has become a necessary requirement and is easier through modern techniques. As attested by Chisenga (1999), ICT in libraries has changed the mode of information storage and retrieval, acquisition, cataloguing and classification, circulation of materials, serials control, management statistics and administrative activities such as budgeting. This has led to the provision of more efficient information services to the users and the overall improvement in the performance of the libraries and other related information institutions.

Information and Communication Technology (ICT) has transformed library services globally (Futalibrarian, 2013). Ndidiamaka (2013) observed that the ICT resources are greatly used effectively in processing materials in the library services such as cataloguing and classification, indexing, bibliographic checking, spine labeling etc. Furthermore, physical barriers have broken down, libraries and the services they provide now have borderless territories due to the application of ICT in libraries thus resulting in the benefits articulated several years ago. Alasa and Kelechukwu (1998) highlighted the impact of ICT to include:

Quick and convenient information exchanges; Access to regular updates on topics of interests; Enhancement of team work across geographical distance; Access to archives information worldwide; Transfer of data between machines and provides a great platform tohave fun and be entertained. As a reference tool, the internet provides wealth of up-to-date resources unavailable in bond volumes; It enables you to reach your fellow librarians with messages and documents independent of the constraints of mails, telegraph or even fax; One can collect news and facts which can be stored in one's computer for later use in reference; Resources in the internet allow libraries to provide better services to their patrons by giving on-line access to information that will be difficult to locate in any other manner; The internet provides access to bibliographic records of millions of books and the details of the holdings of academic and research libraries around the world. Electronic journals and newsletters are made available on a regular basis; Librarians can make the selection of books required in their institutions and order them without going from one bookshop or publisher to another; Furthermore, Omekwu and Echezona (2008), corroborated these benefits as follows: Libraries are now situated in cyberspace; Library services are no longer constrained to time of opening and closing hours; Library users can access services in libraries beyond their own, beyond their country and continent and the virtuality of information resources means that millions of users can access one resource at the same time. Still on the benefits of ICT to library services, Akanni (2008), also identified the following as benefits of globalization to library services: Improved access to information; Enhancement educational development; Improvement in the status of Nigerian libraries; Digitization of local content; and Conservation of library space.

Modern Technologies (ICT) in libraries

According to Ndidiamaka, (2013), some of the ICT gadgets used in carrying out different aspects of library services are computers, internet, printers, telephone, spine labeling machine, Barcode machines etc. Similarly, ICTs used in libraries as identified by Kude (2016) include: Computers, Internet, Library Housekeeping software, Consortia, CCTV, RFID, Institutional Repository, Web design and e-resources. Others as suggested by Issa et al. (2011) comprises of all the electronic infrastructure and facilities employed by libraries to improve and provide efficient services. Such facilities, in broad term, consist of hardware, software and communication links between the service outlets of different libraries to facilitate the sharing of common resources; especially the library networks. Again, Khan et al. (2011) listed the following as modern technologies used in libraries: Computers, Internet, E-mail, Mobile Phones, Fax machine, Scanner, Printer and Bar code reader. However, Islam and Islam (2006) categorized modern technologies used in libraries into three namely: Computer Technology, Communication Technology and Reproduction technology. These are discussed as follows:

Computer technologies: The dramatic development in the information transmission process in every field of human endeavor has been made by the widespread use of computer technology that can further be divided into following categories:

Workstations: These are expensive and powerful computers used mainly by engineers and scientists for sophisticated purposes.

Microchip technology: A microchip is a tiny piece of silicon that contains thousands of micro-miniature electronic circuit components, mainly transistors. The microprocessor of microcomputer, which process data, is made from microchips.

Artificial Intelligence (AI): AI is a group of related technologies that attempts to develop machines to emulate human like qualities, such as, learning, reasoning, communicating, seeing and hearing.

CD-ROM technology: CD-ROM is an acronym that stands for Compact Disc Read Only Memory. It is an optical disc of 120 mm diameter and a hole of 15 mm at the center with thickness of 1.2 mm. Data is recorded in digital form using laser beam. CD-ROM is used to hold prerecorded text, graphics and sound.

Software technology: Software consists of the step-by-step instructions that tell the computer what to do. Many software packages for various applications in the field of library and information services and management are commercially available.

Communication technologies: Communication or telecommunication technologies are used to transmit information in the form of signals between remote locations, using electrical or electromagnetic media as carriers of signals. Communication technologies comprise the following:

Audio technology: The outmoded AM (Amplitude Modulated) radio receivers are being replaced by the modem FM (Frequency Modulated) receivers. The recent development is the production of Compact Discs (CDs). Audio technology can be used in libraries and

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information centers for a wide variety of purposes such as storytelling to children, imparting education, knowledge, recreation, etc.

Audio-visual (AV) technology: AV technologies are those by which things can be understood by listening as well as seeing.

Satellite technology: Satellites are, in fact, formed of microwave transmission, which are positioned in space approximately 22,300 miles above the earth, represent relay stations for earth round communication.

Internet: Technically, the Internet is a junction of a number of hardware and software resources or equipments to construct the infrastructure and to perform multiple functions. It is treated as a virtual library where world's information resources are gathered for the use of the clientele. It has broken down the distance barrier in communication. It has greatly influenced the practice of librarianship; and access to information through Internet has changed the total scenario of librarianship.

Network 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.

Reproduction Technologies

Reprographic technology: The term reprographic is used to identify that field of information processing which concerns with technologies and equipments for the reproduction of documents.

Micrographic technology: Micrographic is that field of information technology which concerns making use of microforms. 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 documents, whether patterns or holograms.

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 printers, Inkjet, Bubble-Jet, etc.

Problems inhibiting the deployment of ICT infrastructure and facilities in Nigerian libraries

There are problems challenging the deployment of ICT infrastructures and facilities in Nigerian libraries. MacArthur's report of 2005 titled "Developing Strong University Libraries in Nigeria," identified lack of appropriate funding system to acquire relevant information and communication tools and lack of infrastructure to provide access to electronic information as the major factors faced by the Nigerian libraries. In another development, money was found to be inadequate for collection development and there have been few acquisitions, as most of the collections stopped growing substantially in the mid-70s. Furthermore, Chasinga (2004) observed that the use of ICT in libraries has raised a number of challenges such as, Changing role of libraries and librarians, Funding for libraries, Copyright management, Information access, Preservation of digital information resources and Legal deposit among others. Similarly, Ndidiamaka (2013) in his study of the impact of Information and Communication Technology (ICT) on libraries discovered that

most of the challenges identified in some Nigerian libraries include poor funding and internet access. Other challenges inadequate skilled librarians and poor power supply, which greatly affects the use of ICTs in the provision of library services. However, OKiy (2005) points out poor and inadequate telecommunication facilities; poor level of computer literacy within the academic community; and poor level of computer facilities. Poor level of awareness of Internet facilities among policy makers, government officials and the ruling class in general; and minimum involvement of academic institutions in network building in Africa are challenges militating against the use of ICTs. Other common barriers mentioned as factors undermining the use of ICTs, include Low level of ICT skills; lack of functional ICT policy; economic barriers (funds); ICT infrastructure; resistance to change; low capacity of communication facility; absence of digital or electronic libraries; lack of policy for manpower development etc. (Okiy, 2005).

Explaining further these challenges, Gardner (1994) pointed that unskilled and untrained human resources lead to the employment of expatriates which the African governments cannot pay or sustain expatriates. Furthermore, Vendor's are more concern with making money without maintenance plan. Without adequate training, organizations may not be able to effectively use them. Therefore, system designers need to understand or undertake a systematic study of the organization and country within which the system will be used (implemented) in order to put in place an effective and efficient system. Another factor that contribute to the under-use of ICTs is culture. Supporting this, Odedra (1992), opines that culture is a strong factor that dictates if technology be accepted or not accepted. Schneider and Barsoux (1997) analyzed culture as functional, professional, organizational, industrial, regional and national. To this study however, professional and national cultures appear to be more suitable. Professional culture has cultural peculiarities, the way they (people) take training, supervision and socialization. National culture is about where someone is born, undergoes training etc. Tully (2003) states that the environment where one grows up can determine his or her ability to fully use modern technologies. Many Nigerian libraries had, at different times, planned to adopt ICT, but had to drop the plans mid-way due to certain inadequacies, which Madu (2002) enumerated to include: Economical, Manpower problem, Political instability, Capital, Geographical isolation, Social, cultural and Exposure. Consequently, libraries especially those of tertiary institutions have had difficulties in their attempts at achieving full application of IT in the conduct of their operations; thereby failing to benefit maximally from such adoption. On the whole, Obajemu and Ibegwam (2006), pointed that libraries in Nigeria are still on the race to make their services totally ICT- based.

SUGGESTION FOR IMPROVEMENT OF ICTS IN NIGERIAN LIBRARIES

There should be massive injection of funds and financial assistance from both the Nigerian government and some international donor agencies for the provision of ICT infrastructural facilities for effective library services in Nigerian libraries; every division of libraries in Nigeria should be automated in order to facilitate and create an avenue for effective services. Nigerian libraries should organize short computer training and retraining

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programs from time to time to assist librarians who do not have knowledge and computer skill, thereby promoting computer awareness of computer potentials and capabilities.
Orientation programs on the use of computer for information retrieval should be conducted and made compulsory for new entrants into the profession so as to cope with the current trend or the new technological revolution.
The Nigerian librarians should seek for effective and efficient power supply supplemented with standby generators so as to check the menace of frequent electricity power failure. With this, library and information services will become ennobled through the acquisition of adequate ICT knowledge/skill and its full application in Nigerian university libraries or else they become obsolete in this era of ICT. Government at both the federal and state levels in Nigeria must develop a more pro-active and progressive attitude to the implementation of the national policy for information infrastructure and facilities. There should be collaboration between experts in ICT know-how in the computer centers and the libraries, to fast-track the active participation of academic libraries in Nigeria in delivery of their services.
Basically, librarians should be fully articulated with ICT competencies required as follows:
Have basic knowledge of computers and their capabilities;
Competency with search engines;
Competency with internet facilities;
Competency with e-mail;
Competency with internet navigator tools;
Competency with web browsers and web file formats;
Competency with database software;
Internet development and management know-how.

CONCLUSION

The library is an important part of the learning society that surrounds it. It is formed and improved by many of the same forces that shape other types of institution. Nigerian librarians need to identify the changes that have already taken place in libraries, and to be aware of the methods in which larger social changes are affecting the other institution. Although the fundamental job has remained, to facilitate and give access to information and knowledge, the processes, tools and techniques have undergone significant changes. However, access alone is of course not enough, it is also about extending services, methods, and practices and developing innovative approaches to guarantee free and universal access to relevant knowledge. Nigerian Libraries should ensure that the world's citizenry has access to the world's knowledge. This can only be achieved through the adoption of ICT. The use of ICT will lead to speed in library operation services such as cataloguing and classification, acquisition, processing storage, retrieval and dissemination operations. This is the only way Nigerian librarians can retain a place of relevance in the challenging world of information service delivery or else they become obsolete.

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