

APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN SELECT PRIVATE UNIVERSITY LIBRARIES OF NORTH- CENTRAL NIGERIA

*Abdullahi Bala Shehu
K.P. Singh*

Mr. Abdullahi Bala Shehu
Ph. D. Scholar,
Department of Library and
Information Science,
University of Delhi,
Delhi - 110 007
E-mail: abeeshe@yahoo.com
Corresponding author

Dr. K.P. Singh
Professor,
Department of Library and
Information Science,
& Coordinator, Academic and
Cultural Affairs, Faculty of Arts,
University of Delhi,
Delhi - 110 007
E-mail: kpsingh330@gmail.com

This study was carried out to find out the availability, areas, and extent of application of ICTs in Private university libraries of north-central Nigeria. Four research objectives were formulated to guide the study. The population of the study consists of the total census of library professionals and paraprofessionals from two private university libraries in north-central Nigeria. A mailed questionnaire was the instrument of data collection and descriptive method of analysis was used to analyze the data. It was discovered from the study that ICT application is improving in the two private university libraries under study. The study found that ICTs are applied to a Great Extent (GE) on Acquisition operation, on Technical processing, Under circulation operation ICT was applied to a great extent on registration of library users, charging and discharging of library materials, and ICT adoption for circulation operation was higher in Nile University in comparison to Baze University. Application of ICT to library promotions was very low, but both the universities adopt library websites as a way of library promotion. Major areas where ICT was applied for reference service include E-mail, electronic document delivery, and current awareness service. The study also found out that both the libraries possessed some of the ICT facilities and major factors hindering ICT application include: inadequate financial support, erratic power supply, lack of ICT awareness among staff, lack of infrastructure and poor maintenance.

Keywords: ICT Applications, University libraries, ICT Facilities, Library services, Survey, Nigeria, Nile University and Baze University.

INTRODUCTION

The mandate of every university library is to support research, teaching, and learning in universities and colleges. According to Adigun et al. (2011) the main function of any university library is to support the objectives of the institution that established it, which includes learning, teaching, and research. The users of university libraries are mostly students, lecturers, and researchers. Information and Communication Technologies (ICTs) play an important role in the progress of academic libraries. Cholin (2005) defined ICT as a range of Technologies that is used to support communication and Information and that ICT includes Networks: Fixed

wireless, satellite telecommunication, broadcasting networks, and well-known application such as internet, database management system and multimedia tools. The swift developments in the Information Technology sector have eliminated distance and time barriers. University libraries are the fertile areas for the introduction of ICT to make accessible the best possible information from anywhere any time and any sources around the world (Cholin, 2005).

Introduction and Application of ICT to academic libraries has enabled automation of core functions of library operations and services. The efficiency and effectiveness of the core functions result in the implementation of laid down policy that guides the academic library. At the same time ICT has improved access to digitized information, but various studies have shown ICT applications in developing countries like Nigeria are hampered by several factors. According to Omekwu and Uzoma (2014) so many factors are responsible for this state of affairs. The factors include but not limited to inadequate funds, lack of infrastructure, short of qualified library professionals, and the like. Therefore, to achieve the task of effectively applying ICT, in university libraries' strategies of management and appropriate policies must be in place that will foster acquisition, information processing, package and repackaging, storage, retrieval, and dissemination in university libraries (Enakrire and Ocholla, 2017). TAM (Technology Acceptance Model) has proven to be a reliable predictor for ICT adoption. Many studies use TAM for understanding how ICT is perceived and used. TAM has shown for example Adeoye and Olarenwaju (2019), Jeong (2011), Tella (2011),

Miller and Khera (2010), Goh and Liew (2009), Ramaya (2006) just to mention but a few, that perceived ease of use has a significant relationship with perceived usefulness and attitudes towards the behavior of any technology adoption and not to adopt. Most of these studies also agree that intervening variables such as IT competence, skills, and knowledge, reflect flexible, proven, valid and reliable measures that predict the acceptance to use new technologies by end-users in this contemporary information era. The authors found many studies that prove TAM is very useful Application for studies such as this. The study predicted that perceived ease of use and perceived usefulness together would have a positive effect on intent to use ICT for library operations and services in private university libraries of North-central Nigeria. It is consequent on this backdrop that this study is carried out to investigate ICT application in selected private university libraries in north-central Nigeria.

STATEMENT OF THE PROBLEM

Application of Information and Communication Technology to library operation and services has sped up access to information resources, anywhere, anytime. ICT has enhanced communication, sharing, and flexibility. Application of ICT has also resulted in automated services, at the same time providing effective and timely information delivery. Though some libraries in developing part of the world are still grappling with the implementation of ICTs in their library operations and services but some are at the varying stages of ICT applications in their libraries operations and services despite benefits. According to Mairaj and El-Hadi (2012) the speed

of ICT applications in libraries in developing countries has been very slow. In same vein Onuoha and Chukwueke (2019) maintain that ICT application in library and information services in Nigerian institutions of higher learning is grossly inadequate and that ICT application in Nigerian universities libraries is faced with mirage challenges. As a result, the user may not be satisfied with the library services and will be forced to look for an alternative means like the use of search engines such as Google, thereby reducing the efficacy of libraries not been able to meet its mandate. It is on this note that the authors deem it fit to investigate the availability and extent of ICT application to operation and services in private university libraries of north-central, Nigeria. It is empirically unknown the present state of ICT application in private university libraries of north-central Nigeria, which led the authors to purposively select Baze and Nile University in Abuja Municipal Nigeria.

LITERATURE REVIEW

Ridwan (2015) investigated the trend in the use of ICT in library services of Kaduna state institutional libraries. The author ascertains that ICT was utilized in a certain aspect of library services, but are bewildered by problems and made some recommendations for improvement again. Achugbue, Uwaifo and Igun (2015) posit that university libraries have undergone a significant change in the past two decades owing to the application of information technologies in its operation and services such as automated cataloging, circulation systems, online information retrieval, electronic document delivery, and CD-ROM databases, electronic databases. The authors observe that ICT

application in university libraries in developing nations such as Nigeria are faced with challenges and tried to investigate the reason in their study. In the same direction Anyoku (2012) posits that majority of librarians' responsibility in the 21st century involves working with computers and investigated the level of ICT application to operation and services in University libraries and concluded that more effort is needed in ICT application to library services and operations.

Enakrire and Ocholla (2017) conducted a study which was extracted from one of the author's Ph.D. thesis, ICT utilization for knowledge management in academic libraries in Nigeria and South Africa. It was a comparative study between the two countries. The authors had sampled three universities from Nigeria and three from South Africa. The study avered that the South African sampled university libraries were better equipped in using ICTs for KM in terms of availability, accessibility, services, and effectiveness than Nigeria sampled. The study added that Nigerian university libraries had several factors mitigating effective ICT application to its Library services for managing KM. This study makes a valid point that Nigerian Academic libraries are struggling with ICT adoption and counterpart countries such as South Africa are doing better.

Adeleke and Olorunsola (2010) investigate the awareness of librarians in Nigeria libraries regarding available online tools use for Cataloging and Classification. The result shows that librarians in Nigeria are aware of the importance of online tools for cataloging and classification and the benefits derived from utilization. Going further, Nwalo (2005) listed the

following ICT facilities used in the management of library resources to include; computers, DVDs, CDs, internet and telephones and others include; computer, internet, digital camera, webcam, smart card, scanner, E-BOOKS, printers, electronic Journals, WEB-OPAC, animation, E-Mail, CD-ROM, DVD, RFID Technologies. In the same vein Ani, Esin and Eden (2005) concluded that windows NT and MS-DOS is the most used operating systems in the libraries surveyed in Nigeria. While Tinlib is the popular library management software based on the study they conducted. Going further, Ejedafiru (2010) investigated provisions of ICT infrastructure for resource sharing in four academic libraries in Nigeria. The analysis shows that all surveyed libraries had a very limited amount of computers and telecommunication tools for resource sharing. None of the libraries were fully utilizing ICT for resource sharing, and the benefit of resource sharing with ICT was highlighted in the study. Similarly Oyewo, Akintunde, and Salau (2019) measured ICT facilities use to correlate benefits of library service in first-generation universities of southwest Nigeria. The study found the use of computing facilities such as internet and web resources to prompt the user to visit the library more and that telecommunication facilities and reproduction facilities correlate with perceived benefits of library services but the film/tape-based facilities do not correlate with perceived benefit of library services as they are not available in academic libraries of Nigeria. This study makes a very valid point that adequate ICT facilities in the library equate improves service delivery in the eyes of the library patrons.

Onuoha and Chukwueke (2019) posit that the position of ICT application to libraries in the

developing countries is, however, a far cry from that in developed countries. The authors listed poor electricity, unfavorable government policy, lukewarm attitude towards the alleviation of the suffering of the users of such libraries, high cost of importation of ICT facilities and insufficient fund allocation. Furthermore, Amkpa and Abba (2009) conducted a study on the factors inhibiting the implementation of Information and Communication Technologies (ICTS) in Nigerian university libraries. The major issues were funding, inadequate infrastructure, lack of training and education, lack of adequate power supply. Attitude of information professional towards ICTs, Political and Economic problems, Lack of technical support from software agents / gateways. In the same vein, Adeleke and Olorunsola (2010) describe the lack of skills in using the internet as a major constraint for using online cataloging and classification tool technique in Nigerian libraries.

OBJECTIVES OF THE STUDY

The fundamental focus of this study is to investigate the areas and extent of ICT application to private university libraries of north-central Nigeria. The specific objectives include:

1. To find out the extent of ICT application to library operations and services;
2. To know the ICT facilities available in university libraries of north-central Nigeria;
3. To identify the challenges confronting the application of ICTs in university libraries in north-central Nigeria; and
4. To provide suggestions for improving ICT application in private university libraries in Nigeria.

SCOPE AND LIMITATION OF THE STUDY

The scope of the present study is limited to the private university libraries of north-central Nigeria situated in Abuja municipal, which include Baze University and Nile University of Nigeria. The target respondents are library and information science professionals including Para-professionals and excluding non-professionals.

METHODOLOGY

The descriptive survey design was adopted for this study. Akuezilo and Agu (2003) defines descriptive survey as a type of research design that describes the characteristics of the population or phenomenon that is being studied. Hence, it is appropriate for this study because it generated relevant and useful data to describe the availability and application of ICTs in the private university libraries of north-central Nigeria. The non-probability sampling, specifically purposive sampling, enabled the selection of two private university libraries from the north-central part of Nigeria which includes Baze University Abuja and Nile University Abuja. The choice was based on the high-level academic standards maintained by

these universities to attract student patronage. The population consists of the entire census of the professional and paraprofessional librarians across the two private university libraries in the north-central. The structured questionnaire was prepared and mailed. The purpose of the questionnaire was to obtain the data regarding the current extent of application and availability of ICTs in selected private university libraries of north-central Nigeria. A total of 21 filled questionnaires were received back and found usable indicating a total population of professional and paraprofessional librarians cutting across both private University libraries. Data collected was analyzed using mean frequency counts, and percentages.

From the table 1, the total population of librarians cutting across both the universities are 21 which include both the professionals and paraprofessionals. The Baze university has the highest number of respondents representing (12) 57% of the population and Nile university (7) total representing (43%) of the total population. 3 Graduate Librarian, 7 Librarian II, 1 Library officer, and University librarian, while Nile university 1 library officer, 5 Assistant Librarian

Table 1 : The Profile of the Respondents

Gender	Baze University		Nile University	
	Frequency	Percentage	Frequency	Percentage
Male	7	58	5	71
Female	5	42	2	29
Total	12	100	7	100
Position				
University Librarian	1	8	1	14.5
Librarian II	7	59	0	0
Assistant Librarian	0	0	5	71
Graduate Librarian	3	25	0	0
Library Officer	1	8	1	14.5
Total	12	100	7	100

Table 2 : Extent of ICT application to Library Operations and Services

Sl. No.	Item Statement Acquisition Operations	Baze Mean (\bar{x})	Remark	Nile Mean (\bar{x})	Remark	Average Mean (\bar{x})	Decision	Rank
1	Book Acquisition	3.91	VGE	3.71	VGE	3.81	1st	Positive
2	Search	3.83	VGE	3.30	VGE	3.57	2nd	Positive
3	Ordering	3.41	GE	3.29	GE	3.35	3rd	Positive
4	Money Transaction	2.25	LE	2.30	LE	2.27	4th	Negative
5	Serial control	1.31	NA	1.70	LE	1.50	5th	Negative
	Grand Mean	2.94	GE	2.86	GE	2.90		Positive

Table 2A: Technical Processing Operations

Sl. No.	Item statement Technical Processing	Baze Mean (\bar{x})	Remark	Nile Mean (\bar{x})	Remark	Average Mean	Rank	Decision
1	Copy Cataloguing Schemes	3.95	VGE	3.96	VGE	3.95	1st	Positive
2	Online Cataloguing	3.61	VGE	3.96	VGE	3.78	2nd	Positive
3	Online Classification	3.51	VGE	3.59	VGE	3.55	3rd	Positive
4	Subject Heading Classification on DVD and CD	1.60	LE	1.80	LE	1.70	4th	Positive
	Grand Mean	3.16	GE	3.32	GE	3.24		Positive

Table 2B: Circulation Operations

Sl. No.	Item statement Circulation operation	Baze Mean (\bar{x})	Remark	Nile Mean (\bar{x})	Remark	Average Mean (\bar{x})	Rank	Decision
1	Registration of Library Users	3.20	GE	3.90	VGE	3.55	1st	Positive
2	Renewing of Materials	2.20	LE	3.51	VGE	2.85	2nd	Positive
3	Charging of Materials and Discharging of Materials	2.00	LE	3.55	VGE	2.78	3rd	Positive
4	Overduelines	1.67	LE	2.28	LE	1.95	4th	Negative
5	Interlibrary Loan	1.11	NA	1.20	NA	1.15	5th	Negative
	Grand Mean	2.03	LE	2.89	GE	2.46		Negative

Table 2C: Promotional Service

Sl. No.	Baze University			Nile University				
	Item statement Promotional Service	Mean (\bar{x})	Remark	Mean (\bar{x})	Remark	Average Mean (\bar{x})	Rank	Decision
1	Library website	2.59	GE	3.51	VGE	3.05	1st	Positive
2	E-news letter/bulletin	2.00	LE	2.90	GE	2.45	2nd	Negative
3	Public Relations	1.83	LE	1.39	NA	1.61	3rd	Negative
4	Library Advertisement	1.07	NA	1.32	NA	1.19	4th	Negative
5	Fundraising	1.11	NA	1.35	NA	1.23	5th	Negative
	Grand Mean	1.72	NA	2.0	LE	1.86		Negative

Table 2D: Reference Service

Sl. No.	Item Statement Reference Service	Baze	Remark	Nile	Remark	Average Mean (\bar{x})	Rank	Decision
		Mean (\bar{x})		Mean (\bar{x})				
1	Email	3.59	VGE	3.53	VGE	3.56	1st	Positive
2	Electronic Document Delivery	3.50	VGE	3.59	VGE	3.29	2nd	Positive
3	Current awareness service	2.21	LE	3.12	GE	2.67	3rd	Positive
4	New arrival alert	1.70	LE	3.10	GE	2.40	4th	Negative
5	Selective dissemination of information	2.00	LE	2.53	GE	2.26	5th	Negative
6	News paper clipping service	2.09	LE	2.31	LE	2.21	6th	Negative
7	Indexing and abstracting service	1.28	NA	2.30	LE	1.79	7th	Negative
8	Interlibrary loan service	1.13	NA	2.21	LE	1.67	8th	Negative
	Grand Mean	2.19	LE	2.83	GE	2.51		Positive

Note: VGE-Very Great Extent, GE- GREAT Extent, LIE – Little Extent, NA-Not at All

and 1 University librarian. 7 males and 5 females in Baze university while for Nile university 5 males and 2 females.

The table 2 reveals the mean rating of respondents on the extent of ICT application to Library operations and services. The analysis of the data shows that ICT was applied for acquisition operation to a Great extent, book acquisition, search and ordering ICT is applied. Online money

transaction and serial control had the least ICT application with mean responses (2.27 and 1.56) respectively. In technical processing, ICT has been adopted to a Very Great extent to copy Cataloguing Schemes, Online Cataloging, Online classification with Mean responses of (3.95, 3.78, 3.55) respectively. The least adopted was Classification schemes on DVD / CD. From the table 2 it is clear that ICT was applied to the

technical processing operations of the libraries under study. ICT application to circulation operations is low in Baze University, registration of library users had the highest mean (3.22), renewing of library materials and charging and discharging of library materials, overdue fines had a mean rating of (2.20, 2.00, 1.67) respectively and the interlibrary loan had the least ICT application with a rating of 1.11. Overall ICT application to circulation operation in Baze university is to a Little Extent, while in Nile university ICT has been applied to a very great extent to the registration of library users, renewing of materials, charging and discharging of library materials, Little extent to overdue fines and not applied to interlibrary loan. Overall ICT has been applied to circulation operation to a

Great Extent in Nile University. For Library Promotions, Library website (mean=2.59 Baze: Nile= 3.51) ICT was adopted to a great extent in Baze and very great extent in Nile. Adoption of E-newsletters / bulletins has an average mean of (2.45) ICT application on public relation, library advertisement, fundraising was low. Overall ICT application to library promotions was low. In reference service, E-mail (3.59), electronic document delivery (3.29), current awareness service (2.67), new arrival alert (2.40) selective dissemination of information (2.26) newspaper clipping service (2.21) indexing and abstracting service and in interlibrary loan ICT was not applied. ICT application to reference service is greater in Nile University than in Baze University.

Table 3: ICT Facilities Available in Private University Libraries

Sl. No.	Baze University			Nile University		
		Yes	No		Yes	No
1	Computers	65		Computers	64	
2	Scanners	1		Scanners	4	
3	Photocopiers	2		Photocopiers	2	
4	Flash drives	2		Flash drives	2	
5	External Harddrives		-	External Harddrives		-
6	Digital camera		-	Digital camera		-
7	Projector		-	Projector	2	
8	RFID technologies		-	RFID technologies	Yes	
9	Barcodes	6		Barcodes	2	
10	Telephone lines		3	Telephone lines	5	
11	Institutional Email	-		Institutional Email	Yes	
12	Internet connectivity	-		Internet connectivity	Yes	
13	Security cameras	9	-	Security	8	-
14	Printers	2		Printers	2	
15	Smart Boards/Smart TV	3		Smart Board/Smart TV		-

The data analyzed from the table 3 shows that ICT facilities available include computers, scanners, photocopiers, flash drives, external hard drives, printers smart boards/smart tvs, projector is not available in Baze university but available in Nile University, while smart board/ tv is available in Baze but not available in Nile, barcodes,

telephone lines, institutional E-mail, internet connectivity are available in both the universities others include security camera which are available and installed in both the universities. Digital camera is not available in both the universities under study, RFID technology is available in Nile university but not available in Baze university.

Table 4: Mean Responses of Constraints encountered in ICT application

Sl. No.	Item Statement Constraints	Baze University Mean (\bar{x})	Remark	Nile University (\bar{x})	Remark	Average Mean (\bar{x})	Rank	Decision
1	Inadequate financial support	3.51	SA	3.29	A	3.40	1st	Positive
2	Erratic power supply	3.60	SA	3.21	A	3.40	2nd	Positive
3	Lack of ICT awareness among staff	3.00	A	2.89	A	2.94	3rd	Positive
4	Lack of Infrastructure	2.89	A	2.75	A	2.82	4th	Positive
5	Poor Maintenance culture	2.77	A	2.97	A	2.87	5th	Positive
6	Low level of ICT	2.31	D	2.41	D	2.36	6th	Negative
	Grand Mean	3.01	A	2.96	A	2.99		Positive

Note: SA- Strongly Agree, A- Agree, D-Disagree, SD- Strongly Disagree

The result in the table 4 shows the mean rating of the respondents on constraints encountered in ICT application to library operations and services. The respondents agreed (A) that 5 items listed in the table 4 are constraints to ICT application to library operations and services and the only Disagreement (D) was in 1 item which is Low level of ICT skills. Among the constraints the respondents emphasized on inadequate financial support (3.40), erratic power supply (3.40), lack of ICT awareness among staff (2.94), lack of

infrastructure (2.82), poor maintenance culture (2.87).

DISCUSSION

ICT application to Library Operations and Services

Analyzed data shows that ICT is utilized in acquisition operations to a Great extent. This finding goes against the findings of Malkanthi (2017) that acquisition operations are the least library operation with ICT applications in Sri

Lanka university libraries. ICT is been adopted for technical processing in understudied libraries especially copy cataloging, online cataloging and classification. This finding is in line with Alabi (2018) that librarians in Nigerian academic libraries utilize ICT for cataloging and classification activities. They make use of OCLC, world cat, etc. In circulation operation ICT is utilized to a very great extent for registration of library users, user charging and discharging of library materials, renewing of library materials. This finding agrees with Idakwo et al (2018) and Wilson (2012) who admitted that circulation operations in the university libraries include charging of materials to library users; checking in materials returned, but disagree with interlibrary loan and overdue fine. ICT application to library promotion activities was low based on the mean rating of (1.86) but the library website was utilized for promotions. This finding corroborates with Qutab, Bhatti, and Ullah (2015). In their findings they assert that Library website is the most adapted for library promotions in public and private university libraries of Pakistan. Application of ICT for public relations, library advertisement is low from the mean rating. Reference services were available to a Great extent based on the mean rating (2.51) but there is room improvement especially areas like interlibrary loan service, abstracting and indexing service, newspaper clipping service, selective dissemination of information and new arrival alert services in which ICT application is low. This finding agrees with Omekwu and Uzoma (2014) that ICT library services like selective dissemination of

information (SDI), indexing and abstracting service, interlibrary loan services and exchange of information are very low in polytechnic libraries of Delta state Nigeria.

ICT facilities available in private university libraries of North-central Nigeria

The data analysis shows that different ICT facilities are available which include computers, scanners, photocopiers, flash drives, external hard drives, projector barcodes, telephone lines, institutional E-mail, internet connectivity the finding agrees with Omekwu and Uzoma (2014) which asserts that photocopiers, printers, scanners, internet facilities, e-mails, CD-ROM, DVD-ROM, projectors, library-based software eg Xlib, Local Area Network (LAN), Wide Area Network (WAN), and wireless internet access need to be available in the library for effective service delivery.

Challenges Associated with ICT application in private university libraries of north-central Nigeria

Challenges associated with ICT application in private university libraries of north-central Nigeria detailed include inadequate financial support, erratic power supply, lack of ICT awareness among staff, lack of infrastructure, poor maintenance culture. This is in line with Omekwu and Uzoma (2014), Onuoha and Chukwueke (2019), and Idakwo et.al (2018).

CONCLUSION AND RECOMMENDATIONS

Like many developing countries of the world, Baze and Nile University libraries are taking the initiative to embrace ICT. The result shows that

the application of ICT to library operation and services in Baze and Nile University are improving but there is room for improvement by adopting ICT to the areas that are lagging to be able to compete favorably with libraries in developed countries and meet the user information need in this ICT era. The following suggestions were made based on the major challenges experienced by library and information professional of Baze and Nile University of North-central Nigeria.

1. Sufficient fund is required for better ICT facilities. Baze and Nile University library management should endeavor to Provide adequate funds.
2. Baze and Nile University Library professional's training needs should be assessed properly and appropriate conferences, seminars, and workshops should be encouraged.
3. It is one thing to automate library operations and services another thing to maintain it. Therefore, the library management and library and information professional should develop a maintenance culture to retain the value of the procured facilities.
4. Provide alternative means of generating electricity for round the clock electricity availability.
5. Different kinds of ICT awareness programs should be designed for library and information professionals working for Baze and Nile University.

REFERENCES

1. Achugbue, I. E., Uwaifo, S. O., & Igun, S. E. (2015). Librarians Knowledge of Information and Communication Technology Hardware Usage in University Libraries in South-South and South-West, Nigeria. *Information and Knowledge Management* 5 (5), 70-74.
2. Adeleke, A. A., & Olorunsola, R. (2010). ICT and Library Operations: More on the online cataloguing and classification tools and techniques in Nigerian libraries. *The Electronic Library*, 28(3), 453-462.
3. Adeoye, A.A., & Olanrewaju, A.O. (2019). Use of technology acceptance model (TAM) to evaluate library electronic information resources use by undergraduate students of lead city university, Ibadan, Nigeria. *Library Philosophy and Practice*, 2471. <https://digitalcommons.unl.edu/libphilprac/2471/>
4. Adigun, G.O., Kotso, J. A., & Kolajo, F. S. (2011). Changing Roles of Academic and Research Libraries in the Scholarly Information Communication Landscape: Case Study of Ahmadu Bello University, Zaria, Nigeria. *Greener Journal of Social Sciences*, 3(3), 156-165.
5. Akuezilo, E.O., & Agu, N. (2003). *Research and statistics in education and social sciences: methods and applications*. Nuel Centre Publishers & Academic Press Ltd.
6. Alabi, A.O. (2018). Information and Communication Technologies (ICTs) application to Cataloguing and Classification in Nigerian Libraries. *Nigerian Libraries*, 51(2), 85-96.
7. Amkpa, S.A., & Abba, T. (2009). Factors Inhibiting the Implementation of Technologies (ICTs) In Nigerian University

- Libraries. *Information Technologist*, 6 (1),40-50.
8. Ani,O.E., Esin, J.E., & Edem, N. (2005). Adoption of Information and Communication Technology (ICT) in Academic Libraries:A Strategy for Library Networking in Nigeria. *The Electronic Library*, 23(6), 701-708. <http://dx.doi.org/10.1108/02640470510635782>
9. Anyoku, E. N.(2012).Computer Skills Set of Librarians in Nigeria: Confronting the stereotype. *Annals of Library and Information Studies*, 59(1), <http://nopr.niscair.res.in/bitstream/123456789/14441/1/ALIS%2059%282%29%20128-134.pdf>
10. Cholin,V.S. (2005).Study of the Application of Information Technology for Effective Access to Resources in Indian University Libraries. *The International Information & Library Review*, 37(3), 189-197.
11. Ejedafiru, E. (2010). Lack of ICT Infrastructure as A Barrier to Resource Sharing in Nigerian libraries. *Library Philosophy and Practice*, 431. <https://digitalcommons.unl.edu/libphilprac/431/>
12. Enakrire, R.T., & Ocholla, D.N. (2017). Information and Communication Technologies for Knowledge Management in Academic Libraries in Nigeria and South Africa. *South African Journal of Information Management*, 19(1),11-19.
13. Goh, T. T., & Liew, C. L. (2009). SMS-Based Library Catalog System: A Preliminary Investigation of User Acceptance. *The Electronic Library*, 27(3), 394-408. <http://dx.doi.org/10.1108/02640470910966853>
14. Idakwo, I.S., Shehu, A.B., Saba, F. M., & Dankwalba, I. A.(2018). Application of Information and Communication Technology in Circulation Operations in Selected Federal University Libraries in North Central Nigeria. *Information Impact: Journal of information and Knowledge management*, 9(4),35-47.
15. Jeong, H. (2011). An Investigation of User Perceptions and Behavioral Intentions towards the E-library. *Library Collections, Acquisitions, and Technical Services*, 35(2-3), 45-60.
16. Mairaj, M.I., & ElHadi, M. (2012). Applications of Information and Communication Technologies in Libraries in Pakistan. *Journal of Medical Library Association*, 100(3),30-35.
17. Malkanthi, D. (2017).Status of University Libraries Automation in Srilanka:A Survey. *Journal of University Librarian Association of Sri Lanka*, 20(2). <http://doi.org/10.4038/jula.v20i2.790>
18. Miller, J., & Khera, O. (2010). Digital Library Adoption and The Technology Acceptance Model: A Cross-Country Analysis. *The Electronic Journal on Information Systems in Developing Countries*, 40(6),1-19.
19. Nwalo, K. (2005). Availability and Use of ICTs in Collection Management in University and Special Libraries in the Niger-Delta Region,Nigeria. *Library Philosophy and*

- Practice*. <http://www.webpages.uidaho.edu/~nculon/mhese.doc>
20. Omekwu, C., & Uzoma, E. (2014). Application of Information and Communication Technology (ICT) in Delta State Polytechnic Libraries, Nigeria. *Journal of Applied Information Science and Technology*. 7(1), 10-20.
21. Onuoha, J., & Chukwueke, C. (2019). Emergent Trends in library Services Delivery: The Application of Information and Communication Technologies in Academic Libraries. *Library Philosophy and Practice*, 2602. <https://digitalcommons.unl.edu/libphilprac/2602/>
22. Oyewo, R.O., Akintode, S.S., & Salau, I.T. (2019). Information and Communication Technology Facilities Use as Correlates of Quality Library Service in First Generation Universities, Southwest, Nigeria. *Library Philosophy and Practice*, 6061. <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=6061&context=libphilprac>
23. Qutab, S., Bhatti, R., & Ullah, F.S. (2015). Adoption of ICT's For Library Operations and Services: A Comparison of Public and Private University Libraries of Pakistan. *Library Philosophy and Practice*, 1106. <http://digitalcommons.unl.edu/libphilprac/1106>
24. Ramaya, T. (2006). Interface Characteristics Perceived Ease of Use and Intention to Use an Online Library in Malaysia. *Information Development*, 22(2), 123–128.
25. Ridwan, S.M. (2015). The Use of Information Communication Technology: A Survey Study in Selected Tertiary Institutions' Library in Kaduna State Nigeria. *European Scientific Journal*, 1(1). 56-74.
26. Tella, A. (2011). Availability and Use of ICT in South-Western Nigeria Colleges of Education. *African Research Review*, 5(5), 315-331.
27. Wilson, K. (2012). Introducing the Next Generation of Library Management Systems. *Serials Review*, 38(2), 110-123.

