
Challenges on the utilization of information and communication technologies in Nigerian academic libraries: a study of selected tertiary institutions in northern Nigeria

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ABSTRACT

This study assessed the challenges on the use of information and communication technologies (ICTs) in Nigerian academic libraries using tertiary institutions in Northern Nigeria. Adopting survey research design, the target population was all the tertiary institutions located in Northern Nigeria as at 31st June, 2023. Ten (10) out of 18 states were selected using systematic sampling techniques and all universities located in the 10 selected states were purposively adopted. The study used structured questionnaire to collect data from the librarians of the selected tertiary institutions. Using descriptive statistical tools to analyzed the data collected, the study revealed that, majority (72.9%) of the tertiary institutions in Northern Nigeria have ICT facilities available in their library even though not adequate, and most (52.2%) of the ICT facilities are rarely used. However, the study further revealed that, lack of fund, commitment among stakeholders, rate of ICT literacy among users of libraries, unreliable power supply, and lack of full access to information sources and security were found to be critical challenges of the use of ICT facilities in academic libraries in Northern Nigeria. Therefore, the study recommended that, specific trust fund should be created for the development of ICT facilities, and solar be provided to supply power in the libraries.

Keywords: Academic libraries, Challenges, ICT utilization, Nigeria, Tertiary institutions

1. INTRODUCTION

There is a trending saying that, the world is a global village. This saying gain ground because of the use of Information and Communication Technology (ICT) to access, collect, process, store, and disseminate information across the globe in different field of human endeavors within a limited period of time. The introduction of ICT has significantly changed human activities such as management of business, medicine, engineering, teaching and learning, research and development, and even national economy (Dele *et al.*, 2010). Thus, Olusola *et al.* (2020) were of the view that, the shift from traditional (manual) to digital or virtual where information and knowledge sources have no geographical boundaries has expanded the services of many industries and information professionals in various organizations, particularly, libraries.

In this respect, Olusola *et al.* (2020) described ICT as the application of computers and other technologies for easy acquisition, organization, storage, accessibility, retrieval, and dissemination of information. It is one of the greatest inventions of mankind which played unprecedented role in changing the landscape of human and organizational activities around the globe including libraries. It has immensely changed the system of traditional library services; that were hitherto laborious, repetitive and boring; in the process of identifying, acquiring, processing, organizing, storing, retrieving and dissemination of information (Etebu & Dime, 2020). Thus, the modern application of ICT has challenge the traditional way of teaching and learning, and the process in which education is managed conventionally. ICT is an important area of study in its own right, as it provides instant access to vast array of data, challenging assimilation and assessment skills (Etebu & Dime, 2020). Increased access to ICT in the educational institution, could mean that learning becomes a truly lifelong activity; an activity in which the pace of technological change forces in constant evaluation of the teaching and learning processes.

Like most tertiary institution in the developed nations, Nigerian tertiary institutions libraries now have ICT facilities (Awotekun, 2016; Onoriode, 2016). Some of these libraries have computers, internet facilities, and different software packages. However, with these outline benefits of ICT and its adoption in the Nigerian academic libraries, studies such as Olusola *et al.* (2020), Etebu and Dime (2020), Awotenkun (2016) were of the view that, there is a need to ascertain the challenges or otherwise of the adoption of ICT in the Nigerian tertiary institutions.

To fill this gap in knowledge, few studies were conducted such as Olushola et al. (2020) who used tertiary institutions in Kwara State. However, most of the studies such as Muhammad and Ezeudu (2020), Michael and Princess (2013), and Dele et al. (2010) conceptually studied the challenges of the adoption of ICT in the Nigerian libraries. Looking at these studies, it is clear that there is paucity in the academic literature that empirically examined the challenges of the application of ICT in the Nigerian Tertiary Institutions, thus the motivation of this study to empirically examined the challenges on the utilization of ICTs in Nigerian Academic Libraries, particularly, tertiary institutions in Northern Nigeria.

In order to achieve the above stated objectives of this study, the following research questions were formulated to guide the study.

- i. What types of ICT facilities are available in the libraries of tertiary institutions in Northern Nigeria?
- ii. To what extent do tertiary institutions in the Northern Nigeria use ICT in libraries?
- iii. What are the possible challenges of the use of ICT in the libraries of tertiary institutions in Northern Nigeria?
- iv. What are the possible ways to alleviate the possible challenges of the use of ICT in the libraries of the tertiary institutions in Northern Nigeria?

This study contributes to the literature by identifying the challenges on the utilization of ICTs in Nigerian academic libraries, particularly tertiary institutions in Northern Nigeria. The outcome of this study reinforces the main argument of this study that, despite the role ICT played in many aspects of human endeavors, it is not free without its cost. Therefore, the study believed that, appropriate application of ICT by Nigerian tertiary institutions would improve significantly academic environment for learning, research and dissemination of information. Therefore, the study is structured into four sections. Section one is introduction, while section two contained a review of relevant literature, section three described methodology adopted for the study, while section four present results and discussion, and section five gives conclusion and recommendations.

2. LITERATURE REVIEW

Information and Communication Technology (ICT)

In the early days of the introduction of computer, the concept of Information Technology was used to describe the application of computer for information system, hence, the concept of IT was used in 80s and 90s (Mesagan *et al.*, 2022). From late 90s to 21st Century, the concept of Information and Communication Technology (ICT) replaced IT. Thus, Mohammed and Ezeudu (2020) described ICT as a variety of tools and technological resources used to communicate, create, disseminate, store and manage information. These technologies include computers, Internet, broadcasting (radio and television) and the telephone that are used for sharing information. While Mesagan *et al.* (2022) viewed ICT as the use of computer and other technologies such as internet to process, transport, and transfer voice and other data singularly or mixed with least interference or distortion of content.

The development and the use of ICT in academic libraries today have not only increased and broadened the impact of information service but also brought services to users' doorsteps, thus placing more emphasis on effective and efficient information services. The use of ICT in the operation of libraries and information centers is to ensure that information delivered is timely, accurate, precise and relevant (Adegoke, 2015). Hence, the deployment of various ICT facilities such as computer, Internet, Digital camera, Webcam, Smart Card, Scanner, E-Books, Printers, Electronic Journals, WEB-OPAC, Animation, E-Mail, CD-ROM, DVD, RFID Technologies (Sani, 2015). These facilities are for acquisition, cataloguing, circulation, serials and user services. It replaced the manual system earlier obtainable in academic libraries.

Academic Libraries

The concept of library was defined by Josiah *et al.* (2023) as the collection of print and non-print materials that are easily accessible for use in academic institutions. It is a housing of updated information in order to meet the users' need on a daily basis. Hence, Murtala (2020) described an academic library as a library that is attached to academic institutions purposely to support teaching, learning and research. Earlier on, Onoriode (2016) viewed an academic library as the centers where relevant intellectual information is stored and retrieved for learning and research. Thus, an academic library is a library that is attached to a higher education institution which serves the purposes of supporting school's curriculum, and the research of both

students and staff (Marcus, 2014). It is crucial to the development of any institution, as it provide the necessary information to both staff and students to achieve their teaching, learning and research needs in the easiest, fastest and most comprehensive way.

In this respect, LaRue (2012) was of the opinion that, library has the ability to change lives and build community. This was supported by IFLA (2015) that, library and information services are key actors in providing unhindered access to essential resources for economic and cultural advancement. Thus, Haber (2011) believed that the supply of books in recent centuries is an independent function of libraries, but that their offering shave evolved with the digital age, to meet the changing needs of their clients. Therefore, the need of the use of ICT in academic libraries to enhance knowledge acquisition through learning and research.

Application of ICT in Academic Libraries

Communication technology and computing technology, as well as bulk and large storage technology, are some of the areas of rapid ICT development which resulted to modifying and reshaping the way libraries access, retrieve, store, deploy as well as disseminate information to users (Muhammed & Elvis, 2021). Hence, for effective and efficient operation of libraries, several application of ICT facilities are deployed. These ICT applications are described by Murtala (2020) as apparatus that upgrade teaching and learning through dynamics and intuitive content. Therefore, according to the Pointer (2018), Rexwhite (2017), and Sigh (2015), library application includes online public access catalogues, library networking, internet opportunities, and library automation.

Online Public Access Catalogue (OPAC) is a mechanized online catalogue of the resources held in library (Murtala, 2020). It is an entrance manual for the collection of libraries that gives a bibliographic information in machine clear shape that can be automatically search on computer terminals. While library networking means a collection of libraries and information center that are interconnected online for information exchange and correspondence (Mishra & Lakshmikank, 2014). It is made possible through local area network in library housekeeping and assets sharing, and wide area network that covers wide geographic zone. Internet opportunities also known as internetworking implies internet as far reaching system keep running along the line of the world wide web making it conceivable to share documents, data bases and application (Eseoh, 2014). With the approach of digital revolution,

communication has turned out to be simpler and quicker and choice are made promptly. Library automation was described by Rexwhite (2017) as the application of computer system for general/modified software designed and composed in accordance with the library and information administration techniques that are intended to be utilized to carryout indicated lines of data administration services. A mechanized library gives users access to any electronic library in any place on the planet within short period of time.

Challenges of ICT Application in Academic Libraries

Considering the application of ICT in communication system, Akintunde (2021) and Muhammad and Ezeudu (2020) stated that, this advancement in technology is not free from challenges. Hence they listed the possible issues such as lack of funds for the acquisition of ICT facilities and services, inadequate ICT facilities, awareness and commitment among key stakeholders, information literacy among library users, and unreliable power supply. Furthermore, Ridwan (2015) earlier identified lack of adequately trained manpower in the use of IT, lack of full access to information resources, and security as major challenges facing the use of ICT in libraries.

According to Ridwan (2015), Nigerian academic institutions are not adequately funded. Hence, the fate of academic libraries is not different as funding for this library, which comes largely from their parent institutions and education trust fund are not sufficient. In their study, Okiy (2005) acknowledged that, there is severe and pronounced low level computer literacy even among academic staff talk more of students and the general public. This problem is further aggravated by the shortage of technology literate library staff. Hence, Sahabi and Otobo (2021) stated that, lack of skilled human resource to install and manage technology network in academic libraries coupled with poor funding to developed or attract such skill served as a severe challenge to the deployment of ICT in academic libraries. Furthermore, there is an acknowledged challenge of power supply in Nigerian tertiary institutions. Hence, Edbiton (2012) confirmed that, most tertiary institutions in Nigeria uses generator as alternative sources of power. Hence, these machines are prone to maintenance problem and high cost of diesel and gasoline. Therefore, Awotokun (2016) was of the view that, effective provision of information services may not succeed in this type of scenario. In respect to security, Anyira (2011) stated that, it is easier to copy, duplicate, transmit, and distribute digital information. Therefore, copyright is possible to be violated in a digital environment because it has limited control over access to content and reproduction of multiple copies of digital media.

Empirical Review

Several studies were conducted in the field of the application of ICT in academic libraries, however, most of the studies such as Michael and Ikyembe (2013), Ridwan (2015), Onoriode (2016), Sahabi and Otobo (2021), and Sahabi and Unobe (2021) were all conceptual in nature. Only few were empirical studies, particularly in the emerging nations (Awotokun, 2016; Olusola *et al.*, 2020). Therefore, there is a need to have more comprehensive empirical studies that examined the application of ICT in Nigerian Tertiary Institutions and various challenges affecting the use of ICT in Nigerian academic libraries. Thus, some of the empirical studies conducted are reviewed as follows:

Olushola *et al.* (2020) evaluated the progress and challenges of the application of ICT in academic libraries in Kwara state, Nigeria. Using structured questionnaire to collect data from 83 academic libraries in the state, the data collected was analyzed using simple percentage and frequency count. The result of the analysis revealed that, majority of the academic libraries in Kwara State are in developed stage in terms of provision of ICT facilities. Furthermore, majority of the academic libraries studied lacked computerized security door with 0.0% and smart board with 9.6% while the availability of all other ICT facilities was rated high especially computer system, CD/DVD, internet connectivity and slide projector with 100%, CCTV camera with 95.2%, electronic database with 92.8%, library automation software with 91.5% and barcode sensor reader with 73.5%.

Mesagan *et al.* (2022) examined the availability and utilization of ICT resources in Nigerian academic libraries. Adopting survey research design and using structured questionnaire to collect data from 90 respondents and the data collected was analyzed with simple percentage and mean value. The study reported that, most readily available ICT resources in the libraries were computers, and Online Public Access Catalogue (OPAC), it also revealed that users used ICTs for reprography, browsing the internet and downloading of PDF files in the libraries. It likewise revealed that ICTs were available and accessible for usage in the libraries.

Etebo and Dime (2020) evaluated problems and prospect of the use of ICT in Niger Delta Universities libraries. Using structured questionnaire distributed to 140 respondents, the data collected was analyzed using simple percentage and mean value. The findings revealed that there are factors militating against the effective use of ICTs by the library users, ranging from inadequate funds, poor or erratic power

supply, and inadequate number of effective Internet Service Providers (ISP) to lack of policy framework on ICTs in the country. Also, strategies as prospects include; proper ICT seminars/workshops in the universities, provision of sufficient ICT facilities, government support on provision of stable power supply, reduction of telecommunication/computer importation tariffs, provision of adequate and effective internet services provider (ISP), establishment of National Research Centre for ICT, while others were provision of grants and aids by government and university and staff training and orientation.

Odionye (2016) assessed the availability and the usage of ICT facilities in university of Nigeria, Nsukka library. The study revealed that ICT facilities are available in UNN library but some are more available than others. The facilities mostly used are OPAC, internet and virtual library, which are used to source for reference materials, complete project work, up-date the knowledge and lecture notes. The study further reported that, the major challenge encountered in the use of ICT facilities in the university was irregular power supply and irregular cooling environment.

A study by Enakrire (2015) on the availability of ICT facilities in KwaZulu-Natal and University of Ibadan libraries revealed that; 84.2% of the universities had personal computer, 72.7% used CD-ROM, and 57.9% used Local Area Network (LAN), Internet and e-mail facilities. The population of university libraries using Wide Area Network (WAN), fax machine and online public access catalog (OPAC) was below 50%. Furthermore, the study carried out earlier on by Ugwuanyi (2012) revealed that there are ICT facilities in the South-East Nigerian universities studied as indicated by more than 75% of the respondents in each university. The facilities available are: computers, interconnectivity, LAN, CD-Writer, cataloguing software power point projector and scanner. The respondents equally agreed that they are functional where they are available but those who indicated not available automatically indicated not functional.

3. METHODOLOGY

The study adopted survey research design and the target population was all the tertiary institutions in Northern Nigeria. Using systematic sampling techniques, 18 Northern states were arranged alphabetically and the first ten (Adamawa, Bauchi, Benue, Borno, Gombe, Kaduna, Kano, Katsina, Kebbi, and Kogi states), representing 56%, were selected as sampled study area. Out of the tertiary institutions in the study area, the study used purposive sampling techniques to adopt all the 41 universities

located in the study area. 41 structured questionnaires were distributed to the librarians, out of which 38 representing 93% were fully completed and returned. The questionnaire was structured into two sections; bio data of the respondents and the topical data. The questions were structured using 5-point Likert scale and the validity and reliability of the questionnaire were tested using Cronbach Alpha, Composite Reliability, and average variance expected. The data collected was analyzed using descriptive statistics.

4. RESULTS AND DISCUSSION

The results of the analyses of the data are present in tables. It consists of bio data results, diagnostic test, and regressions analyses. In order to achieve the objectives of this study, four research questions were developed to guide the study.

Validity and reliability test

The study used average variance expected, Cronbach Alpha and Composite Reliability to test the validity and reliability of the instrument used and the result is presented in Table 1.

Table 1
Test result of validity and reliability

Variables	AVE	Cronbach's Alpha	Composite Reliability	Description
Availability of ICT facilities	0.723	0.751	0.932	Reliable
Use of ICT facilities	0.541	0.678	0.815	Reliable
Challenges of the use of ICT facilities	0.850	0.862	0.918	Reliable

Source: PLS Processed Data (2023)

The result in Table 1 shows that, the Cronbach's Alpha values of availability of ICT facilities, use of ICT facilities, and challenges of the use of ICT facilities are greater than the threshold of 0.6, and composite reliability value are all above 0.7, hence the conclusion that, the indicators used in each dimensions have reliability that is good enough to measure the constructs.

Topical Data

The first objective of this study is to ascertain the types of ICT facilities available in the libraries of tertiary institutions in Northern Nigeria.

In order to achieve this objective, 10 ICT facilities such as computer system, CD/DVD, internet facilities, electronic data base, bar code sensor reader, slide projector, CCTV, Flat Screen TV, Smart Board, and library automation software were used as identified by Awotokun (2016) and Akintunde (2021) as basic ICT facilities to be use in academic library.

Questionnaire was structured using three options such as Available & Adequate (AA), Just Available (JA), Undecided (UD), and Not Available (NA) and the respondents were required to indicate their agreement or otherwise of the options provided and its availability in their various libraries. The data collected was analyzed using simple percentage and mean and the result is presented in Table 2 and Figure 1.

Table 2
The availability and adequacy of ICT facilities

SN	ICT Facilities	Available Options			
		AA (%)	JA (%)	UD (%)	NA (%)
1	Computer System	37	21	5	37
2	CD/DVD	27	48	3	22
3	Internet Facilities	31	51	6	12
4	Electronic Data Base	27	49	2	22
5	Bar Code Sensor or Reader	22	53	4	21
6	Slide Projector	29	49	7	15
7	CCTV	17	42	3	38
8	Flat Screen TV	31	39	0	30
9	Smart Board	37	45	7	11
10	Library Automation	23	51	2	24
	Average	28.1	44.8	3.9	23.2

Sources: Field Survey (2023)

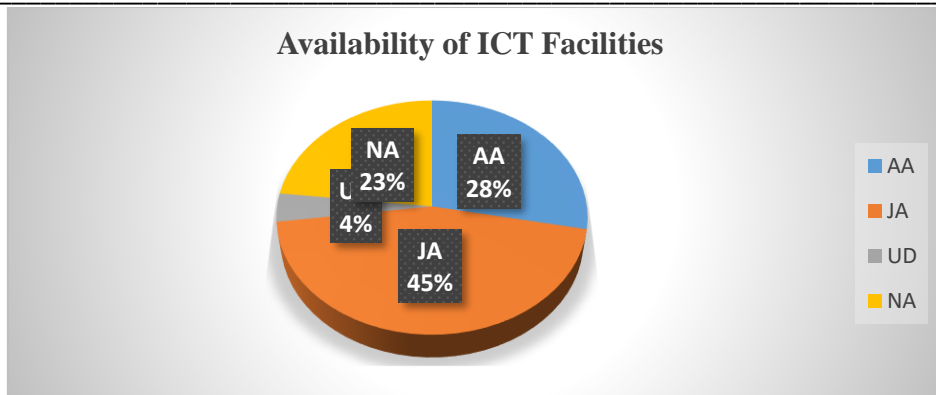


Figure 1: *Availability of ICT facilities in libraries*

The result of the analysis in Table 2 and Figure 1 revealed that, 28% of the respondents agreed that, ICT facilities are available and adequate, 45% were of the view that, ICT facilities are just available, 4% were undecided, while 23% believed that ICT facilities are not available in academic libraries of tertiary institutions in Northern Nigeria. This implies that, even though majority of the respondents were of the view that, ICT facilities are just available, but not adequate.

The second objective of this study was to ascertain the extent of the application of ICT in academic libraries of tertiary institutions in Northern Nigerian.

In order to achieve this objective, 10 ICT facilities such as computer system, CD/DVD, internet facilities, electronic data base, bar code sensor reader, slide projector, CCTV, Flat Screen TV, Smart Board, and library automation software were identified as was considered basic ICT facilities by Olusola et al. (2020) and Mesagan et al. (2022).

Questionnaire was structured using four options such as Very Often (VO), Often (OT), Undecided (UD), and Rarely (RL), and the respondents were required to indicate their agreement or otherwise of the options provided and their application in their various libraries. The data collected was analyzed using simple percentage and mean and the result is presented in Table 3 and Figure 2.

Table 3
The extent of the application of ICT facilities

SN	ICT Facilities	Available Options			
		Very Often (%)	Often (%)	Undecided (%)	Rarely (%)
1	Computer System	38	49	1	12
2	CD/DVD	11	21	4	64
3	Internet Facilities	23	34	3	40
4	Electronic Data Base	16	48	0	36
5	Bar Code Sensor or Reader	12	21	2	65
6	Slide Projector	9	12	5	74
7	CCTV	2	7	6	85
8	Flat Screen TV	8	11	2	79
9	Smart Board	24	39	1	36
10	Library Automation	23	41	5	31
	Average	16.6	28.3	2.9	52.2

Source: Field Survey (2023)

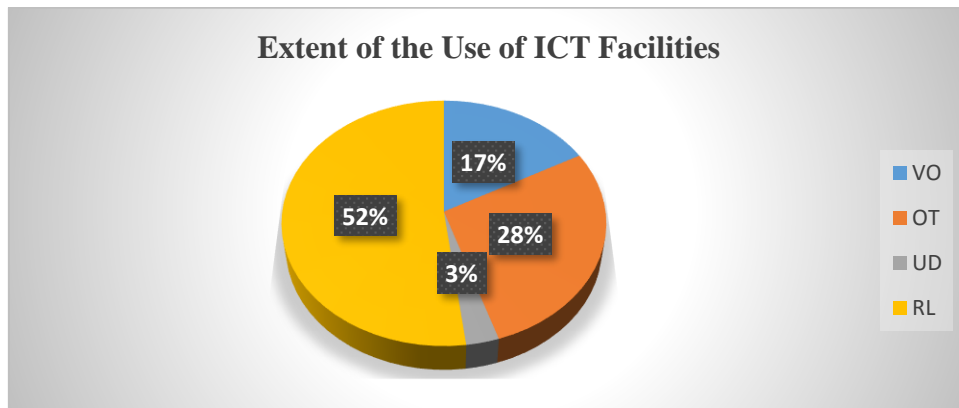


Figure 2: *The extent of the application of ICT facilities*

The result of the analysis in Table 3 Figure 1 revealed that; 17% of the ICT facilities are very often use, 28% are often use, 3% undecided, while 52% are rarely used. This implies that, despite the availability of the ICT facilities in the libraries, majority (52.2%) of the ICT facilities are underutilized.

The third objective of this study is to identify the possible challenges of the use of ICT in the libraries of tertiary institutions in Northern Nigeria.

In order to achieve this objective, 8 possible challenges such as lack of funds, inadequate ICT facilities, awareness and commitment among key stakeholders, information literacy among library users, unreliable power supply, lack of adequate trained manpower in the use of IT, lack of full access to information resources, and security challenges as listed by Ridwan (2015) and Muhammad and Ezeudu (2020).

The questionnaire was structured using four options such as Highly Critical (HC), Critical (CT), Undecided (UD), and Not Critical (NC) and the respondents were required to indicate their agreement or otherwise of the options provided as obtainable in their various libraries. The data collected was analyzed using simple percentage and the result is presented in Table 4 and Figure 3.

Table 4
Possible challenges for the application of ICT facilities in academic libraries

SN	Statements	Available Options			
		HC (%)	CT (%)	UD (%)	NC (%)
1	Lack of funds	38	47	2	13
2	Inadequate ICT Facilities	21	13	3	63
3	Awareness and commitment among key stakeholders	43	47	2	8
4	Information literacy among library users	25	48	0	27
5	Unreliable power supply	37	45	1	17
6	Lack of Adequate ICT Trained Manpower	29	51	0	20
7	Lack of full access to information sources	21	46	2	31
8	Security challenge	34	49	1	16

Sources: Field Survey (2023)

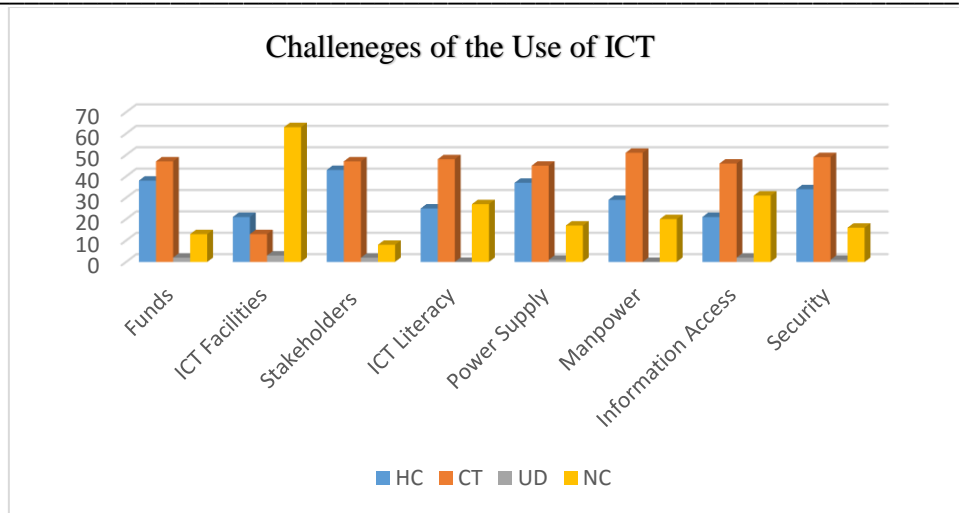


Figure 3: *Challenges of the use of ICT*

The result in Table 4Figure 3 revealed that, lack of funding, commitment among key stakeholders, information literacy among library users, unreliable power supply, inadequate ICT trained manpower, lack of access to information sources, and security are the critical challenges encountered in the course of use of ICT in academic libraries in Northern Nigeria. However, the availability of ICT facilities is not found to be critical challenge facing academic libraries in Northern Nigeria.

The fourth objective of this study is to identify possible ways to minimize the challenges of the use of ICT in the libraries of the tertiary institutions in Northern Nigeria.

To achieve this objective, 5 possible ways such as provision of more funds, use of alternative power supply, creation of more awareness of the use of ICT among library users, training and retraining of ICT staff, and adequate maintenance habit of the ICT facilities as suggested by Mesagan *et al.* (2022).

The questionnaire was structured using five options such as Strongly Agreed to Strongly Not Agreed and the respondents were required to indicate their agreement or otherwise of the options provided. The data collected was analyzed using simple percentage and the result is presented in Table 5.

Table 5
Possible solution to the challenges of the use of ICT facilities in academic libraries

SN	Statements	Available Options				
		SA (%)	AG (%)	UD (%)	DA (%)	SD (%)
1	Specific trust fund should be created for the development of ICT facilities in tertiary institutions academic libraries	46	37	1	9	7
2	Alternative power supply such as solar should be provided to support ICT facilities in academic libraries	29	43	2	21	5
3	Quarterly or semi-annual seminars and workshop should be organization for library staff in the use of ICT and maintenance	15	52	1	28	4
4	Users of library should be sensitized on the use of ICT facilities	38	35	0	24	3
5	A set of library staff should be charge with the responsibility of maintaining ICT facilities in the library	12	61	0	22	5

Sources: Field Survey (2023)

The result in Table 5 revealed that, majority of the respondents (46%) strongly agreed that, a specific trust fund should be created for the development of ICT facilities in tertiary institutions in northern Nigeria. While 43% of the respondent agreed that, alternative power supply such solar should be provided to support ICT facilities in libraries. Also, majority of the respondents (52%) were of the view that, either quarterly seminars or semi-annually seminars and training should be organized for library staff by tertiary institutions to help them develop their capacity. Furthermore, majority of the respondents (38%) strongly agreed that, users of libraries particularly students and academic staff should be sensitizing on the use ICT facilities. In respect to the maintenance of ICT facilities, majority of the respondents (61%) were of the view that, a committee should be set and charge with the responsibility of library ICT facilities.

Discussion of findings

From the analyses made, the result of the study revealed that ICT facilities are available in academic libraries of tertiary institutions in Northern Nigeria. However, apart from computer system which was revealed to be available and adequate, other facilities such as CCTV are reported to be available but not adequate. This finding is in consonance with the result of previous studies such as Mesagan *et al.* (2022),

Olusola *et al.* (2020), and Odionye (2016) which also reported that there are ICT facilities in Nigerian Tertiary institutions, even though they are not evenly distributed. This implies that, Tertiary institutions in Northern Nigeria have ICT facilities in their libraries.

In respect to the extent of the use of ICT facilities in the academic libraries, the result of the study revealed that, 52.2% of the ICT facilities are rarely used, and only 16.6% are very often used, while 28.3% are often used. The facilities that are rarely used include CD/DVD, Bar Code Sensor Reader, Slide Projector, CCTV, and Flat Screen TV. This result supported the earlier findings of studies such as Yusuf and Iwu (2010) and Odionye (2016) who also revealed that the ICT facility that has the lowest use by library users are Barcode sensor reader, CCTV Camera, and Smart Board. The reason could be attributed to lack of awareness or irregular need of these facilities. However, Obotu *et al.* (2019) were of the view that most library users do not use ICT facilities for lack of internet and the rate of literacy.

Furthermore, the study observed challenges of the use of ICT in tertiary institutions in Northern Nigeria, and the result revealed that lack funds, awareness and commitment among key stakeholders, information literacy among library users, unreliable power supply, lack of adequate ICT trained manpower, lack of full access to information sources, and security were the critical challenges identified. However, inadequate ICT facilities were not found to be critical challenge of the use of ICT in the academic libraries of tertiary institutions of Northern Nigeria. This result corroborated the study conducted by Sokari *et al.* (2019) and Balarabe (2015) which reported that; unstable power supply, rate of ICT literacy among library users, and inadequate ICT trained manpower constitute among the militating factors against the application of ICT in academic libraries. The implication of these challenges is that the applications of ICT in academic libraries in Northern Nigeria are commendable but more has to be done to improve on the provision and use of the facilities.

5. CONCLUSION AND RECOMMENDATIONS

Conclusion

This study assessed challenges on the use of ICT in Nigerian academic libraries using tertiary institutions in Northern Nigeria. Adopting various relevant statistical tools to analyze the data collected, the result of the study revealed that, the Nigerian academic libraries, even though not all, often use ICT facilities such as computer

system, internet facilities, electronic data base, bar code sensor reader, smart board and slide projector. However, the study also found out that; lack of fund, ICT literacy rate of the users of library, inadequate ICT trained manpower, unreliable power supply and lack of awareness and commitment among key stakeholder were the critical challenges of the use of ICT in academic libraries in Nigeria. Hence, the study concluded that, even though ICT facilities are available in the Nigerian tertiary institutions academic libraries, several challenges such insufficient funds, lack of commitment among library stakeholders, rate of ICT literacy among library users, inadequate ICT trained manpower, and unreliable power supply hindered its effective utilization.

Recommendation

The study recommended that, specific trust fund should be created for the development of ICT facilities, alternative power such as solar should be provided to support ICT facilities, while seminars and training should be organizing regularly to improve ICT literacy among library staff, and sensitization should use to improve the use of ICT facilities among the users of library in tertiary institutions in Nigeria.

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