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**STATE OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN  
SELECTED ACADEMIC LIBRARIES IN KADUNA STATE, NIGERIA**

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*Abstract:*

*The study is set up to investigate the state of information and communication technology (ICT) in selected academic libraries in Kaduna state, Nigeria. The Objectives of this study include among others exploring hardware infrastructure available in the libraries studied, identifying software available in the libraries studied, pinpointing factors inhibiting the deployment of ICTs in the libraries studied. The study employed survey research design. A five (5) item detailed structured questionnaire was used as the instrument for data collection and sent to all the ten (10) head of ICT in the selected academic libraries in Kaduna state to obtain data from the libraries for the purpose of eliciting information on the state ICTs in the libraries surveyed. The findings of the study showed that there is relative improvement of ICT facilities in academic libraries in Kaduna state particularly the hardware but grossly inadequate compared to the number of customers. The findings also revealed that power supply, funding, lack of managerial support and occasional system break down are the major problems militating against the deployment of ICTs in libraries studied. The study recommend among others; Government, NGOs and other relevant bodies should make provision of adequate ICT infrastructural facilities in academic libraries in Kaduna state to cater for the needs of their teaming population of users. More funds should be allocated to academic libraries in Kaduna state, alternative power supply such as solar electricity, inverters, generators etc should be provided at subsidized rate, management of academic institutions should support academic libraries toward the effective deployment of ICT infrastructure in their libraries*

**Keywords:** *Computers in Library, ICT in academic libraries, Kaduna State academic libraries,*

## **INTRODUCTION**

Information and communication technology (ICT) consists of hardware, software, networks and media for collection, storage, processing transmission and presentation of information (World Bank, 2001). ICT is made up of two basic components; the information technology (IT) and the communication technology (which include the internet and telecommunication technology). Information technology refers to the creation, storage and processing of data through the use of computers and other microelectronics. Through convergence the link between information technology and communication technology is what is now commonly referred to as Information and communication technology (ICT). According to Akintunde (2004) ICT is a terminology, which has overtaken information technology, because of its appropriateness, and its utilitarianism. He further opined that whereas IT was terminology used in the 80s and 90s; (ICT) has taken over since then. While IT focused on computer, ICT emphasises the used technology for development, thus focusing on the use of computer and other technologies such as telephone to process, transfer voice and other data singularly or mixed with little interference or distortion of content. It is this latter emphasis that has led to more interest on how services in the library can be repackaged to reach library users any time anywhere.

Academic libraries are libraries attached to tertiary institutions such as universities, polytechnic institutions, colleges of education, colleges of agriculture, colleges of technology and also research institutes (Akporhonor, 2005). Singh and Kaur (2009) stressed that preservation and access to knowledge and information is the main mandate of academic libraries alongside

supporting the mission of their parent institutions which is teaching and research. However, the paradigm Shift in Academic Library Services With the advent of Information and Communication Technologies (ICTs), the role and position of libraries has dramatically changed. Etim (2004) cited in Okon (2005) observed that the rapid pace of development in the field of information technology and the advent of networked information services have prompted a comprehensive review of the Library and Information Sciences (LIS) profession. The global trend is now characterized with a fundamental shift from traditional information environment to an e-environment where emphasis is placed more on the acquisition of e-resources such as e-books, e-journals as well as online databases.

Unfortunately, most academic and research libraries in Nigeria have not computerized most of their functions. The public card catalog and the visible index are still finding tools for books and journals. In most libraries, likewise, indexes and abstracts are compiled manually. Library and information services in Nigeria have yet to transcend the traditional functions (Aguolu, Haruna and Aguolu 2006). On his own part, Oyegbami (2009) observed that ICT is an instrument of social economic renaissance and if properly used it could excellently stem national and international calamity. If properly used it will assist growth and development of libraries in our higher institutions in Africa, it has conferred new role on the library by bringing about the revolutionary journey from traditional to the digital libraries with new technology it has been possible to access a variety of information and knowledge sources in a manner that would be simple, easy and independent of time, place and subject disciplines (Adenoji, 2012).

## **STATEMENT OF THE PROBLEM**

The witnessed global integration and application of modern information and communication technology (ICT) in library services has tremendously penetrated and subsequent

transformed library operations, sadly however, libraries in different part of Nigeria as observed by several researchers such as (Aguolu, Haruna and Aguolu 2006) are yet to fully deploy ICTs in their day to day library routines for effective, efficient service provision and customer satisfaction. It is against this background that the researchers embarked on this study to examine the State of Information and Communication Technology (ICT) in selected Academic Libraries in Kaduna State, Nigeria.

### **OBJECTIVE OF THE STUDY**

The objectives of the study includes:-

- ✓ To explore the Hardware infrastructure available in the libraries studied
- ✓ To identify the Software available in the libraries studied
- ✓ To determine the various services automated in the libraries studied
- ✓ To discover the state of Internet Connectivity of the libraries studied
- ✓ To pinpoint the factors inhibiting the deployment of ICTs in the libraries studied

### **REVIEW OF RELATED LITERATURE**

Teaching and research in tertiary institutions now demand the use of high caliber ICT infrastructure and facilities to keep abreast of current information in all fields. Onoriode & Ivwighrehweta (2011) listed modern technology for library to include computers i.e desktop, laptop, i-phone, i-pad etc., peripheral like keyboard, speakers, bar code readers, printers etc. network equipment and cables like Cat-5, coaxial, fiber optics and their various connectors, routers, switches, satellite and their modem. They also stressed that Software like operating system (OS), application and utilities software are part of modern technologies used in academic libraries.

Olanlokun (1993) modern technologies which also refers to ICT comprises of hardware and software. Hardware is the physical data processing equipment, its peripherals and terminals as well as telecommunication, while software is the collection of controlled programs used to make computers run and perform some specific functions. It includes items like operating systems, library application software, digital resources management software, teleprocessing monitors, and utility programs that are written to process specific application and many others.

According to Ezomo (2006) the Internet is the gateway for libraries and information centres to enter the electronic information era and provides information generated by different organizations, institutions, research Centres, and individuals all over the world. According to Jensen (2006), “bandwidth is the life-blood of the world’s knowledge economy, but it is scarcest where it is most needed in the developing nations of Africa which require low cost communications to accelerate their socio-economic development. Few schools and public libraries on the continent have internet access.” Internet connectivity in tertiary education institutions in Africa is in general too expensive, poorly managed and inadequate to meet even basic requirements. As the recent Africa Tertiary Institutions Connectivity Survey (ATICS) reported that the average African university has bandwidth capacity equivalent to a broadband residential connection available in Europe, pays 50 times more for their bandwidth than their educational counterparts in the rest of the world, and fails to monitor, let alone manage, the existing bandwidth (ATICS, 2005). As a result, what little bandwidth that is available becomes even less useful for research and education purposes. Libraries without Internet access may lose their relevance in the academic community. Most students, lecturers, and researchers are aware of what Internet provides, and they resort at a much greater cost to cybercafés to satisfy their information needs (Ajala, 2007). Libraries are not fulfilling their function of providing adequate information resources to support teaching, learning,

and research in the institutions studied. Faced with this new scenario, individuals and organizations in modern society must learn new things and discard old habits and perspectives. They must retool and re-strategize. If they fail to do these things, they may lose ground, decline in relevance, and face the possibility of extinction. This is particularly true of library and information personnel whose role in an academic institution is to provide support to the teachers who must impart the skills needed to keep pace with the rest of the world and prepare for the future (Anao, 2003). Computers are also used to automate manual library functions. Acquisitions, cataloguing, circulation, and serials control are now automated, with much library software available in the market. Online public access catalogues (OPAC) have replaced the card catalogue (Anao, 2003).

Many tertiary institutions' libraries in Nigeria are not computerized, and lack Internet connection, and where some ICT facilities exist they are zealously guarded (Nweke, 2006). Faboyinde (2006) laments the fact that the application of ICTs in Nigerian tertiary Institutions though ICT is not fully embraced by most of the higher education libraries in the country. The problem of ICT in Nigerian Academic Libraries includes the following Poor ICT knowledge; there is a severe and pronounced “low level computer literacy among Nigerians (Okiy, 2005). This makes it difficult for them as users and patrons of academic libraries to make full use of available ICT facilities. This problem is further aggravated by the “shortage of technology literate staff in libraries, the lack of skilled human resources to install and manage technology networks and poor funding to attract such staff or develop such skill in existing staff (Ashcroft and Watts, 2005). Igben and Akobo (2007) also assessed the state of ICTs in libraries in River state, Nigeria and reported that, ICT facilities in the state were found to inadequate, which shows that the pace of ICT development is slow. Also Etebu (2010) observed that the state of ICT availability for library service in Niger-Delta university libraries is not totally encouraging. In the same vein

Yahaya (2011) revealed that availability of ICT facilities in libraries and information centers in Borno state, Nigeria is also not encouraging and inadequate. The perceived major course of ICT shortage in libraries has been lamented severally by authors such as Chizenga (2000), Oketunji (2001), Okiy (2003), Gbaje (2007), and Akanni (2008) cited in Okiy (2010). To date, many of the problems militating against adequate provision of ICT facilities and services in academic libraries in Nigeria as enumerated by Alasa and Kelechukwu (1998) are still very much with us. These problems include:

- ✓ Poor and inadequate telecommunication facilities;
- ✓ Poor level of ICT literacy even within the academic community;
- ✓ Poor computer facilities;
- ✓ Poor level of awareness of internet facilities in the academic community;
- ✓ Minimum involvement of academic institutions in network building and diffusion in Africa;
- ✓ Ignorance of decision or policy makers of the power of information network on the economic and industrial development of a nation.

More so, still on the problem of ICT facilities, Oketunji (2000), identified problems such as:

- ✓ A largely exploitative local computer market and unsatisfactory after sales maintenance and support;
- ✓ Inadequate pool of relevant technical staff with the problem or difficulty in their recruitment and retention.



## **METHODOLOGY**

Ten Academic libraries across Kaduna were selected for the study, which includes Nigerian Defence Academy (NDA), Kaduna State University (KASU), Nuhu Bamalli Polytechnic (NB POLY), Federal College of Education (FCE), College of Education Kafanacan (COE), Nigerian College of Aviation Technology (NCAT) and Nigerian Institute of Transport Technology (NITT). The study employed survey research design. A five (5) item detailed structured questionnaire was used as the instrument for data collection and sent to all the ten (10) head of ICT in all the Academic libraries in Kaduna state to obtain data from the libraries for the purpose of eliciting information on the state ICTs in the libraries surveyed. The questionnaires were self-administered due to the presence of some technical terms available in the questionnaire, and it took the researchers three (3) weeks to administer them. All the administered questionnaires (10) were successfully recovered representing 100% response rate.

## **DATA ANALYSIS AND INTERPRETATION**

In response to the State of Information and Communication Technology (ICT) in Selected Academic Libraries in Kaduna State, Nigeria the following response was provided by the responding libraries.

**Table 1: Hardware Facilities Available in the Libraries**

<b>S/N</b>	<b>Hardware Facilities</b>	<b>NDA</b>	<b>KASU</b>	<b>NB POLY</b>	<b>FCE</b>	<b>COE</b>	<b>NCAT</b>	<b>NITT</b>
<b>1</b>	Desktop computers	√ (50)	√ (160)	√ (100)	√ (32)	√ (28)	√ (8)	√ (186)
<b>2</b>	Laptops	√ (4)	√ (5)	√ (40)	√ (40)	Yes (57)	X	Yes (60)

<b>3</b>	Scanners	√ (2)	√ (5)	√ (3)	√ (5)	√(1)	X	√ (8)
<b>4</b>	Barcode	√ (2)	√ (1)	√ (1)	√ (10)	X	X	√ (4)
<b>5</b>	Printers	√ (7)	√ (6)	√ (4)	√ (10)	√ (5)	√(2)	√ (19)
<b>6</b>	LCD projectors	√ (2)	√ (2)	√ (1)	√ (2)	X	X	√ (4)
<b>7</b>	Fax	√(1)	X	√ (1)		X	X	√ (1)
<b>8</b>	Web camera	X	X	√ (1)	√ (5)	X	X	√ (1)
<b>9</b>	UPS	√(50)	√ (80)	√ (100)	√ (30)	√ (20)	√ (6)	√ (300)
<b>10</b>	Identity card prints	X	X	X		X	X	X

√ = Applicable X = Not Applicable

From Table 1 above, NITT, Zaria is having the highest number of desk top computers with 186, followed by Kaduna State University with 160 and NB POLY with 100 while FCE Zaria, COE, and NCAT, Zaria have 32, 28 and 08 respectively. Similarly, NITT have the highest number of laptop computers, with 60 units, COE KAF have 57, FCE and NB POLY have 40 each, KASU HAVE 05, NDA have 04 while NCAT reported to have no single laptop computer in their library. NITT have 08 scanners, FCE and KASU have 05 each, NB POLY has 03, NDA have 02, COE KAF has only one and NITT have no scanner in their library. FCE have 10 barcode machines, NITT have 04, NDA have 02, KASU and NDA have 01 each, NCAT and COE KAF have none. NITT have the largest number of printers 19, FCE have 10, NDA have 07, KASU have 06, COE KAF have 05, NB POLY have 04 and NCAT have but no number was indicated. NDA, KASU and FCE each have 02 LCD projectors, NB POLY have one while NITT have but no number was given. COE and NCAT have none in their libraries. NDA and NITT have fax in their libraries, while KASU, FCE, COE KAF and NCAT have no fax in their libraries. NITT and NB POLY have 01 web camera each while NDA, KASU, FCE, COE and NCAT have no web camera. NITT have 300 UPS, NB POLY have 100, KASU have 80, FCE have 30, COE KAF, have 20, NACT have 06 and NDA library have 50 units of UPS. None of the libraries indicated to have Identity Card

Printer. Based on the result above it appears that most of the hardware facilities are available in the library studied but grossly inadequate compared to the number of library customers.

**Table 2: Types of Software Available in the Libraries**

S/N	Academic Libraries	Housekeeping operation Software	Digital library software	Network Management software	Antivirus software	Research Data Analysis Software
1.	NDA	√	√	X	√ (Norton)	X
2.	KASU	√	√	√	√ (Avast)	√ SPSS
3.	N B Poly	X	X	√	√ (Avast)	X
4.	FCE	X	X	X	√ (Avast)	X
5.	COE	X	X	X	X	X
6.	NACT	X	X	X	√ (Norton)	X
7.	NITT	X	√	√	√ (Aviras)	X

√ = Applicable X = Not Applicable

From the above table, only NDA and KASU reported to have housekeeping library software while all others have no one in their possession, Dspace digital library software is available at NDA, LIB+ is available at KASU and SUR PASS was available at NITT, NB POLY also had digital library software while FCE, COE and NCAT had no digital library software. KASU, NB POLY, NCAT and NITT have Network management software in their libraries, while NDA, COE and FCE had none. NORTON antivirus is available at NDA, Avast was available at NB POLY, and AVIRAS antivirus was available at NITT, NB POLY, KASU and NCAT have antivirus software and COE KAF had no antivirus software in their libraries. None of the libraries studied with the exception of KASU have any Research Data analysis software. From the result above it is concluded that the number of software available is a little bit higher this is a clear indication of an increase in the level of ICTs in our Academic libraries.

**Table 3: Services Automated in the Libraries**

S/NO.	Academic Libraries	Acquisition	Circulation	Serial management	Reference	Cataloguing & Classification
1.	NDA	√	√	√	√	√
2.	KASU	√	√	√	√	√
3.	N B POLY	X	√	√	√	√
4.	FCE	√	X	X	X	X
5.	COE	X	X	X	X	X
6.	NACT	X	X	X	X	X
7.	NITT	X	X	X	X	X

√ = Applicable X = Not Applicable

Looking at table 3 above it reveals that acquisition, circulation, serial, reference and cataloguing and classification services were automated in NDA, KASU and NB POLY. FCE automated only its acquisition service, while at COE KAF, NCAT and NITT none of the services were automated. From the result shown above it is clear that the level of library automation is very low.

**Table 4: Level of Internet Connectivity in the Libraries**

S/N	Academic libraries	Availability of internet connectivity?	Do you have LAN?	Type of internet connectivity	Do you have internet browsing section?
	NDA	√	√	V-Sat	√
2.	KASU	√	√	V-Sat	√
3.	NB POLY	√	√	V-Sat	√
4.	FCE	√	√	V-Sat	√
5.	COE KAF	√	X	V-Sat	X
6.	NCAT	√	√	V-Sat	√
7.	NITT	√	√	Leased line	√

√ = Applicable X = Not Applicable

The table 4 above describes the level of internet connectivity in the libraries studied, NDA have established local area network (LAN), they have independent library network, they are using V-Sat type of internet connectivity and they have internet browsing section. KASU have

established LAN, they have both Campus LAN and Independent library network, they are using V-Sat type of connectivity, the strength of their Bandwidth is 2MB up/download And they have internet browsing section. NB POLY have established LAN, they have campus LAN, they are using V-Sat type of internet connectivity and they have internet browsing section. FCE have established LAN, they have independent library network. COE KAF they don't have internet connectivity. NACT have established LAN, they are using V-Sat type of internet connectivity and they have internet browsing section. NITT have established LAN, they have independent library network, they are using leased-line type of connectivity and they have internet browsing section. All the libraries studied are connected to the internet, 6 out of 7 libraries have LAN, 4 are using V-Sat type of internet connectivity and 5 have internet browsing section this is in line with the findings of Ezomo (2006) the Internet is the gateway for libraries and information centres to enter the electronic information era and provides information generated by different organizations, institutions, research Centres, and individuals all over the world. But their internet bandwidth was grossly inadequate which also tally with the findings of Jensen (2006), "bandwidth is the life-blood of the world's knowledge economy, but it is scarcest where it is most needed in the developing nations of Africa which require low cost communications to accelerate their socio-economic development.

Table 5 Problems militating against the deployment of ICTs in the libraries studied

S/N	Academic Libraries	Power Supply	Funding	Lack of ICTs facilities	Lack of awareness about ICTs by the library staff	Lack of managerial support	Lack of ICT skills	Occasional break down of facilities	Lack of maintenance	Over population of users
1.	NDA	X	√	X	X	X	X	√	√	X
2.	KASU	√	√	√	X	√	X	√	√	X

3.	NB. POLY.	√	√	√	√	√	√	√	√	√
4.	FCE	√	√	X	√		√	√	√	√
5.	COE KAF	√	√	√	X	X	√	√	√	√
6.	NCAT	√	√	√	√	√	X	√	√	X
7.	NITT	X	√	X	√	√	X	√	√	X

√ = Applicable X = Not Applicable

From table 5 above at NDA lack of ICT skills and occasional break down of facilities are problem militating against the deployment of ICTs in their libraries at NB POLY, lack of awareness and lack of managerial support are the problems militating against the deployment of ICTs in their libraries, power supply and funding are the problems militating against the deployment of ICTs in FCE library, lack of fund is the only problem militating against the deployment of ICTs in COE KAF library, at KASU lack of power supply, lack of managerial support, funding and occasional break down of facilities are problem militating against the deployment of ICTs, while at NITT power supply, lack of awareness, lack of managerial support and occasional breakdown of facilities, at NCAT however, the problems militating against the deployment ICTs are power supply, funding, lack of ICTs facilities, lack of awareness, lack of managerial support, lack of ICT skills, occasional breakdown of facilities, lack of maintenance and over population of users.

## CONCLUSION AND RECOMMENDATION

From the findings of the study it is clear that there is relative improvement of ICT facilities in academic libraries in Kaduna state particularly the hardware but grossly inadequate compared to the number of customers. Also there is internet connectivity but the bandwidth is very low. The study concluded that power supply, funding, lack of managerial support and occasional system

break down are the major problems militating against the deployment of ICTs in libraries studied.

In line with the above findings the following recommendation were made:

1. Government, NGOs and other relevant bodies should make provision of adequate ICT infrastructural facilities in academic libraries in Kaduna state to cater for the needs of their teaming population of users.
2. Government should intensify effort in academic libraries automation project and also the strength of the bandwidth should be increased significantly.
3. More funds should be allocated to academic libraries in Kaduna state, alternative power supply such as solar electricity, inverters, generators etc should be provided at subsidized rate, management of academic institutions should support academic libraries toward the effective deployment of ICT infrastructure in their libraries.

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