

TOWARDS TRANSFORMATION OF LIBRARY AND INFORMATION SCIENCE USING INFORMATION AND COMMUNICATION TECHNOLOGY (ICT).

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Abstract

The adoption of Information and Communication Technology (ICT) has revolutionized service provision in libraries and their general information management systems. This has transformed most services to digital: e-database (e-resources), e-catalogs, e-library and use of archiving technology like DSpace. Today, within the developing world, most libraries are moving towards transforming their existing traditional library services to digital systems - allowing them to tap and benefit from the vast advantages of ICT, for example, operation costs reduction, increased efficiency, an on-the-fly availability of information. Even with such numerous benefits, most Higher Institutions of Learning (HILs) in developing countries particularly Nigeria still lags behind on adoption of ICT in their library services. This paper seeks to investigate the challenges that hinder the adoption of ICT in libraries with special attention to HILs in developing countries particularly Nigeria. Furthermore, solutions and recommendations to address these challenges are presented with case study analysis.

Key words: ICT, Library Information Management (LIM), Developing Countries, Higher Institutions of Learning (HIL), Open Distance Learning (ODL).

The rapid development in Information and Communication Technology (ICT) infrastructure across the globe has led to transformation in the way we manage information in the information age. ICT is broadly defined as a diverse set of technological tools and resources used to communicate and create, disseminate, store,

and manage information, Blurton, (2000). The library as a source of knowledge has not been spared today, technology has transformed Library and Information Centers such that they have to adapt to these transformation to be able to address end users' ever growing expectations and dynamic needs. Moreover, the 21st century has ushered our society into the information age - where we're witnessing an unprecedented paradigm shift in rendering library and information services worldwide. The ripple effect of the influence of ICT on every aspect of human endeavour remains colossal and its impact on library and information services has not been exclusive, Sridhar, & Igun, (2006).

Furthermore, the rapid transformation of the ICT infrastructure has created new opportunities and challenges for traditional libraries such that the new trend is to move towards digital collection. Existing libraries are busy digitizing their traditional collections via online subscriptions and planning, design, deployment and ongoing operations management and technical support of ICT infrastructure, Sharma, (2009).

The Information Age is characterized by new ways of information generation, managing, and dissemination using ICT. Today, ICT has revolutionized service provision in all sectors of the economy including education via increase in access to knowledge. Example of such ICT service is Open Distance Learning (ODL) System or eLearning, which has rapidly become a major element in pursuing higher education opportunities; an increase in the number of unique environment where educational opportunities are offered, Chauham, (2004). ELearning refers to using ICT oriented services to provide leaning and training that is dynamic (anywhere and anytime) on an Internet platform.

This impact of ICT on library and information services has led to the development of new professional paradigms within the field of librarianship i.e., meeting the students' needs in fulfilling course assignments and thereby enriching academic programs; meeting teaching and research needs; facilitating the acquisition of lifelong learning skills; and accommodating other informational needs of the distant learning community as appropriate. This is in contrast to traditional library services where the students go to the library to access the range of information services that they need to satisfy their learning requirements. The introduction of social networking: chat rooms, email services, list-serves, fee based or free online databases and reference services have transformed the usage of traditional library to support distant studies and open access such that the students (and staffs) can access the library anytime anywhere whenever they need the services. Since ICT has eliminated the distance between library services and students we can only achieve quality education if ICT adoption in library services is properly and exhaustively deployed, Maurya, (2008).

Academic libraries in the developing nations play an essential role in terms of supplying society with knowledge and information, as well as being considered an inseparable part of the academic provision. These libraries strive to satisfy a strategic academic mission, which includes positively shaping the goals of academic programmes as well as the general information needs of the community, Ghuloum, (2011). But even as many academic libraries in developing countries strive to incorporate ICT in library services, there are several factors such as financial constraints, technological factors, human factors, cultural factors among others that need to be addressed. Ghuloum, et – al (2011) argues that a significant lack of ICT related services in libraries can also be attributed to shortage of qualified staff in these libraries. This paper aims to investigate the challenges facing the implementation of ICT solutions in higher institution libraries (HILs) in developing countries and provides practical solutions (and recommendations) to the problems

Education

Peretomode (2007) observed that Nigeria like other countries of the world recognizes education as the major instrument for effecting national development. The formal education system in most nations of the world has been organized into three levels, namely; primary, secondary and higher education. In this context this paper shall be looking at higher education.

Higher education encompasses all organized learning activities at the tertiary level. The National policy on education (2004) defines tertiary education to include the universities, polytechnics, monotechnics and colleges of education. The goals of tertiary education, as specified in the National policy on Education (2004), are:

- i. To contribute to national development through high – level relevant manpower training;
- ii. To develop and inculcate proper values for the survival of society;
- iii. To develop the intellectual capability of individuals to understand and appreciate their local and external environment;
- iv. To acquire both physical and intellectual skills which will enable individuals to be self – reliant and useful members of the society;
- v. To promote and encourage scholarship and community service;
- vi. To forge and cement national unity; and
- vii. To promote national and international understanding and institutions.

The first institution for higher education in Nigeria, according to Okemakinde (2010), was Yaba Higher College, established in 1934. This became the nucleus of the University College, established in Ibadan in 1948. The attainment of political independent in 1960 was accompanied by expansion in the education sector in general, and in higher education in particular. There was an improved geographical

spread of universities: University of Nigeria, Nsukka (1960), Ahmadu Bello University, Zaria, University of Lagos, and the University of Ife (all in 1962), and much later, the University of Benin (1970). These institutions are now collectively known as first generation universities. In 1975, with the advent of the oil boom and the geo – political restructuring of Nigeria into twelve states, there were strident agitations from Nigerians for more universities in the newly created states. The federal government acceded to this demand by establishing seven additional universities at Jos, Maiduri, Sokoto, Kano, Ilorin, Calabar and Port Harcourt, which became the second – generation universities.

Polytechnics and monotchnics were established in Nigeria during the colonial era, longing for the emergence of universities for high level technical manpower in a variety of technical and professional disciplines. Thus, Yaba higher college, school of surveying, veterinary medicine, forestry, and agriculture in various parts of the country were established for this purpose. The early 1950s saw the establishment on the Nigerian college of Arts, Science and Technology, which were later absorbed by three of the first generation universities; Ife, Zaria, and Nsukka. The early years of independence witnessed the creation of colleges of technology in Lagos and in the three regions that existed at that time; Ibadan (Western region), Enugu (Eastern region). As more regions and states were created, new polytechnics (owned by state governments) also emerged. The federal government, in its effort to ensure a judicious geographical distribution of facilities for technological education also established federal polytechnics in various parts of the country. These institutions contributed immensely to meeting the social demands for higher education up till the middle of the 1990s. Today, questions are being raised as to their appropriateness and relevance in the contemporary scheme of things, as there has been disenchantment among young people with the nature of polytechnic education in Nigeria.

The first Advanced Teachers' Colleges (for producing 'highly qualified non – graduate teachers' mainly for secondary schools) were established in the wake of independence in the early 1960s – Zaria (Northern region), Owerri (Eastern region), Ibadan (Western region), and Abraka (Mid – West region). The creation of more states in the federation, and the increasing demand for teachers, (due to educational expansion in the country), led to the establishment of more institutions, now re – named colleges of education, in every part of the country. Most of the institutions are either federally owned or state government – owned, but there has been a rapid increase in private colleges of education in recent years. Like polytechnics, the popularity of colleges of education is steadily waning, as they are no longer anybody's first choice. For this reason, government just has to take a close look at their original "raison d'être" and work out a re – orientation process for them. Presently in Nigeria,

all states have either a state higher institution or a federal one located there (Okemakinde, 2010).

Use of Information and Communication Technology (ICT) in Transforming Library Services in Nigeria Higher Education

The demand for modern education has necessitated the use of Information and Communication Technology (ICT). Information and communication technology is an innovation which is meant to bridge the seemingly wide gap between traditional and modern methods of information organization and service delivery in Nigerian libraries.

Chisenga, J. (2006) observed that the use of ICTs in libraries in the provision of access to information resources and services is resulting in the disappearance of the concept of a library as has been known for centuries – a physical building located in a specific geographic location. ICT has transformed the nature of library services over a period of time. Library “collections” consist not only of physical information resources such as books, periodicals, videos, films, and many more, stored in physical library buildings. They now include digital resources created locally and those accessed over the Internet from computers that are managed by other libraries or information service providers. He further stressed, that unlike in a print-based library system, access to digital information resources is not restricted to specified hours and days of the week at one physical library building. Information resources and services are available 24/7, throughout the year from any computer connected to the Internet from any place around the world.

The importance of ICT in libraries particularly in higher institutions of learning cannot be underscored as noted by Sharma, P., et – al (2009). Since ICT enables optimum utilization and sharing of resources among institutions thereby reducing the operational costs. In addition, ICT enables the librarian to concentrate on other tasks such as research and consultancy as it provides opportunities to deploy innovative methodologies to meet the dynamics needs of library users (Chauham, 2004).

Chisenga, J. (2006), stated that were several functions and activities that libraries have been performing which can now be done better using ICTs and at the same time there are others that previously were difficult or impossible to carry out which are now possible as a result of ICTs. Today, there are tremendous opportunities presented by ICTs to libraries. Furthermore, some of the important changes that developments in ICT have brought about in information services are:

- Changes in formats, contents and methods of production & delivery of information products, and a new business model for use of information products. This requires procedural and infrastructural changes and cost implications in Libraries.
- Emergence of Internet as the largest repository of information and knowledge.
- Extinction or significant transformation of some of the conventional information services such as press clippings, contents pages, company information etc.
- Use of new tools and technologies for dissemination of information.
- Transformation of role of LIS professional as the subject specialist and end-user gets directly involved in the information work and consequent need for new skills.
- Shift from physical to virtual services that offer convenience of time and location for access to services.
- Institutional repositories (digital local content e.g., digital repositories).
- Capacity building

Shariful, I. M. and Nazmul, I. M. (2007) revealed that library is the heart of the learning in a community providing a place for users to do their research and increase their knowledge, and therefore, the future of any academic library greatly hinges on its ability to embrace and leverage the potentials of ICT facilities at all levels of their business activities and strategies systems. Though ICT has led to new higher education learning models such as open distance learning (ODL), electronic learning and blended learning that has provided a good opportunity to learn at any time and place, there have been a number of factors that have impeded the large scale uptake of ICT in higher institutions of learning (HIL). They further stressed, that these have included such factors as lack of funding to support the purchase of the technology, lack of training among established teaching practitioners, lack of motivation and need among teachers to adopt ICT as teaching tools.

Today, libraries are using ICTs, especially the Web to implement online based bibliographic or library use (library literacy) programmes targeting their clients. Among others, these programmes include online or CD-ROM based tutorials on searching online resources and virtual tours of library collections, and these are mainly accessed on intranets, extranets or the Internet. Moreover, use of ICTs enables libraries to avoid problems associated with the use of lecture-based approaches or library orientation programmes. Problems such as dealing with large numbers of users or having a shortage

of staff to deliver the programmes or too little time to deliver so much information to clientiles. In addition, ICTs offer users an opportunity to follow the programmes at their own pace in their own time, Siddike, et – al., (2011).

ICT Challenges for Library Services in Developing Countries

Chinwe, *et al* (2011) points out that ICT use for library operations and services requires library practitioners who are highly skilled both in the traditional library operations and high level of computer literacy, besides being committed and flexible librarians, who are ever ready to engage in sustained reasoning and can manage complex situations.

Ghuloum, H and Ahmed, V. (2011), posit that libraries in higher institutions of learning have not been given key attention that they deserve in terms of financial allocations; thus limiting their ability to meet the targeted requirements of supporting the learning process positively. The libraries are, therefore, not able to acquire adequate ICT services (e.g., access to the required number of computers, copiers, printers, network/internet and subscriptions to more electronic databases, modern bindery equipment etc.). Technological factors, such as ICT illiteracy is also a bottleneck since many library users in developing countries are not able to utilized ICT services and their applications in library hence there is need for consistent user training and user support services (Chauhan, 2004). Moreover, most of the staffs in the academic libraries in these institutions need more experience and training to deal with ICT services as illustrated by Bader, (2008) in Ghuloum, H. and Ahmed, V., (2011). Research carried out by Chisenga, (2004) shows that some developing countries consider a library as “some place to store books” rather than the key component of academics and research activities. Thus, there is a large segment of society and the decision-makers in government in developing countries who do not understand the critical role that a modern academic library could play in developing the economy of a nation.

This paper attempt to present some of the challenges hindering the diffusion of ICT in libraries in higher institutions of learning (HILs), these are: Political and economic instability in developing countries have negatively impacted the operations of libraries in HILs with external funding agencies taking advantage of this instability to push for their own agenda and priorities (Chisenga, 2004). A research carried by Keller, (2011) also reports that the rapid growth of user populations has provided enormous challenges to the HILs since the financial support for these institutions have not kept pace with increasing levels of students enrolment & growth. Without substantial support from the government and in some instances, the inability to charge tuition fee in some cases, universities are struggling to provide the necessary and essential services. More-so, in most cases, there is complete lack of physical facilities adequate enough to

provide education and services for all the users. It's not uncommon to come across lecture halls, hostels, and libraries that are overcrowded with students.

Notably, and in most cases, there is a complete lack of exposure of library staff to international standards and best practices; experience is also a hindrance factor to adoption of ICT in HILs. Most librarians have never had opportunities to attend conferences outside the state or region and therefore, have limited access to cutting-edge knowledge; such that the library staffs develop internal standards unaware of the existence of international standards (David, L.T. (2001). Inadequate access to technical expertise i.e., ICT department, that is responsible for the installation, development and expansion of the backbone network (WLAN/LAN) in the institution and in the library has undermined diffusion of ICT in these libraries. Such a team is required to have basic training in troubleshooting skills and support of library hardware and software; Shariful, I. M. and Nazmul, I. M., (2007).

The outdated and bureaucratic procedures in acquisition of ICT equipment and materials coupled with lack of appropriate policies to support development of ICT in HILs are noted to slow down implementation of ICT in developing countries libraries (Chisenga, J., Ed., 2004). Inadequate diffusion of ICT in library and information centers can also be attributed to lack of real awareness about the benefits of ICT to libraries in information handling. Moreover, Tasubira et- al, (2001) argues that there is a mindset, fear, and consequent unwillingness to face the changes from the highest decision making levels to the lowest operational levels making libraries and information centres to be uncommitted to joining the information and knowledge society. The process of transforming and integrating ICT in library services is a new area in most developing countries and the question of how to adopt it in these institutions is yet to be addressed in some HILs. Therefore, there is the need for such institutions to develop local expertise to plan and manage the change and adoption of ICT in their libraries.

Recommendations and Way Forward

In spite of the various efforts being made by most libraries and information centers in developing countries to adopt and use ICTs, there are still numerous issues that they must be assisted and guided to address. Specifically, the federal, state and local government authorities should provide adequate funding to HILs library services if they are to deploy appropriate ICTs and play an active role in the provision of access to global information resources in their communities. Risk management measures are also needed to be put in place through implementation of secure network, for example, antivirus to protect the digital databases, protection against crackers/hackers by installing firewalls at the proxy server. General risk management via backing-up of databases to guard against data loses, protection against general damage due to power failure, natural disasters e.g., flood, and installation of UPS to cope with the erratic

power supply experienced in most developing countries. Standby power supplies i.e., generators or solar power are also very critical in these libraries (Chinwe, V.A. et - al (2011). Lack of a clear perception of how ICT resources can be sustainably managed, the operational risks, and likely escalating costs of poor information resource management is another area where local expertise needs to be developed, in order to ensure reliability and efficiency in library and information service provision (Tusubira, F.F., et – al (2011).

Conclusion

ICT has changed the work of libraries and information centers as users' demand and expect better and efficient services i.e., electronic/ online resources and databases, ODL among others. Libraries in HILs in developing countries have found themselves in a situation where they must embrace ICT in order to remain relevant and also meet future challenges. However, these libraries are experiencing a lot of barriers in the adoption of ICT resulting from several factors but majorly inadequate funding, and here is where users expect the governments to meet their obligation to provide libraries with adequate funding - noting that libraries are the source of knowledge and enablers of economic growth. In the future work, other researchers' shall investigate the contribution of internet and library websites to improving service provision in these libraries.

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