CHAPTER FIVE

LIBRARY ROLES IN E-LEARNING THROUGH INFORMATION AND COMMUNICATION TECHNOLOGY: THE PROSPECTS AND CHALLENGES

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ABSTRACT

This paper examined the role of libraries in e-learning through information and communication technology, its prospects and challenges. The advent of ICT is indeed a boost to library services as it now assists many librarians in using their ICT potential to reach out to library users. The increased exposure of ICT worldwide has enhanced the competitiveness of firms in the context of product or service delivery. ICT application to library work and services is seen as the best way that could be used to assist users to adequately solve their literature needs efficiently. The paper also, among other things, discusses various types of e-learning, the place of ICT in the library, the suitability of e-learning for library and information science education, and the prospect of e-learning. Also, the paper highlighted issues and challenges of e-learning for library services, the prospects of effective library and information services for e-learning in Nigeria as well as the impact of ICT on e-learning. The paper summarized that the combination of the potential of computers, telecommunication, and electronic media using digital technology has created a powerful drive for changes in the way human beings live, transfer information, process information, and carry on businesses. One of the recommendations made was that for successful and effective use of ICT in enhancing the quality of e-learning and teaching and learning, policy makers need to be aware of how these evolving technologies can be of the greatest value in their country's education system, and in this regard, they have to develop a supportive policy environment and framework at the national level for the integration of ICT into their education systems.

KEYWORDS: Library Roles, E-Learning, ICT, Prospects and Challenges

INTRODUCTION

Information and communication technology is a scientific, technological, and engineering discipline and management technique used in all areas of human life to handle information. Its application is associated with social, economic, and cultural matters (UNESCO, 2002). Information and communication technology (ICT) is

increasingly becoming an indispensable part of the education system. ICT has changed the style and functioning of the educational system and its governance. The gradual progress in using ICT changes from learning about computers, to learning computers, and finally to learning with computers (Volman, 2005). ICT has brought waves of industrial transformations, which are also visible in the education industry. The increased exposure of ICT worldwide has enhanced the competitiveness of firms in the context of product or service delivery. ICT is becoming a key component of every industry, and the education industry is not an exception to it (Phutela and Dwivedi, 2019).

The educational sector is equally inspired by the remarkable potential of information and communication technology for upgrading the quality of education in every human life (MHRD Policy, 2012). Owing to the advancement of technology as well as the development of people, the world's educational system is evolving in many ways (Jain, 2017). With the changing environment and the industry's demand, students' perspective towards e-learning is also changing at a fast pace. In the Technavio analysts' report (2018), it is revealed that the key factor that has contributed to the growth of the e-learning market in the world is the increased penetration of the internet and smart phones. The inclusion of "Quality Education" as a key sustainable development goal has led to the expansion of e-learning in the educational sector globally (Pothula, 2018).

THE CONCEPT OF INFORMATION AND COMMUNICATION TECHNOLOGY

Information and communication technology, according to Darnton and Giacoletto (2002), is a systemic study of artifacts that can be used to give form to facts in order to provide meaning for decision making, and artifacts that can be used for organization, processing, communication, and application of information. Gokhe (2016) defined information and communication technology as the combination of informatics technology with other, related technologies, specifically communication technology. OECD (1987), cited in Sansanwal (2009), observed ICT as a term used to cover technologies used in the collection, processing, and transmission of information. It includes micro-electronic and info-electronic-based technologies incorporated into many products and production processes, and it is increasingly affecting the service sector. Computers, electronic office equipment, telecommunication, industrial robots and computer-controlled machines, electronic components, and software products are all covered (Sansanwal, 2009). Similarly, Tinio (2003) defined ICT as a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony. Sansanwal (2000) defined ICT as the use of hardware and software for efficient management of information, i.e storage, retrieval, processing, communication, diffusion and sharing of information for social, economic and cultural upliftment.

E-LEARNING CONCEPT

The term e-learning comprises a lot more than online learning, virtual learning, distributed learning, networked or web-based learning (Romiszowski, 2004). As the letter "e" in e-learning stands for the word "electronic", it incorporates all educational activities that are carried out by individuals or groups working online or offline, and synchronously or asynchronously via networked or standalone computers and other electronic devices. Markus (2008) defined E-learning as a learning process created by

interaction with digitally delivered content and network-based services. E-learning is any technologically mediated learning using computers, whether from a distance or in a face-to-face classroom setting (computer assisted learning). It is a shift from traditional education or training to ICT-based personalized, flexible, individual, self-organized, collaborative learning based on a community of learners, teachers, facilitators, and experts (Jethro, Grace, and Thomas, 2012). Zhang, Zhou and Briggs (2006) viewed E-learning as the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance. Furthermore, Chitra and Raj (2018) noted that e-learning is commonly an intentional use of networked information and communication technology in teaching and learning. A number of other terms are also used to describe this mode of teaching and learning. They are as follows: online learning, virtual learning, distributed learning, network learning, and web-based learning.

TYPES OF E-LEARNING

Tamm (2020) identified the types of E-learning as follows:

Computer Managed Learning (CML): In the case of computer-managed learning (CML), also known as Computer Managed Instruction (CMI), computers are used to manage and assess learning processes. Computer managed learning systems operate through information databases. These databases contain bits of information which the student has to learn, together with a number of ranking parameters which enable the system to be individualized. Additionally, educational institutions use computer-managed learning systems for storing and retrieving information which aids in educational management. This could mean information such as lecture information, training materials, grades, curriculum information, and enrolment information, among others.

Computer Assisted Instruction (CAI): Computer Assisted Instruction (CAI), also sometimes referred to as computer-assisted learning (CAL), is another type of e-learning which uses computers together with traditional teaching. This could mean interactive software for the students or the kind of training software. Computer-assisted training methods use a combination of multimedia such as text, graphics, sound, and video in order to enhance learning. The primary value of CAI is interactivity which allows students to become active learners instead of passive learners, by utilizing various methods such as quizzes and other computer-assisted teaching and testing mechanisms (Tamm, 2020). Many institutions, both traditional and online, now use various forms of computer-assisted learning to help their students develop skills and knowledge.

Synchronous Online Learning: Synchronous online learning enables groups of students to participate in a learning activity together at the same time, from any place in the world. Real-time synchronous online learning often involves online chats and videoconferencing, as these tools allow training participants and instructors to ask and answer questions instantly while being able to communicate with the other participants. This kind of community-oriented online learning has been made possible with the rapid development of online learning technologies. Nowadays, synchronous e-learning is considered to be highly advantageous as it eliminates many of the common disadvantages of e-learning, such as social isolation and poor teacher-to-student and student-to-student relationships.

Asynchronous Online Learning: In the case of asynchronous online learning, groups of students study independently at different times and locations from each other, without real-time communication taking place. Asynchronous e-learning methods are often considered to be more student-centered than their synchronous counterparts, as they give students more flexibility. For these reasons, asynchronous e-learning is often preferred by students who do not have flexible schedules, because it allows them to utilize self-paced learning.

Adaptive E-Learning: Adaptive e-learning is a new and innovative type of e-learning, which makes it possible to adapt and redesign learning materials for each individual learner. Taking a number of parameters such as student performance, goals, abilities, skills, and characteristics into consideration, adaptive e-learning tools allow education to become more individualized and student-centered than ever before. Taking into consideration that this type of e-learning is often more difficult to plan and accomplish than traditional teaching methods, its potential value and effectiveness is often understated (Tamm, 2020).

Linear E-Learning: When referring to human-computer interaction, linear communication means that information passes from sender to receiver, without exception. In the case of e-learning, this becomes a very limiting factor, as it does not allow two-way communication between teachers and students. This type of e-learning does have its place in education, although it's becoming less relevant with time. Sending training materials to students through television and radio programs is a classic example of linear e-learning.

Interactive Online Learning: Interactive e-learning allows senders to become receivers and vice versa, effectively enabling a two-way communication channel between the parties involved. From the messages sent and received, the teachers and students can make changes to their teaching and learning methods. For this reason, interactive e-learning is considerably more popular than linear, as it allows teachers and students to communicate more freely with each other.

Collaborative Online Learning: Collaborative e-learning is a modern type of learning method, through which multiple students learn and achieve their learning objectives together as a group. Students have to work together and practice teamwork in order to achieve their common learning objectives. This is done through the formation of effective groups, where each individual student has to take into account the strengths and weaknesses of each other student. This boosts the communication skills and teamwork abilities of the students (Tamm, 2020).

CONCEPT OF LIBRARY AND INFORMATION SCIENCE

Library and information science, as the name implies, is a combination of two fields: i) library science; and, ii) information science. The joint term is associated with schools of library and information science (SLIS) (Hjørland, 2018). The first use of this combined term was in the School of Library Science at the University of Pittsburgh, which added information science to its name in 1964. Other American library schools soon followed, and by the 1990s, almost all former library schools had added information science to their names (ström, 2007). Therefore, the status of LIS as a science has been discussed for many years by different researchers. According to Bates and Maack (2010), library and information science (LIS) is a branch of academic

disciplines that deals generally with organization, access, collection, and protection/regulation of information, whether in physical (e.g. art, legal proceedings) or digital forms. Martínez-Arellano (2013) defined library and information science as a discipline oriented toward providing access to vast amounts of accumulated knowledge and information. It has been used as the name of a general discipline covering all study aspects of recorded information (in numerical, alphabetical and graphic symbols) (Rubin, 2010). In addition, Wikibooks (2018) noted that library and information science is an academic and professional study of how information and information carriers are produced, disseminated, discovered, evaluated, selected, acquired, used, organized, maintained, and managed.

THE PLACE OF INFORMATION AND COMMUNICATION TECHNOLOGY IN THE LIBRARY

The advent of ICT is indeed a boost to library services as it now assists many librarians in using their ICT potential to reach out to library users. According to Nwankwo (2006), ICT application to library work and services is seen as the best way that could be used to assist users to adequately solve their literature needs efficiently. Also, Afolabi and Abidoye (2011) claimed that instant access to information from a multiplicity of sources is one of the major roles of ICT applications to library services. Not only can it help in locating the materials where the required information can be found easily, but ICT also helps in sorting out what information is relevant from a mass of irrelevant information. Chisenga (2004), Igbeka (2008), Adebisi (2009), and Uwaifo (2010) identified some of the ICT-based services that have impacted on library services as follows:

Provision of Web Access to OPAC: Libraries are providing access to web-based Online Public Access Catalogue (OPAC) interfaces. The OPAC makes it easier for users to access and use information resources. OPAC is the computer form of the library catalogue, which allows users to access materials in the library (Afolabi and Abidoye, 2011).

Online Readers Advisory Services: Libraries now implement web-based versions of reader's advisory services to include informing users about new acquisitions, provide reviews and recommendations and so on in using the web.

Electronic Document Delivery: Libraries implement an ICT-based interlibrary lending system through the use of electronic networks for document delivery. In essence, the Document Delivery Service (DDS) enables a library to use copies of research papers or other research documents from other libraries. These documents could be journal articles or other documents in digital format. They are mainly in portable document format (PDF) and are delivered to library users' desktops.

Online Instruction/User Education: There is implementation of online based bibliographic or library user programmes such as online tutorials on searching online resources and virtual tours of library collections. Libraries can also use the internet or CDRoms to educate users.

Networked Information Resources: Libraries now provide users with access to networked information such as databases, electronic scholarly journals, and other publications from various publishers.

E-LEARNING SUITABILITY IN LIBRARY AND INFORMATION SCIENCE EDUCATION

According to Kumbhar (2009), E-learning should be adopted in LIS education for the following reasons:

Management of Change: Like most other institutions, libraries are also facing dramatic changes in their dimensions. Particularly, the growing use of ICT in library activities is enforcing many changes. However, the staff working for many years in libraries may not be well-convergent with ICT. The reason could be the emergence of ICT long after they had their education. ICT terms like information literacy programmes, open source software for library management, digital library software, creation and maintenance of institutional repositories, Library 2.0 technologies and their use in libraries, HTML, knowledge management, web design, etc. might be a bit difficult for them to comprehend. E-learning is the most suitable teaching-learning method for imparting education on such important and useful topics in LIS.

Image of the Profession: The e-factor (electronic factor) is an image building factor. As such, the provision of e-learning, if made available by the LIS educational institutions, will definitely improve the image of the LIS teaching profession.

Multi-skilled Personnel: The current employment market expects that its potential employees have multiple skills. The skills required by libraries are changing. In Parry's (2008) study, he indicated that library staff needed more and newer skills. The workflow is changing. The classroom-based and traditional pattern of LIS education may not allow the library staff to have multiple skills. But through e-learning, they can acquire more skills at their own pace and time.

Increased Expectations from Employers as well as Users: All potential library employers expect that LIS professionals have optimum skills and, thereby, efficiency in their housekeeping operations. They also expect that the library staff should be able to provide library services effectively. The users of the library also have similar expectations. One expectation shared by both of these stakeholders is that LIS professionals in any cadre must be able to use ICT to provide efficient library services (Kumbhar, 2009). Thus, ICT handling skills have become an essential qualification for LIS professionals. These and other similar expectations of employers and users of the library can be fulfilled if LIS professionals get an opportunity to learn these skills. Therefore, e-learning remains the most viable option for in-service LIS professionals.

ISSUES AND CHALLENGES OF E-LEARNING IN LIBRARY SERVICES

The majority of the population stays in rural areas, and making them aware of the concept of e-learning is a major challenge. Lack of infrastructure in terms of connectivity, availability of the Internet, etc. is another issue. It is therefore important to understand these challenges so as to mitigate their effect on the quality of education services and to give an opportunity to any other institutions preparing to adopt these technologies in their library to understand the difficulties ahead and plan well in preparation.

Inequality in Access: One of the common challenges to technology-enhanced learning is the wide gap between those who have access to these new technologies and those who do not have access. While only a handful of people have total access to technology, a

large number of others cannot get access to these new tools and services such as computers, other digital devices, and the internet. Inequality in access is determined by numerous factors, such as availability and reliability of infrastructures, gender, economic status, skills in use (e-competence), and motivation of the users (Jorge, Michael, & Rosanne, 2006). It is moderately clear that in developing countries, infrastructure penetration is so poor and inadequate. In most cases, these infrastructures, such as electricity, telephone connectivity, internet high-ways, and good roads, are restricted to urban areas, thereby influencing the trend of access to technology being restricted to urban areas while their counterparts living in rural areas have limited or no access to these infrastructures.

Language Barrier: Most e-learning content is written in English. And this is also considered one of the issues that has hindered the successful implementation of e-learning, especially in non-English-speaking countries or countries that have different languages like Nigeria. Although a lot of students like to engage and enroll in the programs of e-learning, they are hindered from doing so because of low confidence in understanding the contents of English-written materials (Aldowah, Ghazal, and Muniandy, 2015). Thus, students who have low skills are not expected to join e-learning programs because of the spacious use of English in the content of e-learning.

Skills and Training: Since the technology profession in general is relatively new in developing countries, the level of skills and knowledge in these areas are insufficient for a large number of library users. The users of these technologies, such as teachers, administrators, and students, all have significantly low levels of skills that do not favour the appropriate use of these technologies in the library (Sutinen, 2006). In particular, the teachers needed training on how to use the new teaching platform and the students needed to be oriented on how to learn and access learning materials from the new system in the library. In developing countries like Nigeria, the biggest challenge to technology is the cost of acquisition because of high levels of poverty and a weak economy, which inhibit the power to purchase.

Lack of Quality E-Content: Currently, there is a dearth of high quality e-learning content in Nigeria. This is due to the lack of expertise as well as huge financial resources required to develop the content in the libraries (Datuk and Ali, 2008). As a result, most of the e-learning content has low interactivity and moderate impact on the library's users.

Equipment: To begin with, the cost of acquiring ICT equipment, such as computers, remains high in Nigeria, and internet access is prohibitively expensive (Peter, 2003), and institutions typically lack sufficient funds to implement a sustainable e-learning system in their library. At times, they may be able to acquire this equipment, but sustaining a reliable system becomes an issue over time. Apart from the high cost of equipment in developing countries, the technological market in Africa is also flooded with counterfeit products that are sold expensively. It becomes difficult for the technologically inadequate professionals in these countries to differentiate between original and counterfeit equipment. On the other hand, in most parts of Africa, technological equipment, devices, and tools suffer the effects of the environment over time. For example, the accumulation of dust inside the computers renders them functionless eventually, and the heat during the dry season causes overheating of equipment and reduces its life-span and functioning since many institutions,

organizations, and schools do not install air conditioning in their library computer rooms (John, 2008).

***Poor maintenance of ICT equipment*:** Many libraries do not have space or conducive environments for keeping ICT equipment. In addition, most of the ICT equipment is not adequately maintained in most libraries as a result of the high cost of maintenance, which is usually very high. Also, as a result of a lack of maintenance culture.

Bandwidth Issues and Connectivity Issues: The design of interactive e-learning content requires the use of multimedia and software to design the course. However, downloading of e-content will be slow, due to the limitations of bandwidth and internet connectivity. And this will influence the easiness of e-learning and create frustration among library users.

Difficulty in Engaging Learners Online: Engaging learners actively is one of the key factors in determining the success of an e-learning program (Datuk and Ali, 2008). Online learning requires a very high degree of self-motivation, which is found to be lacking among our library users. Learners find it difficult to migrate from the traditional learning mode to the new e-learning mode.

THE PROSPECT OF E-LEARNING

There is emerging evidence that e-learning can help to improve attainment and raise standards of education. Below are the major visions, views, possibilities and prospects of e-learning in Nigeria:

Dynamism: Learners progress at the pace that suits them best, at the time that suits them best, while getting the information that they need (Blezu and Popa, 2008).

Empower Learners: As stated by the National Policy on Education (NPE, 2004), one of the primary aims of the philosophy of Nigeria's education is to produce a self-reliant citizen that can be useful to themselves, their society, and to the development of the country at large. People in groups or individuals, irrespective of their age, could take responsibility for what and how they learn, achieving their personal goals as self-directed lifelong learners.

Collaboration: Learners are able to meet in a virtual space with other members and practitioner experts to discuss issues, answer questions and even participate in simulations and management games without having to leave their office or home.

Creative and Innovative Teaching and Learning: With E-learning, teaching and learning of curriculum content could be more creative and innovative in preparation for the 21st century global knowledge society.

Global reach: Learners, regardless of where they are, receive the same message and are able to engage other learners and practitioners globally (Blezu and Popa, 2008).

E-learning offers flexibility: A more responsive education system would adapt to the needs of all learners, wherever and however they needed to learn. The wide range of curriculum content deployment to learners will ensure the philosophical framework of Nigerian education is ascertainable on the level of equity. NPE recognizes equal education for all citizens as a goal that can be achieved through E-learning (NPE, 2004).

Speed of delivery: Learners benefit from learning when required. Learners are able to access the right sort of training at the right time with the right people.

Generate a professional workforce and fulfilled citizens: E-learning would enable a community, group, and a workforce for the knowledge society to have a high proportion of people capable of continually updating their knowledge and skills. E-learning will help in managing knowledge transfer and contribute to practitioner knowledge in all its forms (Fredrick, 2015).

With the advent of e-learning to implement curriculum content in the Nigerian educational sector, it will not only help to make the teaching and learning of the content brought by the teacher active but also revolutionize the education system entirely (Ndam and Oti, 2010). E-learning will also tap the benefits of a more effective method of teaching and learning offers. Kajetanowtez and Wierzejewski (2010) pinpointed that e-learning has no rival when it comes to the generation of intrinsic motivation and initiation of organized active learning in education. They equally see e-learning as an efficient means of promoting self-study through frequent testing in the form of formative evaluation, which engenders proper monitoring of educational progress and periodical achievement. The overall research report shows that e-learning has a positive effect on learners' achievement (Garrison and Anderson, 2003).

PROSPECTS OF EFFECTIVE LIBRARY AND INFORMATION SERVICES FOR E-LEARNING IN NIGERIA

Technical Support: Technical support is needed in libraries where internet systems are involved or extensive use is made of computer networks. Technical assistance is expected to enhance library services to open and distance learning institutions. ICT-based services dominate the services rendered to distance learning students by library staff; they have become providers of technical support (Hulshof, 2009); and they have been transformed from "information gatekeepers" to "information gateways" (Haricombe, 2008). Lippincott (2002) advocates librarians' involvement in learning communities: "Librarians can shift the focus from explaining library resources to meeting the on-going information needs of students in the broad information environment."

Technological Infrastructural Facilities: Library and library services for open and distance learning environments must be equipped with digital and electronic content created and powered by e-learning portals (Hulshof, 2009). Internet technology is used to connect users where the library students can login and access materials in the necessary format. Text, data, graphics, images, animations, and sound can be accessed by students.

Virtual Support Programmes: Virtual support programmes can enhance library services to open and distance learners. Library services to distant learners in open and distance learning institutions can become interactive by providing links to discussion forums, email, and file transfers, thus allowing communication between users and librarians (Haricombe, 2008). Virtual/digital library services will provide an environment in which librarians and users are not physically present, but users can access library resources from a remote site at an individual's convenient time with the provision of interactive tools like chats. Librarians and users can virtually meet online, in the interest of the users.

Funding: Through proper funding for the library as a whole, ICT knowledge services could be expanded by creating e-learning centres and also using e-library to deliver library services and make library facilities available to distance learners (Yusuf, 2006). It is, however, necessary that the government/institutional bodies provide adequate funding and necessary infrastructure, so as to make the library fulfil its organisational obligation of serving users irrespective of whether they are conventional students or distant learners.

THE IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY ON E-LEARNING

Today, E-learning is a rich and complex concept, as it is the provision of education and training via the World Wide Web for students. Within these higher learning processes, virtual learning environments (VLE), learning management systems (LMS), web-based training (WBT), and other e-learning applications and educational technologies are accessible to all types of individuals. Making E-learning and educational technology accessible means that all these three parts (content, communication, construction) of the three-component-model must be taken in consideration and made accessible (Fisseler and Bühler, 2007). Moreover, in these virtual learning environments, it is important to ensure scalability of the platform, support for portability and standards as well as content personalization. Kante (2003) quoted that information communication technology, when used in a sufficient and suitable manner, can help learners to understand IT better. It can help learners to use the absolutely necessary skills which can guarantee success in empowering them with IT awareness and skills which are essential for success in today's knowledge economy. ICT is the process of putting together the potential of computers, telecommunications, and electronic media by means of electronic technology. Maisamari (2003) alleged that multiple advancements in telecommunications technology have enabled students to be anywhere and yet still receive tutorials, lectures, and instructions from their teachers without having to make any physical contact. Although there is no personal contact, electronic technologies are only used for transferring information, and curriculum can still be carried out. According to Dirckinck-Holmfeld and Lorentsen (2003), using ICT to develop and present curricula in education is the most productive use of ICT in e-learning. Therefore, since teaching and practice often reflect on social and economic development, ICT integration in e-education has resulted in significant breakthroughs in teaching and learning (Senyapili & Karakaya, 2005). Similarly, Salehi, Shojaee and Sattar (2015) noted that the growth of ICT and E-learning in education has resulted in chances to improve the different levels of the process of information. ICT and E-learning, which act as a combination of the potential of computers, telecommunications, and electronic media using digital technology, have positively affected different areas of human existence, thereby creating a powerful drive for changes in the way human beings live, transfer information, process information, and carry on businesses (Anja, 2007).

SUMMARY

Based on the reviews in this paper, it was summarized that, since teaching and practice often reflect on social and economic development, ICT integration in e-education has resulted in significant breakthroughs in teaching and learning. The growth of ICT and E-learning in education has resulted in chances to improve the different levels of the process of information. It is the combination of the potential of computers, telecommunication, and electronic media using digital technology that has

created a powerful drive for changes in the way human beings live, transfer information, process information, and carry on businesses. The world scenario of LIS education is changing fast. The change is enforced by many forces, such as technology, economic character, etc. LIS education is responding to these changes by making appropriate changes in its teaching-learning strategies. Adoption of e-learning in LIS is a robust indicator of this response.

RECOMMENDATIONS

1. For the successful and effective use of ICT in enhancing the quality of e-learning and teaching and learning, policy makers need to be aware of how these evolving technologies can be of greatest value in their country's education system, and in this regard, they have to develop a supportive policy environment and framework at the national level for the integration of ICT into their education systems.

2. The Nigerian government should make a concerted effort to provide the enabling environment by establishing e-learning facilities in all universities.

3. The government or local bodies of organizations or institutions must increase the funding for libraries.

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