INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AS A NECESSITY FOR LIBRARIES AND LIBRARIANS OF NIGERIAN UNIVERSITIES IN THE 21ST CENTURY

Michael E. Okon[1]† --- Catherine I. Ogbodo[2]

[1,2] *Nyong Essien Library, University of Uyo, Akwa Ibom state, Nigeria*

ABSTRACT

ICTS have transformed all services in all sectors of the global economy. Library services have not been exception. In deed ICTS have revolutionized the manner information is processed, stored, retrieved and transferred to the would be users. This paper examines ICT as a necessity for libraries and Librarians in Nigerian Universities in the 21st century. Information and Communication Technology may be seen as the hardware and software that enables the society to create, collect, consolidate and communicate information in multi-media formats for variety of purpose. The paper examines the impact of ICT in libraries to include creation of On-line Public Access Catalogue (OPAC), creation of virtual libraries and Institutional Repository, resource sharing, networking and for electronic theft detector system. The efforts of government at developing ICT infrastructure through the National Virtual (Digital) library project and the Nigerian Research Education Network(Ngren) which resulted in promoting the low ICT skills of Nigerian librarians is commendable. The paper suggested an intensive in- house training by individual university library management for librarians as a means of increasing their ICT skills.

Keywords: Information communication technology, Libraries, Librarians, 21st Century, Information, New skills, Job retraining.

1. INTRODUCTION

Librarians have been trained to serve people through the provision of up-to-date information resources and quality information in various formats which can assist enhance the living standard of people, educate and inform them, help them make quality and sound decisions, enhance their freedom of expression, empower them to be conscious of their fundamental human rights and also serve as historical materials for references to the future generation.

The proliferation of information in various formats and the need to properly package these resources for people to share has increased the sustenance of the library and information practice.

† Corresponding author

The United Nations Universal Declaration of Human Rights [1], Article19 sets out the right of freedom of opinion, expression and access to information for all and the right to seek, receive and disseminate information and ideas in any media irrespective or regardless of geographical boundaries [2]. This article recognizes the imperative of sharing ideas and information across frontiers. Information and Communication Technology is the tool through which this can be achieved.

Information and communication technology (ICT) has facilitated the flow and effective means of communication. It allows the provision of accurate data collection as well as strategies for achieving objectives, which would otherwise be inhibited by organizational structures. ICTs have become a way of life the world over even though libraries and librarians in Nigeria are still struggling with the traditional methods of information processing, storage and delivery.

Incidentally, libraries and librarians in advanced countries have long adopted ICT skills in their day to day operations in the service delivery to their clienteles. It has become imperative that Nigerian libraries and librarians must rise up and embrace the technological changes that have engulfed the world. Fewer people now visit the library because information is readily available elsewhere. Anyone with a computer and a modem can now access directly the Internet to locate, order and retrieve a copy of an article or any information he or she wants at the comfort of his or her home, office or business premises. Thus in order to retain their relevance in the present digital society, libraries and librarians in Nigeria must embrace ICT and acquire new skills that will enable them to offer services that will attract the patronage of their users within and outside the library setting. There are now virtual, digital, paperless or electronic libraries. These are libraries which offer on-line services of all kind, providing electronic resources and various databases to their users even outside the walls of the libraries. In this information age and with the Internet, it is possible for users to have access to a wide range of information .Therefore this work intends to examine the level of Internet status in Nigerian university libraries

2. REVIEW OF LITERATURE

Information and Communication Technology (ICT) has greatly revolutionized the world. Since its invention a few decades ago, librarians have adopted various types of technologies to render different types of services. As observed by Mairaj and El-Hadi [3], using ICT, libraries have not only observed changes in their daily operations and services, but also identified a new and active role for librarians. Information and communication technologies (ICTs) have affected the way information is being handled resulting in speed and accuracy at which information is accessed, retrieved, stored, manipulated and disseminated to users in different formats. Computer, telecommunication and mass storage technologies are major areas of tremendous development that have reshaped the manner librarians acquire, store, process retrieve and disseminate information to their clienteles.

According to Ojedokun and Monhi [4] ICTs describe the range of equipment including basic technologies that process information. Nwokoecha [5], defines ICT as "computer, ancillary

equipment, software and firmware (hardware) and similar procedures services (including support services) and related resources, any equipment or interconnected system or sub-system of equipment, that is used in the automatic acquisition, storage, manipulation, management, movement, transmission or reception of data or information [6]. Information and Communication Technology from the writers' point of view may be seen as the hardware and software that enable the society to create, collect, consolidate and communicate information in multi-media formats for variety of purposes.

Information and communication technology (ICT) has facilitated the flow and effective means of communication. It allows the provision of accurate data collection as well as strategies for achieving objectives, which would otherwise be inhibited by organizational structures.

One major area in which Information and Communication Technology has impacted on librarians is the way it has transformed methods of various tasks and assignments they carry out in libraries. Krubu and Osawaru [7] have asserted that the introduction of various Information and Communication Technology trends have led to re-organization, change in work patterns and demand for new skills, job retraining and reclassification positions. Over the years, librarians have remained unchallenged as the sole custodian and gate keepers of information. With the advent of Information and Communication Technology especially the Internet, librarians began to lose the benefit of being the sole custodian of information. The fifth law of library science as stated by Ranganathan in 1963 Aguolu and Aguolu [8] is that library is a growing organism; growth implies change and librarians have been faced with an unprecedented rate of change with the introduction of ICT.

3. ICT LITERACY AND ADOPTION BY LIBRARIANS IN NIGERIA

Librarians in Nigeria have embraced and adopted ICT in the discharge of their daily routines in the library. However, as observed by Anyaoku [9] there is a low ICT skills among librarians. Librarians have little or no skills to work with computers and the internet. Anyaoku's statement is corroborated by empirical reports.

Kari [10] studied 100 academic librarians in Nigerian universities and their attitude to use the internet. The study revealed that most librarians' knowledge of internet were limited to sending e-mail and web browsing. Ademodi and Adepoju [11] also examined computer skill among academic librarians in Ondo and Ekiti States in South Western Nigerian; and the level of ICT implementation in libraries in the two states. Studies revealed that libraries in Ondo and Ekiti States have very few computers which were used more for administrative duties and internet browsing. Most academic librarians in the study were found to be computer literate but had no computers to use.Adeyoyin [12] study of 268 professional librarians in Nigerian universities libraries also portray a gloomy picture as only 87 (32%) of librarians were found to be computer literate. Ugwnanyi [13] studied ICT literacy among 49 academic librarians in Enugu State, Nigeria using self – assessment questionnaire and reported that the level of ICT skills among academic librarians is low. Ajidahun [14] also studied computer literacy skills involving

276 professional librarians and 306 paraprofessional staff in 20 Nigerian university libraries. The results showed that only 89 or 32.24% and only 34 or (11%) of professional and paraprofessional librarians respectively were computer literate. Also the results revealed that only 95 or 8.2% of 1,163 of other staff surveyed in the 20 University libraries were computer literate. Ajidahun in his summary of the entire studies stated that most of the staff of Nigerian university libraries are not computer literate. Anyaoku [9] in her study of computer skills among librarians in Nigeria also reported that ICT literacy among Librarians in Nigeria is low. It is expected that the situation has improved over the years and there are greater prospects that the ICT situation in Nigerian university libraries would continue to improve especially with government efforts at providing the necessary infrastructures to enable internet connectivity in Nigerian universities.Umeji [15] investigated the information/ ICT literacy skill level among academic librarians in Madonna university library, Okija, Nigeria. Results indicated that librarians did not have good information /ICT skills.

4. IMPACT OF ICT ON LIBRARIES

ICT has impacted on libraries in the following ways:

- Creation of OPAC: Online Public Access Catalogue (OPAC) is the computerized form of the library catalogue (that is the library holdings). OPAC is very easy to use, save space and can be used to access even catalogues of other libraries

  Networking: ICT enables libraries to network. Networking can be local (LAN) or wide (WAN). Libraries will be able to access information from different types of on line databases, in various disciples, on-line magazine and newspapers, e-journals and e-books.

- **Resource Sharing**: ICT can enhance the creation of a central union catalogue which allows libraries to share from their resources.

- **Institutional Repositories:** Institutional repositories are compilation of publications that originate from scholars within an academic institution. These include theses, dissertations, conference and seminar papers, curriculum vitae, reports, inaugural lectures and any other publication emanating from individual scholars within academic institutions. With ICT other libraries would be able to access the information therein.

- **Library Electronic Security system:** ICT enhances library security through the use of Radio Frequency Identification Detector (RFID). RFID is the latest technology used in libraries for theft detection. RFID is a combination of radio frequency used technology and microchip technology.

- **Creation of a virtual library:** ICT promotes the establishment of a virtual library. A virtual is a library that exists without any regard to a physical space or location. As observed by Nkanu [16], virtual libraries which can be made possible by ICT have numerous advantages over traditional libraries. This is as summarized in table 1

Table-1. Typical virtual and traditional libraries compared

N0	Library Services	Traditional Library	Virtual Library
1	Opening hours	Limited	Round the clock, all the year round
2	Student	Not possible	Possible
3	Services to non-traditional students	Grossly limited	Online delivery to students
4	Access to resources	Limited shelf to search in physical locations	Instant/simultaneous and electronic
5	Search engines	Manual and tedious	Electronic, easy and extensive
6	Time factor	Does not save time, waste time	Significant saving no risk or travel time required
7	Seating space and self shelf space	No savings	No seating space required
8	Manpower requirements	High	Low
9	Multiple access	Not flexible	Easy and cheap
10	Resource sharing	Inconvenient, slow turn around time	Convenient, fast, fast turn around
11	Migration	Limited	Use of internet, easy to access other libraries and materials

Source: Nkanu [16]

5. APPLICATION OF LIBRARY MANAGEMENT SOFTWARES

With ICT, libraries can introduce and utilize software designed to manage various library routines and operations. These softwares are integrated and have modules for various library tasks such as cataloguing and classification, circulation processes, serial management, acquisition processes, reference services and statistics. Some current softwares which are used in libraries across the world include Alice for windows, KOHA, SLAM, CDS/ISIS.

- **E-**reference services: Selective Dissemination of Information (SDI) and Current Awareness Service (CAS) are some references services that can be enhanced with the use of ICTs.

- **Online Searching:** ICT promotes on line searching, electronic resources and databases can be searched using the Internet through search engines. This provides a great resource for researchers and general information retrieval.

6. WHY IS ICT A NECESSITY FOR NIGERIAN LIBRARIES AND LIBRARIANS IN THE 21ST CENTURY?

The 21st century is characterized by scientific knowledge, ICT and globalization. This implies that no nation can afford to be an Island. Every aspect of the national life is interconnected with activities in other countries. Each country must be able to compete and seek to excel in scientific knowledge, use of ICT and the dynamics of globalization. Within the library and information practice, the continents and the entire world are forging common fronts to ensure that the

regulation of the profession has common yardsticks so that librarians' qualifications, knowledge skills, competencies, values, rights and obligations are comparable across nations. This on its own will make librarians in Nigeria global professionals, who can be marketable worldwide, practice and compete globally. Fortunately too, many countries including Nigeria have come up with regulation and legislation that regulates and monitors the practice of librarianship. In Nigeria, there is the Librarian Registration Council of Nigeria (LRCN). This body established by Decree 12 of 1995 and charged with the responsibility of regulating the practice of librarianship in Nigeria enacts laws that make it mandatory for librarians to be registered and licensed before they can practice. A Librarian in Nigeria who has satisfied all the requirements as stipulated by LRCN is qualified to practice and is licensed, certified and referred to as a Certified Librarian of Nigeria (CLN)

Secondly, of importance is the fact that information in this era of digital age is driven by a complex set of digital devices and telecommunication networks with the internet as a major information resource. The Internet is a hidden treasure with limitless possibilities in information resources which requires excellent Information and Communication Technology skills to be able to unlock its potential for attendance transfer of retrieved information to the would be users. Librarians cannot effectively and efficiently perform this and other library operations and functions without being "gurus" or masters in Information and Communication Technology. Librarians apart from competing favorably with other information professionals in the management of information are expected to be in the forefront in the acquisition, storage, processing, retrieval and transfer of information in any format (print or electronic) that can assist users solve their information needs. It is obvious that librarians cannot give what they do not have. University Libraries exist to support teaching, learning and information needs of their clientele and the society. They are therefore, agents of change and pivot of the socio-cultural and educational needs of the society. As such they ought to be master of the art in the use and application of Information and Communication Technologies considering the fact that most of their users (students) are digital natives "born into ICT world who can best be directed using ICT Nwokoecha [5].

Today, majority of library users are familiar with the internet (the use of e-mails, worldwide web), search engines, software application, on line and off-line databases in various disciples. They communicate through a number of social media such as facebook, twitter, you tube, Skype and yahoo messenger. In a single handset they would have over 100 applications running live informing and entertaining them. All these make Information and Communication Technology an indispensable tools for Nigerian libraries and a skill which must be acquired by Nigerian librarians in the 21st century.

Thirdly, the rate of revolution in this digital age has been alarming, ICT has brought about transformation to libraries especially in conventional library and information services such as On-line Public Access Catalogue (OPAC), users services, Current Awareness services(CAS), Selective Dissemination of Information (SDI), bibliographic services as well as indexing and abstracting.

Resource sharing, document transfer and other services can be provided more efficiently and cost-effectively with the use of ICT According to Abanihunda [17],

"ICTs are one of the major contemporary factors shaping the global economy and producing rapid changes in society. They have fundamentally changed the way people learn, communicate and do business. They can transform the nature of education - where and how learning takes place and roles of students and teachers in the learning process. The processing of information to build knowledge is one of the essential literacy skills vital for the workforce in the 21st century, which has still not been adequately utilized in our educational system. In order to function in the new world economy, students and their teachers have to learn to navigate large amounts of information, to analyze and make decisions, and to master new knowledge and to accomplish complex tasks collaboratively." This can only be aided by Librarians who have adequate ICT knowledge and skills.

7. WHAT ARE THE FEATURES OF THE 21ST CENTURY?

The 21st century has become a century dominated and ruled by Information and Communication Technologies. The global trend is the digitization of library resources to improve availability and easy accessibility of information to users. Digitization is the conversion of analogue media to digital form. As observed by Nwokoecha [5], the hallmarks of the 21st century are orders-highly entrenched standards and systems of doings things as designed by the international community. According to him, there is political, economic, social and intellectual orders which are primarily founded on scientific knowledge, information and communication technology and globalization. Globalization is a process leading to greater independence and mutual awareness among economic, political and social units of the world, Giullen [18]. Globalization is the process enabling financial and investments markets to operate, internationally, largely as a result of deregulation and improved communication Jeffery [19].

As a result of the influence of scientific knowledge, the 21st century is called the knowledge society and when considering the pivotal role of ICT, the 21st century is also known as the information society [5].

Evers [20], has outlined the characteristics of a knowledge society to include the following features.

- Its members have attained a highest average standard of education in comparison to other societies and a growing proportion of its labour force are employed as knowledge workers; that is researcher, scientific, information specialists knowledge managers and research workers.
- Its industry produces products with integrated artificial intelligence.
- Its organization – private, government and civil society – are transformed into intelligent learning organizations.
- There is increased organized knowledge in the form of digitized expertise, stored in data banks, experts systems, organizational plans and other media;

-      There are multiple centres of expertise and poly-centric production of knowledge; and
-      There is a distinct epistemic culture of knowledge production and knowledge utilization.

According to Nwokoecha [5] when modern society is referred to as information society, emphasis is laid on the pervasiveness and availability of information across geo-political borders. This information is often real time and made possible by ICT. The 21st century focuses more on the areas of digital, virtual or libraries without borders. Libraries are now expected to provide user a wide variety of ICT tools necessary for retrieving information from various databases.

The present-day academic library services in the 21st century are focusing more on the area of digital, virtual or libraries without borders all of which have transformed academic libraries and led to transition and transformation in the academic library environment. The transition and the transformation are accompanied with sophistication in the changing pattern in the information needs of users which is growing rapidly.

Table-2. Internet access in Nigerian University Libraries

		Year established	Internet status
	1st Generation Universities: 1948 – 1965		
	University libraries	Year established	Internet status
1.	Kashim Ibrahim Library ABU, Zaria	1962	Connected
2.	Kenneth Dike Library University of Ibadan, Ibadan	1948	Connected
3.	Obafemi Awolowo University OAU, Ile-Ife	1962	Connected
4.	University of Lagos Library	1962	Connected
5.	University of Nigeria, Nsukka	1955	Connected
	2nd Generation Universities 1970 – 1985		
6	Bayero university BUK, Kano	1977	Connected
7.	Federal University of Technology, (FUTA) Akure	1981	Connected
8.	Federal University Technology, Minna	1983	Connected
9	Federal University of Technology,Owerri	1980	Connected
10	MAUT, Yola	1981	Connected
11.	Nnamdi Azikiwe University, Awka	1980	Connected
12.	University of Benin, Benin	1970	Connected
13.	University of Calabar, Calabar	1975	Connected
14.	University of Ilorin	1975	Connected
15.	University of Jos	1971	Connected
16.	University of Maiduguri	1975	Connected
17.	University of Port Harcourt	1975	Connected
18.	Usman Dan Fodio, Sokoto	1975	Connected
	3rd Generation universities: 1985 – 1999		
19.	Abubakar Tafewa Belewa University (ATBU) Bauchi	1980	Connected
20.	National Open University of Nigeria NAOUN	1983	Connected
21.	Nigerian Defense Academy, Kaduna	1985	Connected
22.	UNAAB,AB	1988	Connected
23.	University of Agriculture, (UNIAGRIC) Markurdi	1988	Connected Connected
24	University of Abuja	1988	Connected
25	University of Uyo	1992	Connected
	4th Generation Universities:		
26	Federal University of Petroleum Resources Efurum	2007	Connected
27.	Michael Okpara University Of Agriculture, (MOUA) Umudike	1992	Connected
27.	University of Agriculture, (UNIAGRIC) Markurdi	1988	Connected

Source: internet survey 2014./Ngren-2014)

8. METHODOLOGY

The study adopted the descriptive survey design, a total of 27 university libraries who are founding members of NgRen were selected and grouped into the various generations based on their year of establishment and used for the study. Using each university websites, a survey to determine the status of internet connectivity was done. The results are indicated in table 2

8.1. Internet Status of Nigerian University Libraries

This result is an improvement on the previous situation a few years ago. As observed by Etim [21]; of the sixteen university libraries surveyed in 2002, only 4 university libraries were connected to the internet. These were Hezekiah Olusanmi library (OAU), Ile-Ife, Kashim Ibraham Library, ABU-Zaria, Lagos state university library,Ojo-Lagos and University of Port Harcourt library, Port Harcourt.

9. EFFORTS BY GOVERNMENT AT DEVELOPING ICTs INFRASTRUCTURES THAT HAS GROWN ICTs DEVELOPMENT IN NIGERIAN UNIVERSITIES AND THEIR LIBRARIES

- **(1) NATIONAL VIRTUAL (DIGITAL) LIBRARY PROJECT:** The National virtual (digital) library project initiative was that of the United Nations Educational, Scientific and Cultural Organization (UNESCO) following a request by the president of Nigeria at the 31st General conference of UNESCO in October 2001; the organization agreed to refocus its special plan action programme for Nigeria towards establishing a virtual library for higher education institutions. The idea was that given the low capacity of the literary institutions to stock their libraries with relevant books and literature it was imperative to exploit Information and Communication technologies (ICTS) to provide solution to the problem.

- To kick start the project, effort at establishing the virtual library,UNESCO and Nigeria got a funding from the Japanese Fund in trust to conduct a feasibility study for the virtual library.Ya'U [22].

The feasibility study which commenced with a study mission from UNESCO headquarters to the country in September, 2002 held discussions with various organizations in Nigeria and established a firm commitment on the need for the virtual library project. It recruited a National Professional Officer (NPO) who co-ordinated the feasibility study and involved various stakeholders and professionals in a participatory approach to develop the content of the study. A workshop was held on the 25-29the August (2003) at the conference hall of the Nigerian Teachers Institute (NTI) Kaduna. The workshop drew participants from all the sectors of the tertiary institutions, representatives from MarAthur Foundation, the open society initiative for West Africa (OSIWA) and the US public information system. Working through an eight syndicate groups, the workshop produced an eight- chapter document covering various aspects of the virtual library. These include infrastructure and connectivity, constant management, capacity

building and funding, sustainability and growth. Others were administration and management, legal, and payment issues implementation plan and costing as well as funding sources. The workshop recorded a huge success as all participants agreed on the need for the project and the numerous benefits that would be derived from the project. However, some thorny issues which arose during deliberations at the workshop were

i.   Question of payment: virtual library entails users to access download documents, electronically. This involved connectivity costs. The question was who shall bear the cost? Also it requires heavy investment. Who shall fund the

ii.   Infrastructure development?

Hosting the co-ordination secretariat of the virtual library. The National library (NLN), The National Universities Commission (NUC) and The National Information Technology Development Agency (NITDA) were involved in vying for the hosting.

- 2 NATIONAL RESEARCH AND EDUCATION NETWORK

A National Research and Education Network (NREN) is a specialized internet service provider dedicated to supporting the needs of the research and education communities within a country. It is usually distinguished by support for a high speed backbone network, often offering dedicated channels for individual research projects. It provides the basic nationwide connectivity platform, linkijng participating institutions, on which a host of e-services are provided and shared amongst participating institutions Ngren [23].

9.1. Nigerian Research and Education Network (Ngren)

Nigerian Research Education Network (Ngren) is the Nigerian Universities Information and Communication Technology (ICT) solution project initiated by the National Universities Commission (NUC). Ngren has been in the making since 2004. At a workshop on strategies for Information and Communication Technology Development (ICT) and Access to more affordable band width for university, Research and Higher Educational Institutions in Nigeria organized by the Association of Vice Chancellors of Nigerian Universities (AVCNU) on 26th February 2008, it was agreed that ICT is essential for

- Supporting the development and sharing of online information and resources.
- Supporting collaborative research among Nigerian Universities, Research and Higher Educational Institutions.
- Running joint online courses and sharing expertise.
- Sharing experiences and best practice
- Providing opportunities for student and staff exchange Chafe [24]

At the workshop it was resolved that the Nigerian Research and Education Network (Ngren) be established. However, the latest move to establish Ngren was catalyze by a group of Researchers under the auspices of the NUC and the committee of vice chancellors in January, 2010 Usman [25]. The objective was to implement an MPLS network under pinned by a concept

document network design and funding proposal backed up by public and private sector engagement. Prior to this, a proposal was drawn up. The proposal had five components namely;

- Provision broadband connectivity
- Capacity building
- Power plan for the network infrastructure
- Provision of more and cheaper bandwidth
- Provision/development of ICT applications

  The proposal was based on the fact that there was

- Lack of adequate interconnectivity between universities and other institutions which prevents effective communication and resources sharing.
- Lack of adequate internet bandwidth leading to poor access to internet-based learning resources.
- Human capacity constraints leading to service delivery problems.
- Dearth of modern learning and collaborating content and tools leading to low-quality teaching and research.
- Unstable power supply leading to increased network downtimes Chafe [24].

To kick start the project catalytic $9.5m implementation funding was secured from a world bank grant in mid-2012 for phase one implementation and procurement cycle was concluded in February 2013 Usman [25]. An additional $2m has also been invested by the Federal Government.

10. SERVICES TO BE PROVIDED BY NGREN

- **Available Services**: up to 155 Mbps of internet bandwidth to each member, hosting of web site, Ip telephony platform, video conferencing services.
- **Planned Services:** IPLC to London, repositories setup, access to resources from other NRENs, storage services, high performance computing, identity federation (authentication, authorization, access control), managed services, levels 2 and level 3 Network support, internet exchange, IPv4 & IPv6 infrastructure, BGP peering. Subscription to Ebsco host e – journal and e -Books, subscription to science Direct e-journals
- **Security Services**: (antivirus, anti spam, intrusion prevention, Denial of service protection, web filtering.

11. CHALLENGES OF ACCESSING NgREN SERVICES

- **Issues with Campus Networks**: Extent and quality of campus-level access; low levels of awareness of NgREN imperative; non-integration of NgREN & campus networks.
- **Funds to Connect more Institutions**: Due to funding constraint, only 29 nodes have been connected so far, with support from the defunct STEP-B as a proof of concept. With 129 universities and hundreds of polytechnics, colleges of education, and research

institutes (all amounting to over 600 Higher Education Institutions in Nigeria), the current size of the NgREN is like a little drop in the ocean.

- **Power**: very often network services at the universities are disrupted due to power failure. It is therefore imperative for the co-coordinating body, the NUC to liaise with managements of various universities towards finding an alternative source of power. The use of generating sets or inverters can provide succour

- **Poorly Coordinated Nature of Research Activities in our Institutions**: majority of our researchers find it difficult to communicate and collaborate to share research findings.

- **Capacity on the Network**: the present 10gbps core ring can only support the existing institutions temporarily. As their demands increase and as new institutions join the network, there will be the need to expand the core to a minimum of 40gbps, raise the size of the NMC last-mile connection, increase the available pooled internet bandwidth, procure IPLC and train all categories of network users.

12. FACTORS AFFECTING THE USE OF ICT IN NIGERIAN UNIVERSITY LIBRARIES

Inadequate Funding: Lack of adequate funding is a major factor that has affected the use of ICT in Nigerian University Libraries. ICT is an area that requires adequate funding. Unfortunately, over the years funding to Nigerian university libraries has been minimized. As noted by Krubu and Osawaru [7] in their study on the impact of ICTs in Nigerian university libraries, funding constituted the most series problem military against the application of ICT resources in the Nigerian university libraries. This is also corroborated by Ifijeh [26] who noted that government owned university libraries are suffering from how budgetary allocation. According to him an analysis of the Federal Government allocation to the education sector in the last nine years is discouraging. Between 2000 to 2008 the Nigerian Federal Government allocated an average of only 9% of its budget to education. In 2008, of the N727b(55.2b), the Federal government allocated to the education sector between 1999 and 2007, the Federal government spent N472 billion or ($53.5b) on salaries and wages leaving a meager sum of N265b or $1.7b for infrastructural development in federal universities over a period of eight years.

Epileptic Power Supply: Nigeria, unlike most countries in the world is yet to get over the challenge of epileptic power supply. ICT can only be driven by availability of constant supply of power

Lack of Technical knowhow on the part of system librarian. This constitutes a major barrier in the use of ICTS in Nigeria University Librarians. In most cases, those managing the systems are not professional systems' engineer or technicians who are very knowledgeable about the system.

Inconsistent Government Policies: until very recently democratic system in Nigeria has not been stable. Usually each government comes with its policies and programmes. Nigeria is

yet to have a standard and implementable ICT policy that is not a function of the government in power.

Lack of Maintenance Culture: Nigeria, as a country lacks a maintenance culture, rarely could you find a situation where an equipment or a set of system is maintained on a regular basis. In most cases it is when the system develops a problem or breaks down that it is attended to.

Lack of Cultural Consideration of the User Environment: Cultural environment should constitute a major factor in any dealings that has to do with a set of people. Each nation has its culture and this invariably affects the manner things are done.

Use of Sub-standard Facilitates during Installations: This should constitute a major factor in the use of ICT facilities. Cases abound where suppliers in connivance with some corrupt of government officials supply sub-standard facilities short of the expected specification.

13. FACTORSAFFECTING ADOPTION OF ICT BY LIBRARIANS IN NIGERIAN UNIVERSITY LIBRARIES

The following **factors** have hindered the use of ICT by librarians in Nigerian university libraries.

- Lack of basic infrastructures
- Wrong perceptions about ICTs
- Lack of adequate training of librarians
- Unconducive working environments
- Poor working conditions
- Inadequate inclusion of ICT components in library schools' curriculum
- Low ICT skills possess by librarians

13.1. Prospects of Ngren sustaining the Continuous provision of Internet Access to Nigerian universities and their Libraries.

There are prospects that Ngren will sustain the provision of Internet Access to Nigeria Universities and their Libraries. It is important to note that Ngren was established as a Private Company Limited by Guarantee (RC1011289) and duly registered with the Corporate Affairs Commission(CAC) on the 21st of February 2012.It is owned by fee-paying members and all proceeds are for reinvestment to sustain services. Ngren has its own Governing Board comprising representatives of Stakeholder organization.

There are six VCs on the Founding Board, which held an inaurgural meeting on 7th March, 2014. Provision does exist for expanding its membership. AVCNU Secretariat is to coordinate its members' inputs on this subject. NgREN has Four Departments: Network Operations; Network Service; Network Innovation & Development; Corporate Services.This means that NgREN does not have share capital or shareholders, but instead has members who collectively own the

company and act as its guarantors Any profit made from its operations cannot be distributed, but rather ploughed back into sustaining and expanding services to members.It is an LIR (Local Internet Registry) recognised by AfriNIC (African Network Information Center) to provide services to earn income. Furthermore, the Federal Government of Nigeria(FGN) has shown support and commitment towards the project. Support has been in form of financial resources and provision of enabling environment. Also multinational corporations such as Airtel Nigeria are partnering with other groups to support the project.

14. RECOMMENDATIONS

1. Library managements must ensure that an in- house ICT programme is mounted for Librarians on a continuous basis.
2. Efforts should be made to ensure that every Librarian owns a personal computer. An access to a computer will enable to use computer on a regular basis. Practice they say makes perfect. Thus continuous practice and use of the system will empower Librarians to be masters in ICT
3. Librarian should be sent on ICT workshops, conferences and seminar to broaden their knowledge on various ICT applications as it affects daily library routines.
4. The working environment should be made more conducive. Managements of university libraries should ensure through the support of their individual university authorities that The working environment

15. CONCLUSION

ICTs have become a way of life in all spheres of human endeavour. For Nigerian Libraries and Librarian to be among the league of Nations in ICT skill and competence, concrete efforts must be made to build facilities and infrastructures that will stand the test of time and match the changing situations from time to time.

Apart from efforts from Government, management of University Libraries must put modalities in place to train on a continuous basis librarian (in-house). Also there must be "an operation own a laptop or desktop which will empower librarians to get use to the system and also remove the" compuphobia "that some librarians may be facing especially the older one. It is an established fact that ICT if well harnessed can assist libraries and librarians to improve service delivery to their clienteles. This study would contribute to existing literature on ICT in Nigerian university libraries. The paper's primary contribution would be finding that Nigerian university libraries like their foreign counterparts participate in information sharing through globalization.

REFERENCES

[1]   The United Nations Universal Declaration of Human Rights, "The united nations universal declaration of human rights (Article19)." Available: http://www.UN.org/en/documents.udhr. [Accessed 11th august 2014], 1948.

[2]   IFLA, "Code of ethics for librarian and other information workers." Available: www.ifla.org/files/assets/faife/news/1COE-Draft111104.pdf [accessed 21st July 2014], 2011.

[3]   M. I. Mairaj and W. M. El-Hadi, "Application of information and communication technologies in Pakistan," *Journal of Medical Library Association*, vol. 100, pp. 218-222, 2012.

[4]   A. A. Ojedokun and K. A. Monhi, "Information and communication technology (ICT) systems in Botswana government department," *African Journal of Library, Archives and Information Science*, vol. 15, pp. 79-88, 2006.

[5]   S. Nwokoecha, "ICT as a 21st century standard for Nigerian teachers," A Paper Delivered at a Conference at West African Eternity Conference and Exhibition. Lagos. [Accessed March, 27-28, 2013], 2013.

[6]   National Information Technology Development Agency NITDA, "Nigerian national policy for information technology: NITDA," 2001.

[7]   D. E. Krubu and K. E. Osawaru, "Imperative information and communication technology in Nigerian Universities library and practice." Available: http:/u-lib.uni.edu/, 2011.

[8]   C. C. Aguolu and I. E. Aguolu, "Libraries and information management in Nigeria Ed-Linform services Maiduguri," p. 37, 2002.

[9]   E. N. Anyaoku, "Computer skills sets of librarians in Nigeria: Confronting the stereotype," *Annals of Library and Information Studies*, vol. 59, pp. 128-134, 2012.

[10]   H. K. Kari, "The academic librarian and the internet: A survey attitude and impact in Nigerian university," *Asian Journal of Information Technology*, vol. 5, pp. 1078 – 1081. Available: http://decsdrive.com/pdfs/medwelljournals/ajit/2006/1076-1081.pdf [Accessed 20th July 2014], 2006.

[11]   D. T. Ademodi and E. O. Adepoju, "Computer skill among librarians in Ugo academic libraries in Ondo and Ekiti States Nigeria library philosophy and practice June 2009(1-7)." Available from www.webpages.uidaho.edu/-mbolin/ademodi-adepoju.htm. [Accessed 21st July 2014].

[12]   S. O. Adeyoyin, "Information and communication technology (ICT) literacy among the staff of Nigerian university Libraries," *Library Review*, vol. 54, pp. 257-266, 2005.

[13]   F. C. Ugwnanyi, "Information and communication technology (ICT) literacy among academic librarians in Enugu State," *The Information Technologist*, vol. 6, pp. 123-132, 2009.

[14]   C. O. Ajidahun, "The training, development and education of library Manpower in information in technology in Universities in Nigeria," *World Libraries*, vol. 17. Available: http:llojsserv.dom.edu/ojsindex.Php/worldlib/issue/view/5 [Accessed 21st July 2014], 2007.

[15]   E. C. Umeji, "Information/ ICT literacy level and skills among librarians in Madonna University library Okija IOSR," *Journal of Humanities and Social Sciences*, vol. 15, pp. 70-75, 2013.

[16]   W. O. Nkanu, "Use of information and communication technology and the provision of library and information services in Nigerian university libraries," Unpublished Phd Dissertation University of Uyo, 2006.

[17]   M. O. Abanihunda, *Integrating information and communication technology (ICT) into teacher education. In D. O. Durosaro and A. A. Adegoke (Eds.). Higher education and globalization.* Ibadan Stirling: Horden Publisher Ltd, 2011.

[18]   Giullen, "Globalization and social problems." Available: <u>Caliber.ucpress.net/doi/pdf/_0.1525sp 2001.4814</u>. [Accessed 7th April, 2008], 2000.

[19]   S.   Jeffery,   "What   is   globalization.   The,"   Available: <u>guardian.com.www.theguardian.com/world/2002/Oct/31/globalization/Simon</u> Jeffery. [Accessed 6th Aug. 2014], 2002.

[20]   H. Evers, "Transition towards a knowledge society: Malaysia and Indonesia in comparative perspective," *Comparative Sociology,* vol. 2, pp. 355-373, 2003.

[21]   F. E. Etim, "Resources sharing in the digital age: Prospects and problem in African Universities," *Library   Philosophy   and   Practice*, vol. 9 Fall. Available: <u>www.webpages.uidaho.edu/-mbolin/lppv9n1.htm</u> [Accessed on 21st july 2014], 2006.

[22]   Y. Z. Ya'U, "Towards a virtual working for Nigeria." Available: <u>portal UNESCO. Org/or.php-URL-ID=16043 & UNL-Do=Do-Topic Yu</u>, 2003.

[23]   Ngren, "NgREN minimum campus network requirement and imperalities for sustainability operational readiness workshop, Abuja." [Accessed 16th May 2014], 2014.

[24]   A. I. Chafe, "Nigerian universities ICT solution project," 2008.

[25]   M. Usman, "Nigerian research and education network (NgREN) implication and operational readiness states report." Available: <u>euroafrica_ict.org/wp.content/ lugins/alcyconics</u>, 2013.

[26]   G. I. Ifijeh, "Nigerian university libraries current situation, needed improvements, and how marketing   might   help," *Library   Student   Journal*, vol. 6. Available: <u>www. Naela org/public/library/publications/publications/main 2011student journal.aspx</u>, 2011.

BIBLIOGRAPHY

[3]   Ngren, "Ngren as a facilitator for academic planning in a 21st century university. Paper delivered at national workshop on, Abuja." [Accessed 16th May, 2014], 2014.