

Application of Information and Communication Technologies on Library Services in University Libraries in Nigeria: Contemporary Issues and Prospects

Ode, I Moses¹ & Ode, U Alice²

Medical Library, Benue State University, Makurdi, Nigeria¹, Benue State Polytechnic, Nigeria²
ijoko_2d4@yahoo.com¹

Abstract

Computerization and globalization of library resources and services is an imperative of modern university libraries. Application of ICT in university libraries provides a premise for efficiency and effectiveness of library services and functions. This paper discusses the concept of ICT in library services and operations as the use and application of computers and other technologies in acquisition, storage, processing, retrieval, transfer and dissemination of information. It examines the state of automation project in university libraries, and discovers that many university libraries are yet to computerize and globalize their resources and services. The impact of ICT on library services results in the efficiency, effectiveness of services, speed of technical processing activities and information services. The challenges of expertise, funding among others were discussed. These challenges could be surmounted when proactive and progressive actions are taken by the authorities concerned to put in place modalities that will enhance ICT application in library services and functions. Recommendations such as massive injection of funds to support ICT project, involvement of practicing librarians in the training of personnel in the knowledge of ICT competencies among others were made as the way forward.

Keywords: Information Communication Technology Library automation, Library Services and University libraries.

Concept of Information and Communication Technology (ICT)

Information and Communication Technology (ICT) is a comprehensive concept and parallel concept with Information Technology (IT) that denotes not only a single unit of Technology but an ensemble of techniques like telecommunication equipment, data processing equipment, consumer electronics etc. The concept has brought a phenomenal change in the information collection, preservation and dissemination scene of the world.

ICT incorporates a range of technologies used to support communication and information. They stress that ICT includes both networks and applications. Networks include fixed wireless, satellite Telecommunications, and broadcasting networks. They further opine that the well known applications

Introduction

With the intervention of information and communication technology, libraries now use

various types of technologies to aid the services they render. Every day, new technological advances affect the way information is handled in the libraries. Libraries in every aspect feel the effect of new technologies. Computing technology, communication technology, and mass storage technologies are some of the areas of continuous development that reshape the way that libraries access, retrieve, store, manipulate and disseminate information to users (Itsekor & Ugwunna, 2014).

The benefits of the application of ICT are numerous but it is mainly used in converting the existing paper-print records in the entire process of storage, retrieval and dissemination to non - print media. ICT has impacted on every sphere of academic libraries actively especially in the area of the library collection development strategies, library building and consortia. ICT presents an opportunity to provide value-added information services and access to a wide variety of digital

based information resources to their clients. Also, libraries are using modern information and communication technology to automate their core functions, implement efficient and effective library cooperation and resource sharing networks, implement management information systems, develop institutional repositories of digital local content and digital libraries (Ezechukwu & Egbe, 2018).

Concept of Information and Communication Technology (ICT)

Information and Communication Technology (ICT) is a comprehensive concept and parallel concept with Information Technology (IT) that denotes not only a single unit of Technology but an ensemble of techniques like telecommunication equipment, data processing equipment, consumer electronics etc. The concept has brought a phenomenal change in the information collection, preservation and dissemination scene of the world ICT is defined as the use and application of computers, telecommunications, and microelectronics in the acquisition, storage, retrieval, transfer and dissemination of information (Shariful & Nazmul, 2006). Hamelin in Shariful & Nazmul (2006), provides a useful and clear definition of information and communication technology (ICT) as those technologies that enable the handling of information and facilitate different forms of communication. These include capturing technologies (CD-ROMS) processing technologies (application software), communication technologies (Local Area Network) and display technologies (computer monitors)., communication technologies (Local Area Network) and display technologies Obebe in Odede & Enakerakpo (2014), posits that ICT is a short term for computers, software, networks, satellite links and related system that allow people to access, analyze, create, exchange and use data, information and knowledge. ICT incorporates a range of technologies used to support communication and information. They stress that ICT includes both networks and applications. Networks include fixed wireless, satellite Telecommunications, and broadcasting networks. ICT has brought unprecedented changes and transformation to academic libraries and information services.

Conventional library and information service and customer relations can be provided more efficiently and effectively using ICT as they offer convenient time, space, cost effectiveness, faster and most up to date dissemination and end user involvement in the library and information service process.

University libraries are those libraries that are in universities as higher institution of learning to collect, organize, preserve and store information for the use of users. These are used by students, teachers and others for educational purposes to enhance education, assist both students and teachers achieve their educational objectives. They provide conducive environment for studying and enhancing reading as a habit (Okoy, 2005).

With the advent of information are the Internet, database management system and multimedia tools. According to them, by implication, in holistic understanding of ICT, it includes the consideration of telecommunication policies, information policies and human resources development policies. Thus ICT is a diverse set of technological tools and resources used to communicate and to create, disseminate, store and manage information (Sharifu & Nazmul,

2006). Hamelin in Sharifu and Nazmul, (2006) provides a useful and clear concept of ICT as those technologies that enable the handling of information and facilitate different forms of communication that include capturing technologies, storage technologies, processing technologies and communication technologies. Thus, the concept of ICT can be termed as the use and application of computers, telecommunication and microelectronics in the acquisition, storage, retrieval, transfer and dissemination of information. Moursund (2005) & Nwosu (2013) opine that the field of information and communication technology (ICT) combines science technology that include a full range of computer hardware and software, telecommunication and cell phones, the Internet and the web, wired and wireless networks, digital and camera robotics. It also includes the field of computer and information science and a huge and rapidly growing knowledge base that is being developed by practitioners and researchers. ICT has proven to be a valuable aid to solving problems and accomplishing tasks in business, industry,

government, education and many other human endeavours.

Ebijuwa (2002) defines ICT as tools used for collection, processing, storage, transmission and dissemination of information. With the advances in ICT, electronic information resources such as e-books, e-journals, CD-ROMS databases, OPAC, online databases and the Internet have launched the world into an information age. As such, no institution or organization can still rely on only traditional printed information resources to perform effectively and efficiently. To the libraries, ICT is a significant development that provides tools for managing the quantum of information generated for modern society. ICTs are significant in the achievement of library and information science educational goals/objectives and the fulfillment of the tasks of library and information science schools. Sutton (2001) & Athanasius (2018) observe that the changes brought into the LIS profession by ICTs can be divided into two major categories, namely, the natural evolutionary changes and transformational changes. As natural evolution, the library and information science profession has harnessed ICTs to perform old tasks better through the automation of housekeeping tasks such as reference work, bibliographic services, cataloguing, serials, circulation and acquisition which are performed more efficiently in an ICT environment. Transformational changes include the emergence of new functions arising out of an expanded demand-driven information society wider and closer focus on user needs.

US Department of Trade and Industry in Nwana (2008) defines ICT as the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numeric information by a micro-electronic based combination of computing and telecommunication and as the technology applied to capturing and transmitting information by electronic means. ICT is the link between computer networks and telecommunication technologies. Uzoigwe in Nwana (2008) is of the opinion that ICT involves all the technologies employed to facilitate the collection, storage, retrieval and communication of information by the fastest means. It consists of hardware, software, networks and media for collecting, storing,

processing, transmission and presentation of information.

Nwana (2008) defines ICT in the following ways:

- a. ICT is defined as the science of information processing which deals with the use of computer and other electronic devices to collect, process, store, retrieve and transmit or disseminate information to any part of the world.
- b. ICT is the science of information that deals with computerized collection of resources of information, processing, transmission and dissemination of information, knowledge, facts and news through radio, television, satellites, and cable transmission, telephone, audio cassettes, audio-visual/video cassettes and video disks.
- c. ICT is any computer-based tool, equipment or gadget which can be used to collect and process information, support and manage the information needs of an organization, corporation, Industry and Institutions.

She states further that ICT is the automated and computerized form of collecting, typing, filing, copying, processing, analyzing, storing, retrieving and using information for problem-solving and decision-making in every aspect of human endeavour.. It involves the integration of word processing, graphics, images and voices, data processing and standard telecommunication systems for multisystem processing of information and use. ICT makes it easy to use potentials and capabilities of electronic computers and modern information systems for communications, connectivity and interconnectivity in the area networks in use.

Our present age is referred to as the age of information technology where ICT as machine-based is used for gathering and processing information for storage, retrieval, transmission and dissemination. In the age of globalization, the importance of ICT to people generally and information professionals in particular cannot be overemphasized because ICT facilitates quick and easy access to a wide range of information resources to meet information needs. If they are not put to effective use, the

essence of acquiring them has no justification (Nwosu, 2013).

Present Situation of Automation of University Libraries in Nigeria

The process of library automation has come a long way over an uncertain and unpredictable path since 1930s when a few libraries began to incorporate IBM equipment into the circulation procedures (Adegboire, 2010). The evolution of technology is defined by developments in science and technology that create new modes of application. Moulton (1998) stresses that the convergence of ICT in libraries has led to technological, organizational, and social change that has reshaped what we do and how we do things.

A number of studies have been conducted on the application of ICT in University libraries in Nigeria. They include that of Adegboire, (2010), Agboola (2000), Ajala (2001), Abbas (2014) Hussaini, Vashistha, Jimoh and Jimah (2017), Ezechukwu and Egbe (2018, Oladukun and Kolawole (2018). All of these studies have agreed that serious effort in the application of ICT to library processes started in Nigerian University libraries in the early 1990s. Individual efforts at library automation such as the one by the University of Lagos, University of Ibadan and ABU in the mid '70s and '80s failed largely because of lack of technical knowhow relating to software development and maintenance of hardware. Agboola (2010) states that, the greatest impetus to library automation in Nigerian University libraries so far came from World Bank project. The World Bank gave automation in the University libraries as one of its conditions for support, and as a result, the National University Commission (NUC) presented one computer and a four-user local area network version of TINLIB (The information Navigator Software) to each of the participating libraries in 1992.

Recent surveys carried out by Oladokun and Kolawole (2018), Ezechukwu and Egbe (2018), show that application of ICT in libraries is gradually taking firm root in Nigerian University libraries. In Nigeria, the first attempt to automate library operation was made in 1970s where omoniwa (2001) reports that the first successful effort; the automation

of serial records in 1972 and secondly, circulation operations in 1976 at ABU library were made. Most notable research libraries in Nigeria have gone far in the computerization project after these efforts. The successful and most comprehensive computerization project of an indigenous Nigerian library was that of the International Institute of Tropical Agriculture (IITA) library Ibadan which was accomplished in 1984 (Abbas, 2014). The hasty effort of academic libraries to catch up with their counterparts in the developed world stirred the way most University library automation started in Nigeria but however left the projects at various stages of development. Such efforts enhanced by National University Commission (NUC) aimed at computerizing library services across the country turned to be a farce with none of the libraries fully automated.

According to Abbas (2014), ABU and Ibadan that are in frontline of automation project in University libraries have not completed full automation of all library services. ABU had not completed any of the modules necessary for full automation, while University of Ibadan had completed one module (cataloguing). He stresses that all modules were partially implemented in ABU, meaning that not all parameters or sub-modules were in operation, while in UI only one module (cataloguing) was implemented to the fullest. Two modules (acquisition and serials) were partially implemented and the remaining two (reference and circulation) were still at proposal stage, meaning that none of the parameters/ sub-modules have been implemented or even used for information service or delivery.

The research of Abbas (2014) supported with data records contradicted other literatures reviewed in the course of the research where some of the literatures claimed that University of Ibadan had completed its automation programme since two decades while another literature claimed that ABU had completed automation of its services contrary to this record. Supporting this view, Ezechukwu and Egbe (2018) assert that most University libraries have not been able to automate all their operations due to varying factors. Thus, library users are still unable to experience the ease of service expected through automation in

University libraries Only some foreign owned or sponsored libraries like IITA, British Council library, United States Information Service (USIS) library and few others recorded some success stories in this direction.

However, from the early 1990s to present time, some University libraries have been partially automated and others whose full automation are underway include University of Ilorin, Ladoke University of technology, Ogbomosho, University of Agriculture, Abeokuta, University of Nigeria, Nsukka, Tafawa Balewa University Bauchi, Bayero University , Kano, ABU, Zaria, Federal University of Technology, Minna and University of Lagos.etc (Mishra, Thakur & Singh (2015). Hussaini, Vashistha, Jimoh and Jimah (2018) assert that there is no University library in Nigeria that is fully automated; and that less than 49% of these libraries are partially automated

With our knowledge of the various research literatures available, we are not very sure yet to claim that University libraries have been automated in readiness for ICT application in University libraries in Nigeria. It is true that few University libraries might have computerized some services in their libraries leaving a whole lot of others grappling with the computerization project. Ani (2007) accepts the fact that despite all the benefits accruable from automation, Nigerian University libraries are still at crawling stage of automation of their services and based on that fact that automation of library services has been in Nigeria since the last decades and the expectation that, academic libraries would take the lead in the automation race because of their enormous potentials and challenges, experience and research have proved otherwise.

The pace of automation project in University libraries has been very slow. The development is discouraging, particularly as the world has become a global village with avalanche of information to share but which may not be accessible without information technology. Sokoya (2004) posits that most academic and research libraries in Nigeria have not computerized their functions and services, the public catalogue and visible index are still searching tools for library resources. Similarly, Ezechukwu & Adewole-Odeshi (2018) assert

that University Libraries have not been able to automate all their operations due to varying factors. Thus library users are still unable to experience the ease of service expected through automation in Nigerian Academic Libraries.

Impact of ICT on Library Services and Functions

ICT has created a profound influence on traditional academic libraries in the 21st century. They have no option but to adapt themselves to new developments in technology hence the networking of information centers is inevitable. They stress that the use of computers prescribes efficiency and saves considerable amount of time, resources and labour. It also speeds up technical processing and information services and has been a means of bringing quality services to library users. To them, the systematic planning of its introduction and application will assure that the technology based information services are sustained and made to enhance the ability of libraries Oladokun & Kolawole (2018).

According to Krubu & Osawaru (2011) Computing Technology, Communication Technology and Mass Storage Technology are some of the areas that enjoy continuous development that reshape the way the libraries access, retrieve, store, manipulate and disseminate information to users. ICT has impacted on every sphere of academic library activity especially in the form of library collection development strategies, library building and consortia. Husseni, Vashistha, Jimoh & Jimah (2018) opined that ICT presents opportunity to provide value-added information services and access to a wide variety of digital based information resources to their clients. They stress that academic libraries are also using modern ICTS to automate their core functions, implement efficient and effective library cooperation and resource sharing networks, implement management information systems, develop institutional repositories of digital local contents, and digital libraries and initiate ICT based capacity building programmes for library users.

ICT has brought unprecedented changes and transformation to academic libraries and

information services. Conventional library and information services such as OPAC, user services, reference services, bibliographic services, current awareness services, document delivery, interlibrary loan, audiovisual services, and consumer relations can be provided more efficiently and effectively using ICT. They offer convenient time, place, cost effectiveness, faster, and most up-to-date dissemination and end user involvement in the library and information service processes. The impact of ICT characterized information services by changes in format, content and method of production and delivery of information products.

Emergence of the Internet as the largest repository of information and knowledge changed the role of library and information science professionals from intermediary to facilitator of new tools for the dissemination of information and the shift from physical to virtual services environment and extinction of some conventional information services and emergence of new and innovational web based services. Saleem, Shabana, Tabusum & Sadik (2013).

With the development and application of ICT, the whole scenario of library has changed drastically. There is a shift from traditional libraries to hybrid libraries with different nomenclatures operating in the universe of knowledge. These libraries are automated libraries, electronic libraries, digital libraries or virtual libraries. In the web environment, there has emerged the concept of library 2.0. All these libraries are using different information technology applications to perform activities ranging from acquisition of materials to the dissemination of information. There is increased productivity of work done in the library by providing information to the right person at the right time and place and also increase in sharing bibliographical records using copy catalogue and classification number and use of other external databases.

Today, computer has brought in a new impact to the library and information usage. In libraries, information technology has assisted library professionals to provide value added quality information service and give more remote access to the internationally available information resources. According to Saraf,

(1998) highly sophisticated information technology facilitates the storage of huge amount of data or information in a very compact space. He further states that information technologies promise fast retrieval of stored information and have revolutionized our concept of the function of a traditional library and a modern information center.

Modern ICT is impacting on various aspects of libraries and the information profession because advancements in ICT and the wide spread use of ICT is resulting in digital information services and digital media replacing and becoming the dominant form of information storage and retrieval. The term library no longer refers only to physical building located in a specific geographic location but also to electronic or digital or virtual libraries that can be accessed from anywhere. Library cataloguing system helps to create bibliographic information on Machine Readable Catalogue (MARC) for efficient library activities such as acquisition, cataloguing, circulation etc.

Library collections consist not only of physical information resources such as books, periodicals, videos, films and many more, stored in physical library building but also include digital resources. Access to digital information resources is not restricted to specific hours and days of the week at one physical library building. He stresses that the proliferation of digital information available over the Internet and other sites is resulting into library losing its former place as the focus of the information environment. Libraries are becoming one of the information systems available to information end users (Babu, 1999).

ICT with tremendous information sources, rapid transmission speed and easy access ensures the satisfaction of the user with complex demand, breaks down the distance barrier and shortened the time required for the right information to reach the right reader at the right time. It also increases and solves the library's demand of electronic development. It is really an excellent tool for the library. There is ease and accuracy in data handling, efficiency in speed and promptness in operation.

ICT has impacted enormously on the effectiveness of the operations and services of University libraries as posits by Patra (2008) that the digital revolution driven by ICT innovation has transformed academic libraries in the way services and functions are performed. The traditional role of information custodian has been changed to that of being information provider and disseminator. ICT holds the key to the success of modernizing information services, introducing new ways of information handling and it also brings about change in structure of information and its communication.

Contemporary Challenges Facing ICT Application in University Libraries

The use of ICT in libraries has raised a number of challenges that hamper its smooth implementation and application in University libraries in Nigeria. These include:

The Changing Role of Libraries and Librarians: More and more library users are using digital technology to get access to global information resources through the web. Unfortunately the huge amount of information available on the web is generally overwhelming and a large number of web users are still not able to use the web effectively.

Funding for Libraries: Due to scarce budget cuts and high prices for books and journal subscriptions, libraries are faced with no options but to reduce expenditures on books and journal subscriptions. The introduction of ICT in libraries has not made the situation better. Money is required to maintain and upgrade the equipment and software, pay software license fees, pay for access to electronic journals and online databases, pay for Internet connections etc. The rapid pace and transient nature of technological development requires sustained funding.

Information Access: Whereas libraries generally contain and provide access to selected information resources, this is not the case with information accessed on the web. Distribution of pornographic materials and information produced to mislead and misinform is very easy to do on the web. Such information does not pass any editing and so presents problems to librarians on how to exclude access to such types of information

especially on Internet workstations located in the libraries.

Copyright Management: Digitization and provision of access to digital collections accessed via electronic networks, especially the Internet, presents big challenges to librarians. Unlike print-based documents, digital-based information resources can be accessed from anywhere via electronic networks, copied several times, manipulated or deleted. The ease at which digital information resources can be copied and manipulated may result in government, under pressure from information producers, to put in place rigid copyright laws in which the rights of the right-holder are increased at the expense of users and this may affect the provision of access to digital information sources in libraries Emezie & Nwaohiri (2014).

Preservation of Digital Information Resources: Print-based library and archive environment, as opposed to the digital information environment, has evolved over the years. Preservation methods and formats for print-based documents have also been developed and tested. There are print-based documents that are very old and can still be read. The digital information era is in its infancy and already some of the information is stored in formats or media that cannot be accessed or read.

Legal Deposit: In the print-based environment, producers of publications are required by law to deposit copies of their documents with the national library or national archive or any agency designated to receive and preserve such publications. In the digital information environment, the situation in many countries is still not clear as to who is responsible for the long term preservation of digital information resources.

Expertise: Quadri (2012) highlights some constraints as issues of (a) skill training of lecturers so as to improve their ICT competency; (b) lack of system manager/support staff and/or ICT experts; and (c) low levels of students' epistemological access to information resources. To him, the staffs in the University libraries lack ICT knowledge and skills to assist library users to access information resources. There is still a

serious need for technical support with high level expertise in the maintenance aspects of ICT facilities. He maintains that, with poor maintenance and insufficient skills to diagnose system problems and swap parts, there are many out-of-commission machines that could easily be reactivated and used. The problem of technical expertise is, there are not enough people who have qualified and attained ICT specialist skills at the speed which the technologies are adopted.

The Way Forward

The benefits of ICT are enormous, and the challenges that confront practicability of ICT in university libraries could be surmounted to give way to application of ICT in library services and functions in our universities through the following ways:

- Government at federal and state levels, in Nigeria must develop a more proactive and progressive attitude to the implementation of the national policy for information infrastructure and facilities.
- Practicing librarians must be involved in training and retraining of personnel in knowledge of ICT competencies required to effectively manage the resources in academic libraries towards globalization of services.
- Library schools in Nigeria should incorporate ICT competency training into their curriculum. The schools should be required to have viable ICT laboratories to ensure appropriate hands-on-ICT training for students. The lecturers should be required to be effective ICT literacy to be able to impact the appropriate ICT know-how to the students of librarianship.
- There should be massive injection of funds by authorities concerned for the effective globalization of library services in academic libraries in Nigeria.
- There should be collaboration between experts in ICT knowledge in computer centres in the universities and their academic libraries to fast-track active participation of academic libraries in Nigeria in the automation and ICT application of their services.

- The collaborative efforts of the libraries and some ICT experts in ICT centres across the country should be harnessed and maximized for the consummation of digitization and automation of library services.
- The problem of epileptic power supply should be tackled headlong by the government of Nigeria by injecting funds and technical experts needed to step-up effective mechanism for regular and stable power supply.

Conclusion

The need for automation in Nigerian University libraries is overdue and requires a pragmatic approach. The processes involved in the automation projects such as human and material resources needed in order to have a complete and effective automation of library resources are pertinent. ICT application in libraries is predicated on the success of library automation and globalization of resources. Various problems identified and envisaged should be tackled to give way to effective automation and globalization of library resources.

The revolutionary changes and transformation that have taken place in information and communication technology have affected everything in life both in the way we think and work. These changes and transformation have affected libraries and information centres where they find it difficult to function without computers and information technologies. In the modern world, the library and information profession have adapted to the developments in information and communication technology. Those who go with the advances will survive while others will become obsolete. Only a well equipped library with facilities of modern information infrastructures and technologies could satisfy the maximum demand of the present technology driven and conscious society. With Information and communication technology (ICT), the role and position of University libraries are dramatically changing. Okon in Abubakar (2011), observes that the rapid pace of development in the area of information technology and the advent of networked information services have prompted

a comprehensive review of the library and information services provision.

The global trend is now characterized with a fundamental shift from traditional information environment to electronic environment where emphasis is placed more on the acquisition of electronic resources as well as online databases. According to Okiy (2005), the contemporary practice in University library services is being propelled with information explosion and the inclusion of information and communication technology (ICT) in all aspects of library services. The present day University library services are more on the area of digital, virtual, or library without walls/books, all of which have transformed University libraries and have led to the transition and transformation in the University library environment.

With the present innovations and enormous benefits experienced as a result of ICT in Nigerian University libraries, they still experience some obstacles in the effective and efficient use of ICT resources in the libraries.

References

- Abbas, K. D. (2014). Automation in Nigerian University libraries: Mirage or reality? *Journal of Information Knowledge Management* 4 (4), 1-7.
- Abubakar, B. M. (2011). Academic libraries in Nigeria in the 21st century. *Library Philosophy and Practice* Retrieved from <http://unlib.unl.edu/LPP/>.
- Adegboye, A. M. (2010). Automation in two Nigerian University libraries Retrieved from <http://unlib.unl.edu/LPP/>.
- Agboola, A. T. (2000). Five decades of Nigerian University libraries: A review. Retrieved from <http://www.librijournal.org/pdf/2000-4pp280-289.pdf> <http://www.librijournal.org/pdf/2000-4pp280-289.pdf>.
- Ani, O.E. (2007). ICT Revolution in African librarianship: Problems and prospects. *Gateway Library Journal* 10 (2), 111-117.
- Athanasius, J. (2018). Problems and prospects of library automation in Nigeria. Retrieved from https://infoguidenigeria.com/problems_prospects_library_automation_nigeria/
- Babu, T. A. (1999). Automation of public Libraries. *Herald of Library science* 38, 47-53.
- Ebijuwa, A. A. (2005). Information and communication technology in university libraries: The Nigerian Experience. *Journal of Library and Information Science* 7 (1&2), 23-30.
- Emezie, N.A. & Nwaohiri, N.M. (2014). The challenges of library automation in Nigerian Universities of Technology: The example of Federal University of Technology , Owerri, Nigeria. *The Information Technologist* 11(1) Retrieved from <https://www.ajol.info/index.php/ict/article/view/109506>
- Ezechukwu, C.O. and Adewole-Odesi, E. (2018). Automation in academic libraries: An evaluative study of two Nigerian Libraries. *Covenant Journal of Library and Information Science* 1 (1), 1-12.
- Husaini, S., Vashistha, R., Jimoh, A.O., and Jimah, H. (2017). Automation of library services for enhanced users' satisfaction of information resources in academic libraries in Nigeria. Retrieved from https://www.researchgate.net/publication/32892807_automation_of
- Itsekor, V.O. & Ugwunna, I.S. (2014). ICT competencies in the 21st century library profession: a departure from the past. *International Journal of Academic Library and Information Science* 2 (5), 51-57.
- Krubu, D. E. & Osawaru, K. E. (2011). The impact of information and communication technology (ICT) in Nigerian University Libraries. *Library Philosophy and Practice* Retrieved from <http://digitalcommon.unl.edu/libphilprac/583/>.
- Mishra, A., Thakur, S., & Singh, T. (2015). Library automation: Issues, challenges and remedies. Retrieved from <https://www.researchgate.net/publication/277668181>.
- Moulton, L. (1998). Leading the library automation project. Cumshaw: Information Services Incorporated.
- Moursund, D. (2005). Introduction to information and communication technology in education. Eugene, Oregon: Dark Wing Books Limited.
- Nwana, S. E. (2008). Information and communication technology (ICT): A continuity in educational technology. Onitsha: West and Solomon Publishing co. Ltd.
- Nwosu, M.C. (2013). Automation of libraries and information centres: A critique. In Issa, A.O., K. N. Igwe, & C.P. Uzuegbu (Eds). Provision

- of library and information services to users in the era of globalization. Lagos: Waltodanny Visual Concept.
- Odede, I. and Enakerakpo, E (2014). ICT skills and Internet usage among library and information science students in Delta and Edo States, Nigeria. *International Journal of Library and Information Science* 6 (5), 98-107.
- Oladokun, T.A. & Kolawole, L. F. (2018). Sustainability of library automation in Nigerian libraries: KOHA open source software. Retrieved from <http://digitalcommons.unl.edu/libphilprac>.
- Okiy, R. B. (2005). Nigerian University Libraries and the challenge of information provision in the 21st Century. *Library bulletin: Nigerian University Library System* 3(1/2), 17-27.
- Omoniwa, M. A. (2001). The computerization of the Kashim Ibrahim Library of ABU Zaria, 1972-2001. *Nigerian Libraries* 35 (1).
- Patra, B. K. (2008). The role of information and communication technology on management and services of academic Libraries. *Techno Indian Group Research Journal* 1 (1).
- Quadri, G. O. (2012). Impact of ICT skills on the use of e-resources by information professional: A review of related literature *Library Philosophy and Practice*. Retrieved from <http://unlib.unl.edu/LPP/qudri.html>.
- Saleem, A ., Shaban, T.S.Z., & Sadik, B.M. (2013). Application of and uses of information communication technology (ICT) in academic libraries: An overview. *International Journal of Library and Information Science* 2(3), 49-52.
- Saraf, V. (1998). Dynamics of the information technology and its implications for Library and information education in the new millennium. Paper presented at an International Seminar held at University of Dhaka, Dhaka Bangladesh.
- Shariful, I. & Nazmul, I. (2006). Information and communication technology (ICT) in libraries: A new dimension in librarianship. *Asian Journal of Information Technology* 5(8), 809-817.
- Sokoya, A. A. (2004). Principles and relevance of information technology in Nigerian Libraries. *Nigerian Journal of Libraries, Archives and Information Science* 1 (3) 31-38.