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Information Communication Technologies and its Application in Nigerian Academic Libraries: Challenges and Prospects

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Abstract

The study examines the concept of Information and Communication Technology and its impact on academic libraries and the society. An overview of ICT over the years is x-rayed. The paper highlights the tremendous impact ICT has exerted in academic libraries. It recommended that librarians and other information professionals should avail themselves of the opportunities offered by the government, academic associations and corporate bodies to update their knowledge and skills through sponsored workshops, conferences and seminars. Librarians should also be able to sponsor themselves and attend conferences, workshops and seminars when sponsoring opportunities are not available. Library educators need to provide good ICT policies and programmes to cater for ICT strategic planning, provision of ICT tools for faculties, staff training/retraining programmes for skill acquisition, creating positive digital environment and awareness campaign. Government and public supports for the application of ICT tools in academic libraries should be considered as a wise step at the right direction.

Keywords: ICTs skills, ICTs application, academic libraries, Nigeria

1.0 Introduction

It is evident the world over that education is one of the key sectors that have been profoundly transformed by the application of information communication technology offered by the digital (electronic) revolution. The impact of the technological advancement offered by the electronic revolution is increasingly influencing several aspects of human life. In fact, the world has been brought to a new concept now commonly referred to as

a global village. Agbatogun (2010) cited in Zaid (2011) observed that computers are increasingly influencing several aspects of human endeavor. It is also remarked that education sector has been greatly influenced by the application of technological advancement offered by the digital revolution that is rocking the globe. Igbo and Imo (2013) observe that the realities of the present information age as a result of the evolution of information and communication technologies (ICT) has brought about a radical change in

teaching, learning and research. This has invariably resulted to the over whelming transformation in information based services so much so that the role of the traditional library has being redefined to key into the opportunities provided by technology to reshape information/provision in line with the expectation of the new information society. Sharma (2009) cited in Igbo and Imo (2013) opines that, the Internet and other electronic resource are constantly influencing the development of scholarly communication, they have been the potential for delivering vast goods as they overcome successfully geographical limitation associated with the printing material in evaluating the impact of information technology has exerted on the society, Edem and Afebende (2011) state that development and innovations in library and information science have revolutionalized the capacity to store, transmit, access and use information. Virtually, every aspect of scholarship from conducting research to communicating ideas has been influenced by these technologies. In fact, presently information and communication technologies have significantly and tremendously influence information generation, organization, access, retrieval and dissemination to users. Also, libraries by extension are organizing information knowledge beyond the physical walls and buildings, by including materials accessible through electronic means and by assisting users in navigating and analyzing the great quantities of knowledge with variety of electronic tools.

1.2 Statement of the Problem

In spite of the fact that ICTs have been utilized from the inception (evolution) by developed nations, world over, in different professions; the technologies however, are unfortunately not properly harnessed in developing countries including Nigeria. The problem is that people are still expressing high

level of naivety and unwarranted fear as they pessimistically concentrate on the ICT demerits. In the field of librarianship, particularly academic libraries, librarians are challenged to meet up with the ever increasing number of students plus the faculty members without adequate ICT infrastructure and tools to acquire and manage library resources. Library staff cannot serve the academic community effectively if they remain indifferent without bothering to acquire ICT new skills. These identified problems have led to this study to investigate the challenges posed to academic libraries which hinder their ICT application.

1.3 Objectives of the study

This study is carried out to:

- i. trace the historical development of ICTs;
- ii. ascertain ways ICTs have been applied in libraries generally;
- iii. identify challenges of ICT use in Nigerian academic libraries; and
- iv. to proffer solution by recommending the way forward

2.0 Literature Review

2.1 Evolution and Generation of Computers

It is now obvious that the modern libraries are increasingly being redefined and repositioned as a place of unrestricted access to information knowledge in various formats and from several sources. The current trends in information generation, packaging and delivery in libraries, is that, collections are stored in digital (electronic), prints and other non-print formats. These digital contents can be stored locally or accessed remotely through the convergence of computer networks. This new development and innovations is greatly enhancing inter-library cooperative networks, and resource sharing, thus facilitating improved document delivery and efficient

information services.

Despite the enormous benefits of ICT to libraries, they exist some challenges and problems, including inadequate existing technologies to cater for the surge for use of novel innovations in libraries, paucity of Information Technology, complaint librarian, lack of awareness and publicity of novel innovation, administrative bureaucracy and policy agreement for electronic information

resources. The need for adoption of ICT in library operations in academic institutions has become imperative. Therefore, this paper is carried out to investigate the concept of ICT and its application in academic libraries for an improved library services provision in Nigeria. Duru and Okon (2004) observe that, the evolution of computers were in many stages as illustrated in Table 1.

Table 1: Generation of Computer systems

Generations of Computers	Applications
The first generation (1940 - 1950)	were bulky and very large computers
The second generation 1955-1963	were transistorized; these categories were smaller, faster and cheaper than the first generation computers.
The third generations 1965-1973	were those whose switching elements were based on chips mounted on sliced on silicon which were operated on an integrated process of hardware and software and hardware.
The fourth generation computers 1974-1980	used large scale integrated circuits based on a micro electronics principle and were referred to as micro or personal computer.
The fifth generation computers (1981-1985)	were the computers system with enhanced intelligence, more than the previous generations. They had more parts packed into single chips for enhance operation and efficiency.
The sixth generation computers 1988 till date	are the latest system characterized by networks. They are smaller, cheaper, consume less space, more efficient and are very fast in processing.

The sixth generation of computers is the latest systems characterized by networks. They are smaller, cheaper, consume less space, more efficient and are very fast in processing. They have multimedia facilities, can use compact disks and flash memory pictures and have large storage capabilities.

2.2 Information and Communication

Technology: Conceptual Issues

Information connotes data that have been collected, processed and converted into message for the purpose of consumption and dissemination. Information can be simply

viewed as anything that has value and can add to human knowledge. The New Webster's Dictionary of the English Language (1992) defined information as knowledge obtained by search, study etc. Grundnitski (1980), cited in M'bashir and Saka (2012) defined information in a technical term as data that have been put into meaningful and useful context and communicated to a recipient who uses it to make decisions. In another context, Daniel (1986) cited in M'bashir and Saka (2012) viewed information as knowledge use in its generic sense to mean processed data facts or ideas meant to convey intelligible meaning for use. Communication denotes the

transfer of information to one another irrespective of distance, and on timely base. Technology, sometimes is used interchangeably with science, but they mean different things. While science is research-based, technology is application based. However, the two are interrelated in the perspective that while the former (science) is the beginning; the latter (technology) is the end of the knowledge production process. The encountered challenges and demands necessitate responsive actions from one and the quality of the responsive actions from one tends to depend on what one knows about the encountered challenges and demands placed on him. For one to have a better knowledge of posed challenges encountered and demands, one have to carefully observe, critically think about what confront him. The body of knowledge emanating through this process which include: concepts, laws, principles, theories, facts about how the world we live in function could be defined as science. The combination of these three basic elements: information, communication and technology led to coining of the term as: Information and Communication Technology (ICT). According to Okore (2005) Information and Communication Technology (ITC) has been used to simply mean availability and access to information through electronic formats which include:

- Telephone
- Software Technologies for distributed information processing
- Information Technology components and subsystems such as semi-conductors, micro-systems and peripherals.
- Web-browsers and sensors
- Multimedia systems (integrated personal systems)

Others include open microprocessor systems, high performance computing and networking (HPCN) technologies for business processes, photonic technologies, digital multimedia etc,

(EKPO, 2001:8) cited in Okore (2005). The convergence of various electronic formats such as computers, Internet, CDROM, GSM etc, resulting in ICT have the great potentials of ensuring and enhancing the dissemination of precise, concrete, accurate and timely information capable of meeting people's needs globally and making them be aware of recent trends in all fields of innovation and change.

3.1 Application of ICT in Library & Information Services

Objectives for the introduction of ICT in libraries Information and communication technology hold the key to effective and appropriate library operation in this modern and information society. In interlibrary learn co-operation and resource shaping ICT is seen as a more appropriate tool to consider in effective service delivery to users.

Nwachukwu (2005) citing Rowley (1993) observed that the objectives for the introduction of ITC in libraries include:

- To accommodate an increase workload
- To achieve great efficiency
- To reduce new services and functions and
- To benefit for co-operation and centralization.

Libraries in modern era are using ICT to accomplish different task such as: to automate technical services, to provide efficient reference and information service to network operations such as: cataloguing, authority control, interlibrary loan and international bibliographic project. Libraries are adopting ICT in other libraries because it has become imperative and to remain relevant in the information business in this present information age. Also libraries want to key in always as the world ICT best practices. Cochraine (1992) cited in Nwachukwu (2005) opines that, some of the advantages to libraries for adopting ICT include:

- Allows easy integration of various

- activities;
- Facilitate cooperation and information of library networks;
 - Helps to avoid duplication of efforts within a library and between libraries in a network;
 - Eliminate some interesting and repetitive work
 - Helps to increase the range of services offered;
 - Provide marketing opportunities of its services;
 - Ultimately may save and or generate money;
 - Increase efficiency.

3.2 Bird's eyes view of Implementation of ICT in Nigerian Libraries

The introduction of Information Technology to Nigeria came as an innovation and in phases. The earlier use of technology in Nigerian libraries as posited by Okore, Njoku and Orakpor (2013) was the introduction of microfilm technology at the University of Ibadan with the purchase of three microfilm readers in 1948. Later, other technologies such as internet and intranet were introduced to allow information sharing and dissemination both locally and through remote access globally. Ukpana and Uwen (2011) cited in Okore, Njoku and Orakpor (2013) observed that, academic libraries in Nigeria started automation as early as 1980s of their catalogues, particularly those of serial collections as a creative way of improving library services. One aspect of information technology that has created a great significant impact in the lives of the people globally in the last part of the 21st century is the computer.

3.3 Challenges of ICT Applications in Nigerian Academic Libraries

The main objective of introducing new technologies in the libraries is to improve on the information generation, organization

handling and use to meet users' satisfaction. In spite of this noble objective, the adoption of new technologies is accompanied with a lot of inherent problems and challenges. Sometimes, there in that initial apprehension and confusion associated with the introduction of new technologies in libraries. The fear of making mistake on the types of computer accessories, the cost involved in having a staff, buying ICT equipment amongst others may be with fear and doubt for success. Adebisi (2008) cited by Tion, Echezona (2014) observed and listed some of the problems facing the implementation of effective and efficient ICT services to include:

Low density and telecommunication facilities and services

Very low level especially computer literacy on the part of the staff and library users even within the academia.

Low personal capacity building in information management as well as in the provision of competent ICTs skilled manpower.

Infrastructural problems such as low-bandwidth, poor power supply and constant breakdown

Lack of financial-base and funding.

Lack of political will in the adoption and proper functioning of ICTS.

No significant interest is shown by the political class to implement ICTs policies.

On the same line of thought Tion and Echezona (2014) observe that there is lack of ICTs policy document, absence of technical support when needed, brain drain is few skilled academic staff migrating oversea for better remuneration. Similarly, Igwe (2005) cited in Tion and Echezona (2014) listed six major challenges facing ICT. These include:

Lack of trained personnel, i.e. lack of knowledgeable dedicated manpower.

Paucity of fund

Low capacity of infrastructure: Africa is

struggling with fundamental technological challenges such as very limited bandwidth and inadequate ICT infrastructure critical to successful exploitation of digital resources (Ngwinwa, 2006).

Low internet penetration access

Low perception of the worth and value of library

Government lethargic approach to ICT.

Besides, it is noticeable that funds are not adequately provided to sustain ICT application and capacity for implementing higher institutions in area of resource management. Other implement to ICT application in libraries is the negative attitudes of lecturers, librarians and students that feel that government or other employer should train them in ICT. Many of them do not see the need to avail themselves of the training opportunities offered through in-service training programmes, seminars, workshops and continuing education among others.

4. The Way Forward

The need for the introduction of ICT in academic and other libraries is a wise and laudable decision to contemplate by librarians and other information professionals. The first step is to take a general view on how librarians and other supporting staff can respond to information and communication technologies ICT environment, the education of the library and ICT environment is necessary as to reduce any apprehension and confusion/fear associated with the introduction of a new technology. This creates a positive attitudes and enabling initiatives towards the library and a committee to review the ICT environment with particular interest on the need, type of computer software and hardware's to purchase. The training /retraining programmes for staff to acquire computer skills, other ICT faculties that will combine to make internet, virtual libraries

possible must be taken into consideration. Nwachukwu (2005) observes that: librarians & other library and information professionals should acquire thorough knowledge of the competencies of new IT technologies on the services and the potentials that holds for improved easy access to information. It is expected that library staff personnel, especially heads of sections must be able to discuss at reasonable depth the possible consequences of such development on the educational environment and display sufficient technical knowledge to support the library's position in meetings when ICT and compiling experts are present.

It should be noted that, the skills, knowledge and interest in the various information related aspects of ICT will need to be further developed among the library's senior staff providing in depth backup to the librarian and other library staff. A library management needs to develop a well planned ICT application policy. This policy should include among other things a strategy to make the best use of the new ICT technology and establish it for the good of the institution. A policy should indicate how library will anticipate the application of ICT, examine the community services to be realistically appraised and the true development cost of new applications assessed. Also, it is expected that clear policies and guidelines should be carefully provided to help in the balance allocation of resources between the traditional pointed materials and electronic forms of delivery. This would help the modern information specialists (librarians) to provide a service which is balanced allocation of resources between the traditional printed materials and electronics forms of information delivery.

In addition, in order to create a new strategy for a change, prompted by the introduction of IT in libraries, the libraries need to re-examine many of their current attitudes and approaches a well as priorities to information services

provision and delivery. Furthermore, no library can exist as an island. Libraries contemplating on ICT adoption must seek for collaboration with donor agencies both locally and internationally, voluntary organization, Cooperate bodies and individuals in the society for assistance in order to succeed.

Conclusion

Information and communication technologies are gradually replacing the traditional printed materials with the electronic formats. Libraries with initial apprehension, confusion and fears associated with ICT application is gradually diminishing. Many academic libraries are now queuing in to embrace these new technologies. It is clear that, the development in the information and communication technologies application has its accompanying problems and challenges but its benefits are overwhelming, hence the need to introduce ICT to our libraries. The educators must provide good ICT policies to cater for strategic planning, ICT facilities provision, staff training/retraining for skill acquisition, creating positive ICT environment awareness campaign, government and public support for the operation of information technologies in the academic libraries in Nigeria.

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