Research Library Development in Nigeria: The Role of Information Communication and Technology (ICT)

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Abstract: *The current trend in global research development and library growth is as a result of the introduction of Information Communication and Technology. This paper explains the role and impact of ICT on research library development peculiar to the Nigeria situation. The paper also traces the genealogy of ICT and its introduction into the Library. It further reiterates the need for ICT in Nigerian research libraries, stressing the importance of ICT in research. The concluding part highlighted some challenges facing ICT development and its full adoption in Nigerian research library situation.*

Keywords: ICT, Research library, Library, Nigeria, Library Development

1. Introduction

Ebujuwa (2005) defined information and communication technology as tools used for collection, processing, storage, transmission and dissemination of information while Loure and Macauley (2002) defined information and technology literacy as "the skills and abilities that will enable the use of computers and related information technology to meet personal, educational and labour market goals.

With advances in ICT, electronic information resources such as electronic books, electronic journals, CD-ROM databases, OPAC, online databases and the internet have launched the world into an information age. No institution or organization can still rely on only traditional printed information resources to perform effectively and efficiently. To Librarians, ICT is a significant development that provides tools for managing the avalanche of information generated by modern society.
ICT enables society to create, collect, consolidate, communicate, manage and process information in multimedia and various digital formats for different purposes. Development in ICT have brought about the merger of the computing, information, communication, entertainment and mass media industries thereby providing a means of exchanging information anytime anywhere in the digital format used by computers.

2. Historical Background of ICT (ICT Evolution)

According to Singh & Nazim (2008), the information society has passed through four transformational stages of development, the most radical stage starting at the tail end of the 20th century. This stage has brought a never-ending revolution, particularly with the introduction of information and communication technologies.

The history of ICT according to Schwartz (2005) originates from humble beginnings, which include the abacus. The abacus is thought to have been originally invented 3000years BC. Revisions to its use/design continued for many years. For instance,in 500 BC a bead and wire version

was developed in Egypt. Early versions of the calculator were gradually replacing the primitive method of mathematics. In 1624 Wilhelm Schickard built the first four-function calculator-clock at the University of Heidelberg, thus heralding a new era.

The 1st general purpose computer was designed by Charles Babbage around the year of 1833. In 1855 George and Edvard Scheutz built a practical model based on Babbage's original designs. The Intel Corporation released the 1st microprocessor (the Intel 4004) computer in 1971. The project was led by Macian E. Hoff. The PC as we know it today was created by IBM and released in 1981. Apple also introduced the PC alternative, the Macintosh, in 1984. It features a GUI (Graphical User Interface), which gave the IBM PC's DOS (text-based) run system stiff competition due to its usability and professional software.

The World Wide Web (www) was developed by Tim Lee in 1991, and CERN also creates the 1st Web Server. The Pentium chip was included in PCs for the first time in 1993. There was officially World Internet Connectivity as at 1995. The new information and communication technologies that emerged and went mainstream during this so-called ICT revolution include advanced fax and telephony technologies, satellite communication, and computer, network hardware and software, such as word and table processors, e-mail, search engines, and Internet databases and encyclopaedias. These technologies immensely improved technological efficiency of interpersonal communication and data processing and storing, which is linked to the birth of e-library.

3. Research Library in Nigeria

A research library according to Ogbonna (2009), are established to function sorely as a research centre. Though their functions cut across those of other types of libraries, the primary function however it to provide the resources and services that will meet the research requirements of researchers in the form in which they are needed and at the time when they are required. Some writers opined that research libraries may operate without been linked with any

parent institution. However, research libraries in Nigeria operate under their parent institution. In other words, research libraries in Nigeria are found in research institutes, and this reflects in the nature or types of resources that are accessible in such libraries. For instance, a research library in an agricultural research institute in Nigeria will focus more on resources related to agricultural research in-line with the mandate of her parent body.

Since research libraries in Nigeria are found in research institutes, thus, the numbers of research libraries is tantamount to the numbers of research institutes in Nigeria. According to a report by the Punch Newspaper (one of the national daily newspaper in Nigeria), Nigeria has well over 100 research institutes. The Agricultural Research Council of Nigeria (ARCN), alone manages about 15 agricultural research institutes in Nigeria, with many other colleges of agriculture where agricultural research is been carried out. This implies that the numbers of research libraries in Nigeria are not negligible and thus the need for their development is crucial.

4. Impact of ICT in Library and Information Science

Information and communication technology, which is popularly, refers to as ICT in short have made considerable impact on all spheres of human environment. The impact has been rather well-known in case of service activities such as banking, health, transportation, education and libraries. According to Patel (2012) in library case, ICT has massively changed the management of databases or housekeeping operations as well as the way services are delivered. He further stated that ICT has brought extraordinary changes and reconstruction to library and information services, user's services.

In another dimension, Islam & Islam (2006), compared ICT and Information Technology (IT) as a parallel concept that denotes not only a single unit of technology but an assemble of technologies like communication equipment, data processing equipment, semi-conductors, consumer electronics etc.

The emergence of ICT has brought tremendous changes in library and information science. Application of information technology (IT) to library and information work has metamorphosed the traditional concept of libraries from a 'store house' of books to an 'intellectual information centre' connoting the concept of digital library. In no doubt, it has opened up a new chapter in library communication and facilitated global access to information crossing the geographical limitations. With the invention of ICT, libraries now use various types of technologies to aid the service been rendered. Every day, new technological advance affects the way information is handled in libraries and information centres.

ICT has impacted on every area of library science especially in the form of library database improvement strategies, library structure and consortium. ICT present an opportunity to provide value added information services and access to a wide variety of digital based information resources to their clients.

In their study on survey of the use and application of information and communication technology in research and development libraries in Tamil Nadu, Murugesan & Balasubramani (2011), suggested that the research and development institutions should give priority to consortia based subscription and boost the funds and recruitment of information technology trained staff for better ICT based services and product to their library users.

Krubu & Osawaru (2011) had in their own study tried to ascertain the impact of ICT on Nigerian academic libraries. The researcher arrived at a conclusion that ICT has fulfilled its promise in academic libraries, that there is remarkable rise in the use of ICT. This has led to the speed on library operations. ICT has also help to cub the problem of information explosion in this information era.

Quadri (2012) also opined that today libraries are shifting their role from the custodian of traditional information resources to the provider of service oriented digital information resources. Widespread use of computers, increased reliance on computer networks, rapid growth of the internet and explosion in the quality and quantity of information has compelled libraries to adopt new means and methods for the storage, retrieval and dissemination of information.

5. The need for ICT in Library

The traditional library system is pruned to many problems and thus the need for ICT. The manual performance of library functions is so difficult because of reasons like the size of recorded information, which is ever-growing greater than the space available. It is difficult to add additional space to a library every year, whereas the library information will continually increase. The storage problem is not only the reason for the introduction of ICT. The organization of the ever increasing information, which is multidimensional because of the current global knowledge explosion, has also proved difficult without the use of ICT.Islam & Islam (2006) highlighted the following advantages of using ICT in managing libraries.

Speed: Searching of information, compilation, sorting and other library functionscan be done faster with the introduction of ICT.
Storage: Computers have a larger capacity to store information or data betterthan even human brain.
Accuracy: Computers are more accurate in any analysis and thus, free from errorscompared to human brain.
Reliability: If maintained properly, computers can live longer than human.
Compactness: Considering the problems of space in the traditional library system, computers in the present days are compact and thus do not occupy more space.

6. Challenges Facing ICT in Nigerian Research Libraries

There are many challenges facing information professionals on the use of ICT in our different research libraries in Nigeria. Currently, very few out of the numbers of research libraries in Nigeria can boost of full ICT application

especially in e-library. Some of the other challenges are highlighted below:

Funding: Sustainability of the technology is the major non-technical constraint in research institutions. Research institutions are facing a lot of challenges in sourcing for funds to sustain libraries in line with the advent of ICT. Unlike the academic area where there is a percentage of allocation for equipping libraries, in research institutes in Nigeria, this is not the case. The fund allocated to a research library is always as a result of how the Librarian in charge can lobby the management through budget or proposals. Therefore, in most research libraries, the issue of underfunding is a major task confronting the sustainability of ICT. In research institutes where the political economy is slanted, coupled with the absence of a policy, libraries and information centre may suffer from neglect and hence be unable to develop and use ICT.

Inadequate Technology and Infrastructure: This is another challenge facing ICT in research libraries. Most of the times, it is telecommunication services that is providing either low bandwidth, technical faults and other networks configuration problems. According to Jensen (2005), there are also 'many external systemic factors such as electricity, transport networks, import duties etc. which impact on internet services delivery not only on research libraries but generally on the African continent. In some institutions, access is limited, not only by the number of internet service points, but also by the time that access is available or permitted, aside the difficulty of bandwidth. Yet for research purposes, access to the internet is no longer a luxury or prestige it is a necessity.

Shortage of Expertise is another constraint highlighted by Minishi-Majanja (2004). He enumerated three major task of:

1. Issues of re-skilling lecturing staff so as to improve their ICT competency.
2. Lack of systems manager/support staff/ICT experts.
3. Low level of users' epistemological access. Manda (2006) observed the lack of ICT knowledge and skills among staff. Ikoja-Odongo (2006) describes the problem of brain drain, where staff sent oversees for training either does not return to their posts or are taken up by other organization who can offer them higher remuneration on return.

The challenge of technical support and maintenance aspects of ICT is another problem confronting ICT in Nigerian research libraries. Poor maintenance and insufficient skills to diagnose system problems is more or less a general problem in Africa as a whole. The problem of technical expertise is two faceted. In the first glance, there are not enough people qualifying or attaining ICT specialist skills at the speed of which the technologies are adopted. Secondly, the problem of brain drain where a few experts opt for better paying job oversees is on an increase in Nigeria.

All these challenges correlated with the findings of Onilude & Apampa (2010), when a study was done to access the effects of ICT on research and development activities at FIIRO in Lagos, some of the challenges highlighted were:

- The bandwidth available to the institute is inadequate compared to the number of users, which accounts for the low speed of connectivity encountered by users.
- Inability to monitor the network from a central location, which also underscores the underdevelopment of ICT infrastructure.
- Analysis shows that while a majority of staff are conversant with basic operations of computers vast majority required further training.

Other challenges highlighted include irregular power supply, failure and high cost of local internet service provider (ISPS), poor organization design and user dissatisfaction with low bandwidth.

7. Conclusion and Recommendations

The contribution of Research Library to research development of any nation can never be over-emphasized. Research libraries can be likened to be the foundation that allows any research. In Nigeria, research libraries functions in research institutes where daily research activities are been carried out. The primary focus of any developing country should be geared toward research development. It is also expediential to note that the traditional system of libraries cannot manage or provide necessary information and services needed for research development of any country. Thus, the introduction of ICT in research libraries is a crucial step in a bid to ascertain research development.

Research has the capacity to develop a nation faster than natural resources. If ICT is fully introduced and adopted in all research libraries in Nigeria, it will not only improve research development but also drive Nigeria to a fast developed status. The following suggestions are hereby recommended.

- Government of Nigeria should improve in the funding of research libraries. It will never be too much if separate funds/budget is allotted to research libraries in all the research institutes in Nigeria. If our research libraries are well funded, it will aid the introduction of ICT into the libraries and thus, improve research development.
- Many research institutes in Nigeria as at today still don't have a standard library building, let alone introducing ICT. There are still many research institutes that use offices or even a store as library just to keep books and internal publication. The government should endeavour to build stand research libraries in all research institutes with the introduction of ICT if research development will be ensured.
- It is also important to employ the service of well trained and qualified librarians to oversee our research libraries. ICT training should also be conducted frequently for research librarians across the country, in other to update their knowledge and improve their skills in facing the challenges of e-library.
- Considering the importance of Information Communication and Technology in library and research development, it is highly recommended that our traditional libraries, especially the research libraries in Nigeria should be upgraded to e-library in other to conform to the current trend of development in the world.

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