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INFORMATION COMMUNICATION TECHNOLOGY (ICT) AND THE FUTURE OF LIBRARY: A REVIEW OF RELATED LITERATURE

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Abstract
Libraries are created as an authenticated and authoritative parlance where knowledge of all human endeavor can be acquired, processed, preserved and made easily accessible by all irrespective of sex, status, religion, race or color. Its primary role is to meet the information need of its users and the society at large. These were achieved previously through conventional means of library services which includes the traditional means of acquiring, storing, retrieving, cataloguing and classification, circulation etc. of information. With the introduction of Information and communication technology library and information services have experienced unprecedented changes and transformation. This paper looked into conceptual background of ICT and library, the impact of ICT in libraries, their setbacks which pose as threats to the future of libraries in this ICT era, and also made possible suggestions on creating an ICT base libraries.

Keywords: ICT, libraries, transformation, information age, digital era, librarians and library profession etc.

INTRODUCTION

The world has become a global village in an information age because of the impact of information and communication technology. These ICT's continues to rapidly evolve, changing the way people communicate, industries produce and information flow. Garg (2013) said that ICT is one of the most magnificent gifts that has changed our live greatly. Onuoha and Obialor (2015) strongly believe that these is as a result of increasingly dependent on the creative management and distribution of information. ICT has become the hub on which the entire universe rotates. Therefore the rapid adoption and use of information and communication technology has resulted in globalization and diversification of knowledge resources. With the recent development globally, is not hard to see how far ICT has permeated all fields of human endeavors. ICT have brought tremendous change to each and every facet of our lives in the modern era. Libraries inclusive.

CONCEPTUAL BACKGROUND

Generally the term ICT is commonly used to mean a combination of computer and communication technologies used for information storage and dissemination. In the UNESCO training module for ICT as cited by David (2001), information communication technology are described as the technologies that enable society to create, collect, consolidates, communicate, manage and process

information in multimedia and various digital formats for different purpose i.e., computing and telecommunication technologies like the personal computer, CDROM, cable TV, cellular phones and the internet. Khan (2016) in his own terms posited that ICT deals with the use of electronic computer and software to convert, store, process, transmit and retrieve information. It is a generic term that covers the acquisition, processing, storage and dissemination of information. It involves the application of computers and communication technology in the task of information handling and information flow from the generation to the utilization levels. Therefore ICT are those tools and technologies that facilitates the easy creation and use of information, knowledge and ideas in all spheres of human endeavor. Rhine (2006) split ICT into three components: first is the technology aspect (i.e. machinery and devices developed from scientific knowledge), information that the technology helps to deliver and the communication process that the technology facilitates and serve as a medium for the information. Information communication technology is classified into several different functionalities, but Hamelink (1997) helped to succinctly capture it into five classification, they are as follows; capturing technologies (like input devices), storage technologies (magnetic tapes, compact disks, CD-ROM, flash disk etc.), processing technologies (system and application software), communication technologies and display technologies. ICT are commonly used today and it have come to stay, strategically well rooted as a hub in which human existence revolves.

Before the digital era, library was considered as a mere store house of books. Pearson (2007) described library as storehouses and quarries of knowledge held in books. He went further to say that human endeavor of many kinds, including education, research, invention, business and leisure has always depended to some extent on access to information or on what people have known or said and for many centuries books have been the containers for holding and transmitting this things. So books were created to be a communication device for ideas, knowledge and information of all kinds and libraries existed to acquire, store, organize and make them easily accessible for use. Other source of information might have existed but when looking for authoritative, cumulative and trustworthy place to process, store or find information, libraries stands out. But with the current trends in technology and its impact in information generation, processing, and dissemination, the concept of library and information centers have drastically change from what it was in the early days.

With the changes going on today, library can be said to be in a state of flux. The fate of their survival is on a serious contention. There is much debate about their future. Librarianship is posed with big questions like, will the infiltration and dynamism of ICT in human endeavors bring library to an extinction? If libraries are to survive what will they look like in few decades from now? These questions necessitated this research piece.

In this ICT era, it is paramount to state that libraries still have their job and services intact, but go about it in different ways. Even with the multi-faceted and changing needs of users which is as a result of the rapid growth of technology, libraries and librarians still maintains its sole priority of satisfying the information need of its users at the appropriate time frame, with the right resources by employing all possible means and format that meets the required need of their users. Just as ICT is transforming the world library professions are not left behind, they are following suit. Balakrishnan (1996) supported this by saying that librarians in the digital world now acts as a guardian of information, as information consultant to users, an information broker and a continuous learner.

Though the functions of libraries in the modern information society has changed, their roles and importance are still base on the basic principle of library science described by Dr. S.R. Ranganathan in his five laws of library science as stated thus; books are for use, every reader his book, every book its reader, save the time of the reader and library a growing organism. These five laws as stated by Bhattacharya (1988) furnish an interpretative explanation of the empirical facts of experience and technology necessary in relation to library services. Libraries still work with these basic rules through their expansive services and medium which is being enhanced by ICT. Therefore ICT has brought unprecedented changes and transformation to libraries especially academic libraries and information service centers. Onuoha and Obialor (2015) observed that conventional library and information services such as OPAC, users services, reference services, document delivery, interlibrary loan, audio visual services and customers services can be provided more efficiently and effectively using ICT as they offer convenient time, place, cost effectiveness, faster and most up-to-date dessimination of information and end users involvement in the library and information service process.

With the help of ICT's there are now various forms of libraries and mode of disseminating information. Omekwu (2004) observes that there are now available such libraries as automated

library, polymedia libraries, electronic libraries, virtual libraries and digital libraries. Each of these forms of ITC induced library system has its own specific features, requirements, services mode and associated problems. To support this claims Shivakumar (2017) stated that ICT is changing the concept of the Libraries, their collection and services, thereby bringing about various new terms like digital libraries and librarians, libraries without walls, virtual libraries, hybrid libraries, cloud libraries etc. ICT's in libraries have brought about tremendous improvement and opportunities to render more efficient, effective and up-to-date services.

ICT AND THE FUTURE LIBRARY

The future of library in ICT age is so glaring that it is currently manifesting in their mode of organization, operation and management. A throw back to the evolution of library and how they have survived till now shows flexibility of library to embrace new technologies as it evolves. Libraries have seen the coming and extinction of most technologies. Hugh Kenner (1986) scholar of Irish literature at John Hopkins as cited by Onuoha and Obialor (2015) said "people nervous about the future are by their own definition open to lesson from the past; and one lesson the past has to teach is that every new technology when it applies for admission to a citadel of the intellect, has invariably received its first welcome from the librarians. Nearly a century ago, libraries were the first building to be getting incandescent lights; a half-century ago, libraries were among the first building to be getting air-conditioned, when copying machines escaped from corporate offices, the first place they became accessible to the public was the library"

The changes that are taking place within all spheres of human endeavor and the society at large mount pressure on the library to evolve to serve both the new structures ICT have created, new demands from the users and otherwise. So libraries are rebranding and re-engineering so as to keep up with the current need of this information age brought about by massive permeation of ICT in the society. Libraries are currently providing ICT-based services to their users including the following as listed by Khan (2016).

- Web access to OPAC
- Electronic document delivery
- Networked information resources
- Delivery of information to users' desktop
- Online instructions

➕ Online readers' advisory services etc.

Furthermore most libraries have and are still undergoing a whole lot of automation in their processes and services. Most of the traditional library practices have been automated with the help of automation software's like cataloguing, circulation, bibliographic control, acquisition, indexing etc. Barathi, Loganathan, Rajan (2017) went further to enumerate some other library management and services that have been improved through the emergence of technology: they are as follows: "user education, digital library services, personalized services, web-based services, reference and information services, search engine services, digital references services, corporative digital library services and customers service". The need for these transformation in libraries are mainly because of information explosion and overload, readers varied needs and demands, limited budget, application of ICT in all fields, availability of free information resources on internet and digital media among others (Anonymous).

Due to the following developments, transformation of the library system is made feasible:

➕ Computer and communication technology
➕ Library automation software's
➕ Networking of library and information resources
➕ Bar codes
➕ Radio frequency identification (RFID) and smart card technology
➕ Web and internet technologies
➕ Social networking (blogs, Facebook, twitter, Apps, Skype, Wikipedia etc.)

CHALLENGES OF LIBRARY IN ICT ERA

Few years back we had no internet and Google was at its barest beginning. These technologies are so new to library parlance and the development so rapid. So while libraries still sustains its educational, professional and recreational purposes, Pearson (2007) said that an axe has been laid at the root of its fundamental philosophy set out earlier. He went further to say that the predictions of the death of future libraries take place against a background of great uncertainty about the stability of the new media. Though the growth of technology and its impact on libraries are too obvious, but the uncertainty that lies in this technology thereof pose as threat to library existence. These technologies are rapidly transformed on regular basis with its complicated features thus, the

explosive growth of ICT and use in libraries as posited by Omosor (2014) have had impact on librarians and raise serious questions on how they need to adapt to new tasks and activities in a globally interconnected world.. It requires regular updating or total change of technology, reskilling of staff and creating of awareness to library clients on the current trends as it surfaces.

Other Challenges Are As Follows

1. **FUNDING:** One of the greatest challenges libraries are facing is lack of fund and negligence. Parents' institutions finds funding of library as a secondary need. The transformation of traditional library to digital library requires a lot of funding. Shivakumar (2017) posited that ICT demand more fund for its infrastructural and continuing services. ICT infrastructure would involve hardware, software and other telecommunication facilities which are capital intensive. Quadri (2012) observed that the rapid pace and transient nature of technological development requires sustained funding. Therefore the future of Libraries in this ICT era greatly depends on the amount of fund made available for them.

2. **TECHNOLOGICAL INFRASTRUCTURES:** Todays library is faced with inadequate technological infrastructures required to integrate ICT's in its day to day services. Libraries are faced with a lot of external and internal systemic factors as observed by Jansen (2005), those factors like electricity, transport networks, import duties etc. stands as a serious setback on internet services delivery especially on the African continents. Libraries are experiencing poor or lack of national ICT policies, low internet connectivity, inadequate supply of electricity, inadequate number of PCs, etc. (Quadri 2012)

3. **EXPERTISE:** The core challenge facing library profession is preparing the professionals to use technologies effectively. The transformation going on in library have brought about change in the traditional roles a librarian plays. Library professionals are confronting challenging dynamic technological environment demanding the extensive and effective utilization of ICT in order to survive and meet the changing complex information needs of the user community (Garg 2013). Librarians are now required to serve as an information service consultant with specific information skills. Most of the library staff hat met the traditional era of library services are now finding it difficult to cope with the current trend

of technology. Library needs librarians that are technologically oriented in managing the entirety of the library.

4. **LIS CURRICULUM:** The developments and innovations in ICT have facilitated changes in the development of curriculum in library and information studies. In spite of the efforts LIS professional bodies have done in developing the modular curriculum, and the demand for all the teaching departments to revise their syllabi introducing more IT components, Mahapatra, (2006) said that LIS schools experiences challenges due to many factors like; lack of sufficient equipment for teaching ICT oriented practical work, lack of ICT trained manpower, lack of uniformity in course contents, proliferation of courses and numbers of courses, lack of accreditation, shortage of budgetary provision, etc. In almost all libraries, majority of the experienced professionals have completed their library education without much exposure to the practical aspects of ICT applications.

Many other challenges abound and have been mentioned by many researchers. Challenges such as online and virtual crimes security, copyright issues, lack of clarity in perspective inadequate library infrastructures, organizational structures, resistance to change and lack of cultural consideration of potential users, lack of ICT policies etc. (Shivakumar 2017, Mamman 2015, Quadri (2012), Sherpa (2012) and Barathi, Loganathan, Rajan 2017)

POSSIBLE SUGGESTIONS ON CREATING ICT BASE LIBRARY

Shivakumar (2017) opined that establishing a digital library without refreshing the information technology and information retrieval skills of library professionals is a difficult task. Below are some of the authors' suggestion in creating ICT oriented library of the future.

RESKILLING: ICT skills is as important as it is a pre – requisite for networking of e-library services and resources sharing (Quadri 2012). For successful implementation of Digital Library, it is crucial that librarians are well trained and possess requisites knowledge and skills in this respect. In conjunction with Sherpa (2017) below is a list of technological skills that a librarian need to acquire in this ICT era, they are as follows,

1. **Traditional/basic skills**: These are the basic skills needed in running a library. They include skills for classification, cataloguing, indexing, abstracting etc.,

2. **Information retrieval skills**: This involves collection and organization of data in electronic form, indexing techniques, selection and evaluation of sources, searching techniques, updating techniques.

3. **Communication Skills:** Librarians should act as the mediator between information users/seekers and the information resources or information providers.

4. **Skill of Using Computer Communication Networks**: Skills of handling different computer communication networking architectures and systems i.e. LAN, MAN, and WAN etc. are required of a digital librarian

5. **Skill of Using Internet:** Skills for the use of internet and other library related networks like INFLIBNET, CALIBNET, DELNET etc. are required for a modern library professional working in IT environment to tackle the problems and challenges raised in building and maintaining a digital web-based library

6. **Technological Tools Using Skills**: The librarian ought to be familiar with skills to handling information technology products, particularly keyboard, operating system, software, physical handling of gadgets, telecommunication products, DBMS, data and file management, DTP word processing, generation of reports, etc.

RESTRUCTURING LIS CURRICULUM: Library profession is face with the challenge of preparing her professionals to use technology effectively. Though library and information science is a growing discipline that has made immense developments in modern times, but it has not attained the requisite status of combating the new tasks that ICT has brought about. According to Singh (2000), the growth of library profession is influenced by the growth of library and information science education, for it is the education and training that gives direction to the profession, and this growth ought to manifest in LIS curriculum. LIS curricula need to consolidate ICT concepts, knowledge, skills and proficiency into core competencies, and LIS schools need to provide adequate content and practice that will enable the professionals to use ICTs effectively. A restructuring of LIS curriculum in maintaining uniformity in course contents, incorporating changes in the traditional subjects and giving more importance to the practical aspects of the profession is essential to meet the challenges of librarianship. Varalakshmi, (2007) observed that it is the responsibility of LIS departments to develop the right personnel with basic competence to manage the libraries and information centers of varied scope and nature, ranging from small rural library to a well-established digital library. Furthermore, libraries should develop a continuing

training programs in ICT applications and be made mandatory for library professionals irrespective of their experience or category to develop basic competencies and thereby improve the quality of library services and also prepare them to face unexpected as ICTs evolves.

EQUIPPING LIBRARIES WITH TECHNOLOGICAL INFRASTRUCTURES: the application of ICTs and other techniques in different activities of libraries are the basic cause of transforming traditional libraries. Barathi, Longanathan and Rajan (2017), posited that the library infrastructure has to be designed in such a way that the facilities available are easily accessible to everyone that meets the changing needs of communities. These Infrastructures are basically classified into collection Infrastructure, Access Infrastructure, Computer Networks, Access Control and Digital Resource Organization. Libraries need to be equipped with diverse range of technologies and software so as to be relevant in this ICT era, examples of such are, Virtual reference technologies, Integrated library systems (ILS), Automated, patron messaging programs, Scheduling and event management software, E-book mobile applications, Circulation management system, Maker space technologies such as 3D printing, Web design development and management software, Bibliographic instruction software, Instructional design products, Wide range of classroom software applications, Apple and Microsoft systems, E-reserves management systems, Serials management software, Integrated search tools, Intellectual property/copyright management systems, PC's, printers, constant power supply, steady internet server etc. Libraries needs to be equipped.

CONCLUSION

ICT has changed the pattern of service of every institution which library is not excluded. Institutions that fails to follow suit will go into extinction because their service will be irrelevant in meeting the current need of the information age. Omosor (2014), observed that today, the library goal of providing information services and access to information resources is greatly improved by the use of information communication technology (ICT). With ICT library services are taking on new meanings and constructs. Librarians should be in the best position to help its diversified user community by providing retrospective searches, ready reference services, bibliographic service, selective dissemination of information services etc. (Sherpa 2017). Libraries are already living in the future because in their different capacities some libraries are already massively employing ICTs in their services while others especially in developing countries like Nigeria are still

undergoing different form of automation in their services and programs. If right things are done at the right time, it is very obvious that none of the library function will stop in the process of transformation but might change value and mode of operation. The future of library in an ICT era is so bright and welcoming.

REFERENCE

Balakrishnan, N. (1996). Impact of information Technology on Library Science. In N. M. Malwad (Ed.), *Digital Libraries: Dynamic Storehouse of Digitized Information* (pp. 115-118). NewDelhi: New Age International Ltd.

Barathi, S., Loganathan, G, Rajan, V.R. (2017). Emerging Technological Innovations in Library Knowledge Management and Services. *Advances in Computational Sciences and Technology:* 10(5)

Bhattacharya, G. (1988). A Stable Theory in terms of Five Normative Principles. In T. S. Rajagopalan, *Relevance of Ranganathan's Contributions to Library Science* (pp. 11-16). New Delhi: Vikas Publishing.

David, T. L. (2001). *ICT for Library and Information Professionals: A Training Package for Developing Countries(ICTLIP).* Retrieved June 26, 2009, from eLibraryDownloadPage: http://www2.unescobkk.org/elib/ publications/ictlip/index.htm

Hamelink, C. J. (1997). *New Information and Communication Technologies Social Development and Cultural Change.* Geneva: UNRISD

Jensen, M. (2005). *The African experience: Building both supply and demand*: A presentation at the InfoDev workshop, March 14, 2005 at the World Bank Office, Paris. Available: http://www.infodev.org/en/Publication.52.html.

Khan, J. (2016). Impact of Information Communication Technology on Library and its Services *International Journal of Research - Granthaalayah,* 4(9): 97-100

Mahapatra, G. (2006). *LIS education in India: Emerging paradigms, challenges and propositions in the digital era*. Retrieved March 14, 2010, from http://arizona.openrepository.com/arizona/ bitstream/ 10150/106109/1/89.Gayatri_Mahapatra.long.pdf

Mahapatra, G. (2006). *LIS education in India: Emerging paradigms, challenges and propositions in the digital era*. Retrieved March 14, 2010, from http://arizona.openrepository.com/arizona/ bitstream/ 10150/106109/1/89.Gayatri_Mahapatra.long.pdf

Mamman, E.S. (2015). Utilization of information and communication technologies (ICTS) in public Library services in Nigeria. A PH.d thesis submitted to the department of library and information science, university of Nigeria Nsukka.

Manish Garg, M. (2013). Libraries in the Era of ICT: An Overall Transformation. *International Journal of Library and Information Studies*. 3 (1)

Omekwu, C.O., (2004), Analysis of the Current Challenges in Accessing Legal Information.

Omosor, U.A. (2014). Effect of Technology on Librarians in Academic Libraries in Nigeria. *Journal of information and knowledge management*. 5(2).

Onuoha, J.A. and Obialor, D.C. (2015). The Impact of Information Technology on Modern Librarianship: A Reflective Study. *Information and Knowledge Management:* 5(11). Retrieved from www.iiste.org

Pearson, D. (2007). *Libraries as history: important of library beyond their texts*. An edited version of a lecture given on October 2007 as the first Charles Holden Memorial lecture, sponsored by the friends of senate house library.

Quadri, G.O. (2012). Impact of ICT Skills on the Use of E-Resources by Information Professionals: A Review of Related Literature. *Library Philosophy and Practice (e-journal)*. Retrieved from http://digitalcommons.unl.edu/libphilprac/762

Rhine, L. (2006). The Impact of Information Technology on Health Information Access in Sub-Saharan Africa: the divide within the divide. *Information Development 22*, 242.

Sherpa, D.D. (2017). Changing role of librarians in the digital library environment: skills, current trends and challenges. *International Journal of Library & Information Science (IJLIS)*: 6(6), pp. 68–74

Shivakumar G.T., (2017). Impact of digital era on academic Libraries: it's play with library Professionals. *International Journal of Library & Information Science (IJLIS). 6(4).* Retrieved from http://www.iaeme.com/IJLIS/issues.asp?JType=IJLIS&VType=6&IType=4

Singh, S. (2000). Library and Information Science Education in India : Growth and Trends. *University News , 38* (6), 45-48.

Varalakshmi, R. S. (2007). Need for National Consensus on Library and Information Science Education in India. *DESIDOC Bulletin of Information Technology , 27* (2), 13-20.