LIBRARY AND INFORMATION SERVICES IN THE AGE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTS) AND THE CHALLENGES

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Abstract

There is no gainsaying that in the world today many organizations, both government and private are taking advantage of the numerous opportunities that are provided by modem Information and communication technologies (ICTs). Libraries are not exception. ICTs present an opportunity to provide value-added information services and access to a wide variety of digital-based information resources to their clients. As a result, they are able to automate their core functions, implement efficient and effective library cooperation and resource sharing networks, implement management information systems and develop institutional repositories of digital local content. The implementation of these opportunities have been characterized with challenges which include including lack of funds to sustain the ICT infrastructure, inability of librarians/libraries to keep up with the pace of developments in ICTs and inadequate ICT facilities in the libraries. Others include lack of staff with appropriate skills to manage ICTs both at the strategic and operational levels, absence of institutional policies and strategies to support and guide the use of ICTs, and lack of adequate knowledge and skills to manage digital information resources and to deal with issues relating to copyright. Issues of intellectual property rights in a digital information environment are yet to be resolved.

Key Words: Library Services, Modern Technologies, Opportunities, Challenges

Introduction

Information and communication technologies (ICTs) is defined as a diverse set of technological tools and resources used to communicate and to create, disseminate, store, and manage information (Blurton, 1999). They encompass a wide range of rapidly evolving technologies including telecommunications technologies, such as telephony, cable, satellite, TV and radio, computer-mediated conferencing and videoconferencing, as well as digital technologies, such as computers, information networks (Internet, the World Wide Web, intranets and extranets) and software applications (Chisenga, 2006).

Information, as the saying goes, is power. The primary objective of libraries is to organize and provide access to information. This objective will never change, although the format and the methods that are used can change dramatically, providing new opportunities and challenges. Many Nigerian libraries are now converting the contents of their print resources into electronic databases thus, increasing their dependence on technology (Nkanu and Okon, 2010). Williams and Sawy (2003) assert that in the era of information technology, "we will have everything connected to everything", which are internet-based remote control devices to regulate our libraries. Advances in ICT and globalization have .enabled resource sharing and exchange of information for various purposes worldwide.

However, when John William Wallace presented his welcome address to the Congress of Librarians in Philadelphia in 1876, little did the librarians knew that the issues posed by Wallace bear a striking similarity to those facing the 21st century librarians. Wallace (1786) as cited by Cadmus (2011) pondered the future of libraries and ruminated over problems associated with the increase in print information which included space management, collection arrangement, discovery, retrieval, and preservation. He surmised that the exponential nature of the growth of books and pamphlets was a result of the proliferation of knowledge and technological advances in printing, and then proposed the application of science (technology) to solve these problems. How books would be catalogued, housed, and retrieved as they increased in number was a source of great consternation then and to a certain degree remains a challenge to 21st-century librarians who grapple with issues arising.

Rapid advances in technology have therefore .changed the way user's view and access information. Information is now increasingly available in digital formats and accessed by users through mobile devices such as eReaders, iPads, and mobile phones (Cadmus, 2011). Contributing to this ever-expanding digital landscape is the steady growth of open access digital repositories in higher education, which are being established in part to counter the commercialization and prohibitive cost of scholarly works (Cadmus, 2011). So what do libraries do with these digital works now also available in print? Will they be able to regain and repurpose erstwhile shrinking space or are they taking a highly risky move if they choose to rely on digital platforms without tangible back-ups? These questions and issues relating to the retention of materials in print formats will only increase as libraries struggle to decide what can be eliminated due to the shift to digital formats.

Recognizing that digitization and archival efforts are cumbersome and expensive, and require high-level technological expertise, many institutions have established collaborative partnerships to pursue the collective purpose of opening up their collections and sharing them with users worldwide. One example is the Hathi Trust, a collective digital repository that started in 2008 as a partnership of 13 universities of the Committee on Institutional Cooperation, the University of California System, and the University of Virginia. To date, there are over 7 million digitized volumes with 24 percent in the public domain (Cadmus, 2011).

It becomes obvious that print materials will not fade away overnight, libraries are still faced with space problems, that is, having to decide what is worth retaining for posterity and how selected materials should be stored and retrieved quickly for library users (Cadmus, 2011). In the midst of all these advances and changes, librarians remain an invaluable and indispensable resource in the increasingly complex and technologically advanced legal information environment. Wallace (1876) as cited by Cadmus (2011) emphasized that:

> *… good librarian has ever been a valuable*
> *minister to letters. He has always stood between*
> *the world of authors and the world of readers,*
> *introducing the habitants of one sphere to the*
> *habitants of the other…*

... But in this day and for the future he is called to new offices and to higher distinctions.
His profession belongs to the SCIENCES. He requires some fine faculties of mind. He takes his rank with philosophers.

Opportunities

❖ **Digitization**

Digitization is the new wave of air blowing many libraries globally simply because there is increasing amount of information now available in digital form and this is likely to have significant consequences for information retrieval. With digital libraries abstracts and indexes are available online and there is easy access to computer-held information, together with the possibility of including sound and video (Nkanu and Okon, 2010). Foskett (1996) opines that, with digital libraries, a full-scale printed encyclopedia contains far more information than any currently available on CD-ROM, a strong method that is certainly the preferred form into the future.

Williams and Sawy (2003) observe that if the internet is on its way to becoming the dominant mode of information exchange, then it is no longer a luxury, but a necessity. Mohammed (2003) maintains that advances in ICTs and ICT applications especially in digital network and networking from the threshold of the 21st century have made information access, retrieval and dissemination much easier and available irrespective of the location, time, package and users. Barriers to information access will thus be lack of access to the relevant ICTs and ICT-based information system and services (Nkanu and Okon, 2010).

According to Murphy (2012) the major opportunities presented by ICTs to libraries are mainly in the following areas:

❖ **Provision of value-added ICT-based information services**

Traditional library automation and use of computers for office automation is largely geared towards improving the efficiency of internal library operations, and doing library work more economically. Modern ICT tools, especially the Internet and Web-based technologies, now provide

libraries with an opportunity to offer library users with access to a variety of value-added library and information services.

❖ Library cooperation and resource sharing

Modern ICTs have made it possible for libraries to provide their users with access to networked digital information resources, i.e. online databases, electronic scholarly journals, encyclopedias, public government information, etc, provided by various publishers or suppliers. In cases where information resources are supplied by commercial suppliers, libraries are negotiating agreements on behalf of their users, for the rights to access these resources. Library users connect to networked information resources using Web browsers running on workstations in their offices or at home, or public workstations located in the libraries;

❖ Institutional Repositories

An institutional repository is defined as a database with a set of services to capture, store, index, preserve and redistributes an institution's research outputs in digital formats. Institutional repositories involve different stakeholders, each bringing different contributions to the repository, and librarians are among the key stakeholders in institutional repository projects. It provides open access to institutional materials, offers opportunity for long term storage and preservation of digital assets, aids the management of often easily forgotten (grey) literature such as research reports, technical reports, etc.

❖ Interlibrary lending and electronic document delivery

As opposed to the traditional interlibrary lending (ILL) system, which relies on postal services to deliver print-based documents to users, ICT-based interlibrary lending systems use electronic networks to deliver copies of journal articles and other documents in digital format (mainly in Portable Document Format (PDF) to users' desktops. For example, using the Ariel document delivery software, libraries can scan articles, photos, and other documents directly; transmit the electronic images to other Ariel workstations anywhere in the world, using either FTP (File Transfer Protocol) or e-mail; and convert them to PDF for easy patron delivery (Infotrieve, 2004).

❖ **Readers' Advisory and E-Reference Services**

ICTs offer libraries an opportunity to provide Web-based versions of readers' advisory services and reference services. These include services such as informing users via the Web about new releases or additions to the library collection, selective dissemination of information (SDI), announcements, and facilities for readers to interact with the reference staff (Virtual Reference Desks), etc. In academic institutions offering courses via distance learning, libraries are able to support their students through ICT-based advisory services.

❖ **Management Information Systems**

Libraries generate and manage a lot of data and information. The data may come from interactions with users, administrative activities, collection development, use and maintenance activities (Burford, 2003). The major functions of MIS in libraries is to assist staff with the daily decision making process; to maintain better accountability and control of resources; to monitor budget allocations; to improve overall library effectiveness by focusing on outcomes; to generate internal and external reports; to improve long-term planning; and to facilitate performance measures activities (Lakos, 1999).

All libraries also co-exist with larger entities: universities, municipalities, and professional organizations to name a few. The data is converted into statistical information that is reported to those larger entities. That information is also used within the library for a variety of purposes: benchmarking, accreditation, resource allocation, personnel decisions, trend analysis, policy decisions, measuring effectiveness, assessing training needs, and strategic planning (Burford, 2003).

Challenges
❖ **Digital Preservation**

Preservation of digital-based information resources is a major concern and challenge to librarians. Although institutions such as universities are widely adopting the use of ICT and thus generating information in digital formats, most archiving and preservation methods and activities for information resources currently in use are primarily focused on paper-based resources. Chisenga and Rorissa (2001) observed that the print-based library and archival environment has evolved over centuries.

There have been concerns about the general lack of long-term planning for digital preservation. No strategic leadership for establishing architecture, policy, or standards for creating, accessing, and preserving digital content is likely to emerge in the near future. In addition, higher education institutions are entering a period of flux, and potentially even turmoil. Trends to watch for are the rise of online instruction and degree programs and globalization.

❖ **Constant Change in the ICT Industry**

As seen above, ICTs encompass a wide range of rapidly evolving technologies. New technologies are being introduced and improvements are being made to existing technologies almost on a daily basis, and therefore, the main challenge for libraries is how to catch up with these developments. Esterhuysen (2002) laments that "The most damaging consequence of the volatile nature of ICT, however, is that users, having invested time and money and having struggled to establish connectivity and make good use of it, are caught up in an eternal game of **catch up".**

❖ **Inadequate ICT Facilities**

Another challenge associated with the ICT technical infrastructure in most libraries is the lack of adequate ICT facilities. Lack of funding means that most libraries are not able to acquire adequate ICT facilities to enable them provide to efficient and effective ICT-based information resources and library services to their clients. Most libraries cannot get adequate bandwidth to enable them to provide fast access to online based information services. In some libraries Internet connection is so slow that sometimes it is impossible to download and print documents from the Internet. Owusu (2002) paints a good picture of how frustrating this can be to a library user or library staff when he writes about Internet facilities exiting at the Kwame Nkrumah University of Science and Technology (KNUST). He stated that:

> *Of most importance and concern to the users of the IT facilities and services in the University Library is the slow rate of transmission of materials. For a greater part of the day, the transmission rate is very slow to an extent that most users become frustrated and some even*

leave; in some cases staff of the section close down the section. Most times at the University Library Internet Cafe, it takes between 15 to 30 minutes to move from the domain name address; and sometimes it takes 15 minutes to open or send a letter/message... (Owusu 2002:93)

❖ **Copyright and Intellectual Property Rights Management**

Development of digital libraries and information repositories is being hampered by the absence of appropriate legal instruments and guidelines to facilitate the management of information in a digital environment. While there are several copyright laws and regulations governing the copying and photocopying of print-based information resources, digitization and provision of access to digital collections accessed via electronic networks, especially the Internet, is presenting bigger challenges to librarians. Digital-based information resources can be accessed from anywhere via electronic networks, copied several times, manipulated (i.e. edited, modified, repackaged, etc) or deleted, and most librarians do not know how to deal with this situation. Licensing arrangements often prevent libraries from lending out the materials they have in digital contents. Most times, even if the e-resources are available, a library, depending on the agreement it has with the supplier of the e-resources, may not be able to fulfill the interlibrary lending requests.

Barriers

Information and Communication Technology (ICT) has become an important subject for all information providers. This is because of its relevance and applications to tasks in libraries. Despite its acclaimed relevance and as tool to drive the 21st century digital libraries, there are still issues envisaged as set-backs for Nigerian libraries to cope with. Major setbacks include information literacy, inadequate funding and poor electricity supply.

❖ **Information Literacy**

The world over, one of the common barriers to the use of ICTs in the digital age is associated with information literacy. Information literacy is

an art that extends from knowing how to use computers and access information to critical reflection on the nature of information itself, its technical infrastructure and its social, culture, and philosophical context and impact (Shapiro and Hughes,1996). To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information (The American Library Association's Presidential Committee on Information Literacy, 1989). The digital age is characterized with enormous challenges as new innovations in ICTs are emerging. The skills to find, locate and use information from print sources, computer and other storage media are to be acquired. To acquire these skills, Nigerian librarians need education which is ICT-based. This type of education, according to Akintunde (2007) will assist them to:

> Articulate reasons why their libraries must digitize their library materials and work strictly on a preferred digitizing policy that will define the purpose and process of digitizing their library materials, identify what materials to digitize, determine priorities for digitization, access human resources to be involved in the digitization exercise, identify users to benefit from the digitization effort, choose the hardware and software consideration, determine the beginning and ending date of the digitization process, device access to digitization content, set standards and funding policy.

❖ **Inadequate Provision of Funds**

This is a major problem confronting libraries all over the world, except that the situation is better in advanced nations than what we experience in developing countries. With incessant cut in library budget, librarians are faced with the difficult task of purchasing electronic gadgets and subscribing to internet facilities. Unfortunately, income generation is not the core business of libraries and there seem to be no other means for them to generate funds for the payment of subscriptions to online e-resources, maintenance costs for automated library systems and hardware upgrades other than depending on income from the parent institutions.

❖ **Poor Electricity Supply**

Nigeria is known for erratic power supply. Libraries that can afford generators have to contend with buying of diesel out of the meager resources allocated to them. As a result, funds that are supposed to be committed to computerization are used to fund generators. Other set-backs include:

❖ High Cost of Maintaining ICT Facilities
❖ Negative Attitude of Supervising Authorities towards ICT Facilities,
❖ Lack of Maintenance of ICT Facilities in the Libraries

Way Forward

In this era of ICT, Nigerian librarians who are not information literate as pointed out by Henrietta (2005) are potential national risks because they have ceased to be information literate professionals in the digital age. Strategies that are required to be advanced by all stakeholders, including governments include:

❖ **Capacity Building - Using ICTs**

It is generally accepted that capacity building as a concept is closely related to education, training and human resource development (Williamson and Rajabifard, 2003). Libraries need capacity building as it relates to human resource development and to the institution, to enable the staff to use and manage ICTs and the library to plan and implement sustainable ICT projects.

❖ **Policies and Strategies**

Countries in Africa have now recognized the developmental opportunities and challenges brought about by ICTs, and the need to put in place integrated national information and communication policies and strategies to harness, seize and obtain maximum benefits from ICTs, A national ICT policy provides a national framework that facilitates the development, adoption and use of ICTs in a country, from which libraries can also benefit. However, the 21st century Nigeria librarians should as a matter of priority:

- acquire broad-based education that will assist them to confidently demonstrate their information literacy competence

through which they can communicate their ideas in data to the world of scholarship;

- stimulate their interest positively and sustain their awareness of their expected roles as information professionals in the digital era;
- generate in them a great deal of thought to the tasks of developing library collections that will be technologically driven;

Conclusion

The primary aim of every library is to organize and provide access to information to its users within a limited space of time. Information technology encompasses a wide range of rapidly evolving technologies that have the capabilities to provide the needed speed to disseminate information irrespective of geographical location. The trend therefore is 'digitization'-a new wave blowing libraries globally because of the increase in the amount of information resources, otherwise known as the 'information flux'. With digital libraries abstracts and indexes are available online and there is easy access to computer-held information, together with the possibility of including sound and video. The use of computers in libraries has improved the efficiency of internal library operations. Selective Dissemination of Information (SDI), virtual reference services, interlibrary loans and document deliveries, among others, are now made easy by the use of computers.

Unfortunately, libraries in Nigeria are facing difficulties in operating in this modern age of information provision because of challenges that include: inadequate fund, erratic supply of electricity, inadequate information literacy, and copyright issues. In order to be seen to be participating in the global information age, Nigerian libraries must acquire broad-based education that will assist them to confidently demonstrate their information literacy competence through which they can communicate their ideas in data to the world of scholarship, Governments must be committed to proper funding of the libraries and improve the present state of electricity supply.

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