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**THE EMERGENCE OF DIGITAL LIBRARIES SERVICES IN  
NORTHWEST NIGERIAN UNIVERSITIES: CHALLENGES AND  
PROSPECTS**

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## **ABSTRACT**

*This paper highlights the development of University education vis-à-vis the emergence and development of digital libraries in Nigeria Universities with specific reference to Northwest Nigeria. The concepts of digital library and as well its objectives in a university system, and services provided such as network services, digital preservation and quick reference were discussed. In addition prospects and benefits of digital library services like digitization of local content, access wide range of services and scholarly publishing among others were identified. The paper highlighted funding, infrastructure and technology as challenges facing the application of digital libraries in northwest Universities and concludes that, though they are faced with numerous challenges, however, the university libraries could gradually overcome such challenges in the course of time especially through library collaboration. Finally the paper recommends that the virtual library project of the Nigerian University Commission (NUC) should be well funded and managed to support the digital Libraries in various Universities. Also, there is need for CULNU to ensure a unify method of linking Nigeria University Libraries together through a particular network, among others.*



## INTRODUCTION

Digital libraries as occasioned by the information and communication technology (ICT) revolution has given Nigeria a chance to stamp and showcase her authority in knowledge and subsequently contribute as never before in the national development through university education. Hence, university education in Nigeria began with the establishment of the University College Ibadan in 1948 during British Colonial masters. Immediately after the Nigerian Independence celebration in 1960, four additional universities were established. Thus: University of Lagos, University of Nigeria, Nsukka, Obafemi Awolowo University, Ile-Ife and Ahmadu Bello University, Zaria. These were referred to as the first generation universities in Nigeria with the aim to lead in man-power development and advancement in educational development of the country. However, in the 1970s, seven more additional universities were founded, and they were referred to, as the second generation universities, which among them were: Usmanu Danfio University Sokoto and Bayero University, Kano. These were found in the North West Zone. These universities greatly help bringing university education closer to the citizens of the country, Ogunsola (2005). The third generation universities came on board in the 1980s with the establishment of Federal University of Technologies and Agriculture. None was established in the northwest zone.

For the purpose of the high quest for education and also the need to increase man power development in Nigeria state own universities began to spring up by individual states in Nigeria. In line with this, all states in the Northwest zone of Nigeria (seven states) established their own state universities which marked the fourth generation Universities. In 1990s the law for the establishment of private universities was legalized and led to the establishment of private universities across the nation which the zone was not an exception. Today, there are over one hundred accredited public and private universities in Nigeria. On record, sixteen of them are from the Northwest zone of the country. All aim at working towards the educational advancement and human resources development of the nation, (NUC, 2014).

Generally, the university library objective is to support academic activities in their university community. To achieve this, relevant resources of all kind need to be put in place to satisfy the learning, teaching and research needs of users. According to Ani and Edem (2012), the resources

utilized in the university libraries were mostly in printed format made up of books, journals, magazines, dissertations/theses and other local materials.

However, in the recent development, libraries experience new technological transformation identified as the electronic information era been powered by Information and Communication Technologies (I.C.T.) with its capabilities in promoting and improving information services in all facer of live led to the establishment of digital libraries in Nigerian universities. In line with this development, all universities in the Northwest zone also adopted the trend of setting up the digital libraries. From the foregoing, this paper seeks to explore the emergence of the digital libraries in Nigerian Universities in Northwest Zone and also identify challenges and prospect of digital libraries using documentary and secondary data.

## **REVIEW OF RELATED LITERATURE**

There is no single definition for digital libraries. The definition evolves as research progresses. Within the context of libraries, digital libraries may be viewed as technical services performed electronically with an entirely electronic application. The e-libraries are “a set of electronic resources and associated technical capabilities” and that are designed to serve specific users community, (Buckland’s electronic library, 2012). Trivedi (2010) defined digital library as “a library in which collections resources are stored in digital formats (as opposed to print, microform, or other media) and accessible by computers.” Aman and Norliyanan (2002) stated that an electronic library also refer to as digital library or digital repository focused on collection of digital objects that can include text, visual material, audio material, video material, stored as electronic media formats (as opposed to print, micro form, or other media), along with means for organizing, storing, and retrieving the files and media contained in the library collection,” They also viewed it as “a potentially virtual organization, that comprehensively collects, manages and preserves for the long dept of time rich digital content, and offers to its targeted user communities specialized functionality on that comprehensive codified policies.”

Universally, Digital libraries are perceived as libraries in which all information resources are available in computer process through which acquisition, storage, preservation, retrieval and dissemination of resources are carried out using digital technologies. Mutula and Ojedokun (2008) noted that it is a library that contains no conventional print information resources, but electronic

books, journals and newspapers. They further observed that the digital library may not occupy a physical space, where as users need to go and gain access to its electronic resources.

In another development, Li and Furht (2014) stated that digital libraries are systems that combine the machinery of digital computing storage and communication, in which the content, and software needed to reproduce, emulate and extend that services of collecting, cataloguing, finding and disseminating information offered by traditional libraries based on paper and other materials. “They also viewed digital libraries as systems providing a community of users with coherent access to a large, organized repository of information and knowledge.” The ability of the user to access, reorganize, and utilize this repository is enriched by the capability of digital technologies.

The digital library is synonymous to the virtual library which is a library where services or collections of electronic resources are entirely virtual and access via a network. A virtual library does not have a physical space where users can visit to access information resources, instead distribution of resources are done electronically virtually. It is also called a paperless library. Digital libraries and virtual library are characterized by the following features as noted by (Costabile and Semeraro, (1998) access to information over a network, facilitate immediate and simultaneous access to information, they are interactive, i.e. support 2 ways communication with the users, they exist in multimedia format of text, video, graphics, sound and animation. Above all, it increases speed and effectiveness in finding information and to decrease mental effort put into each search of information in the net.

The e-library (EL) most often referred to as digital library; virtual library and online library are not one and the same. According to Irokwe (2001), a digital library is a library that harnesses digital technologies as infrastructure to search, collect, organize, store and distribute cultural, historical and scientific information whether it is text, visual images or sound. This requires that all operations of the library are computerized. Such operations include selection and acquisition, cataloguing and classification etc. It comes into existence due to inconveniences of traditional library system. The digital library contains resources that are either born digital or digitized resources that pass through the process of transformation from hard to soft copies. It also developed electronic

catalogue of all library materials, networking this catalogue, so that users not only in the library but also from elsewhere can access it. Additionally, digital library includes the digitalization of locally produced information and the establishment of institutional repositories, to provide access to the scholarly material produced by members of the university.

According to Daniel (2002), Nancy Schiller was one of the first writers to use the expression “virtual”. Schiller simply uses the term as “libraries in which computer and telecommunication technologies make access to a wide range of information resources possible.” All virtual libraries must, by virtue, be electronic, but not all electronic libraries are necessarily virtual. It is called ‘virtual’ because in a good electronic wide area networked library, the user enjoys the euphoria of being able to access collections in distant libraries, and yet he has not physically moved. It is an experience of virtual reality; the user does not need to be in a library environment. Fabunmi (2009) added more light that the virtual library can consist of materials from a variety of separate libraries that are organized in a virtual space using computers and computer networks. Virtual library is a collection of machine readable documents made available through an Internet site. The library does not exist in real life because physically it is not accessible but then it exists. Powell (1994) defined VL as: “a library with little or no physical presence of books, periodicals, reading space, or support staff, that disseminates selective information directly to distributed library customers, usually electronically.” The characteristics of a true VL according to Sherwell (1997) are that there is no corresponding physical collection; documents are available in electronic format, not stored in any one location, and accessed from any station. It retrieves and delivers as and when required and effective search and browse facilities. Thus VL can simply be defined as a library without wall or as “a scientifically managed collection of information resources and services available electronically through the Internet at any moment”. Omolaye (2002) extended the definition to include access to

electronic resources in the university library not only through the Internet but also other electronic/digital networks such as campus network or the intranet, without the physical need of the patron (staff/students) visiting the library.

However, despite the differences enumerated above, Fabunmi (2009) and Irokwe (2001) see e-library as synonymous to digital and virtual library. Both argued that a library having digital collections that could be accessed universally can be referred to as being virtual while a library with all holdings on CD-Roms, DVD-Roms, FMD-Roms, etc. accessed from stand-alone computers would be electronic. This is in line with the definition of Rosenberg (2005) as “a library where information resources are made available and accessible electronically, frequently over the internet.”

What is being referred to as e-library in Nigerian is known as information commons in advanced countries of the world, because information commons refers to a physical space usually in an academic library environment, where any and all can participate in the process of information research, gathering and production. Beagle, (1999) explained that the information commons is a conceptual, physical and instructional space that involves an organizational realignment from print to the digital environment characterized by having Pervasive technology, group spaces, work stations and user services not just information services. And this shows that the e-library and information commons share the same nature and characteristics because both deal with combination of both physical and virtual spaces. It is also important to note that it is the e-library that gives the opportunity to venture in the virtual space. The e-library contains the physical technologies that enable the virtual technology to perform. Also access to the virtual space is made real through the e-library.

Misconception of the e-library shows that it is commonly thought that an electronic library enables anyone, at any time or place, to access a library's enormous book collection by using the Internet. It is even believed that one can use all the books in a library's collection without actually going to the library. But these notions are only half-truths. It is only natural, however, that the contents which can be used over an electronic library are limited to those contents which have been digitized at the library so they can be relayed through a network. Libraries have huge book collections and it is possible to digitize all these resources, if the right resources are made available within a specific time.

### **Objective of Digital Library in a University System**

The main goal of digitization in academic library is to promote library use through effective services. Local and international recognition and respect are partly determined by quick accessibility to published works. Some highly productive scholars globally have been found to be more information rich than their counterparts. This implies that information adds significantly to the existing knowledge of the users. The information resources and services available in institutional information systems (library, archives, records offices, and documentation centers) are digitized and create databases capable of supporting research activities. The shift from print to electronic information means that both academic staff and students in a University system must use these resources for better quality, efficient, and effective research more than ever.

Digital libraries are libraries that are extended and enhanced through digital technology. Li and Furht (2014) noted that the important aspects of a digital library that may be extended and enhanced include: The collection of the library, The organization and management of the collections, Access to library items and the processing of the information contained in the items, The communication of information about the items.

They further stated that the objectives of digital libraries are:

- To speed up the systematic development of the means to collect, store, and organize information and knowledge in digital form, and of digital library collections.

- To promote the economical and efficient delivery of information to all parts of society
- To encourage co-operative efforts which leverage the considerable investment in research resources, computing and communication net-work.
- To strengthen communications and collaboration between and among the research, business, government and educational communities.
- To contribute to the lifelong learning opportunities of all people.

They concluded that digital libraries distribute a rich coherent set of information services (including selection, organization, access, distribution, and persistence) to users reliably and economically.

The cardinal objectives of academic libraries are designed primarily to serve their parent institutions most especially by meeting the teaching, research, and learning needs through provision of the services (conventional and digital) that can lead to an increase in the productivity of their students, teachers and researchers. To buttress this, Trivedi (2010) stressed that digital libraries possess unlimited storage space at a much lower cost, enhance information users with coherent sources to a very large, organized repository of information and knowledge.

### **Services Provided by Digital Libraries**

The success of the digital library hinges on harnessing e-library as a means of providing effective service. To make this possible, there must be adequacy in terms of equipment and infrastructure. In digital libraries environment, Oni (2004) identified two major services provided. Thus:

**CD-Rom Searching service:** Compact Disc-Read Only Memory. He noted that it is a very important tool in IT for e-libraries because of its ability to store in high capacity, compactness and portability, reduce shelf space and durability.

**Network Services:** He highlighted that Network services provided by the library are: digital Electronic mail, World Wide Web, User net, telnet, File Transfer Protocol, Remote Access, Internet chat, Internet feeds, relaxation and leisure, money making (e-commerce), Create Share and Collaborate on documents online, Video and Teleconferencing, Live online help from librarians, Social Medias such as Blog and RSS

In line with the above, Igu (2006) gave a summary of digital library services as: Analyzing and processing different kinds of information resources; Activating and finding potential value hidden in any information; Providing added-value information products and services at right time and at the right place; Finding the right users for information and provide personalized and tailored services." Similarly, Oakleaf M. (2010) identified four basic services Thus:

**Data curation-** is a process whereby digital research communities design and implement a plan for data description, efficient storage, management and reuse. Several discipline data repositories already exist and the digital library does the collaboration. Librarians in the digital environment collaborates with their research communities to facilitate this process

**Digital preservation-** as the digital collation keeps growing and maturing, there is the need for their general long-term planning for the preservation. Only the digital library environment can establish architecture, policy or standard for creating, accessing and preserving digital content.

**Mobile environment-** recently, mobile devices are changing the way information is delivered and accessed. The digital library makes it possible to access and contact users via the mobile environment. An increasing number of library users depend on their smart phone for vital information utilization.

**Scholarly communication-** Digital libraries enhances schorlarly communication and publishing models at an ever-faster pace Through the digital libraries, new publishing models are being explored for journals, scholarly monogrpahes, textbooks and digital materials as stakeholders try to establish sustainable models.

## **DEVELOPMENT OF DIGITAL LIBRARY IN NIGERIAN UNIVERSITIES**

Academic Libraries are designed to serve their parent institutions by meeting the learning, teaching and research needs through the provision of the services that can lead to an increase in the productivity of their students, teachers and researchers. As earlier stated that the development of Academic libraries dated back to pre-independence time when the University of Ibadan and its library were established in 1948. Aguolu (1996) cited by Ogunsola (2004), noted that since independence in 1960, there has been an unrelenting upsurge in the establishment of education institutions at all levels. Successive Nigerian government have strongly invested in education and as

it were, university library, being an integral academic parts of the universities, generally emerged and cared for simultaneously, with their parent institutions. Hence, there are many universities libraries as there are universities in Nigeria. This is because the quality of teaching, research, and community services of scholars and students in any University system depends on information sources and services provided in the library. Hence, information availability, accessibility, and uses are essential to the teaching, research, and service activities of the academics in the Nigerian University system.

Development of digital libraries in Nigerian Universities started with the application of Information and Communication Technology (I C T) championed by the computer. This led to the computerization of libraries in the 1970s Ogunsola (2005). However, Abolaji (2000) pointed out that “significant and widespread efforts of computerizing library services started in the early 1990s”. This move resulted to automating the operations of many libraries, particularly research libraries. The International Institute for Tropical Agriculture (IITA), Library, Ibadan, an agricultural research library, migrated to a fully computerized integrated library system. The Institute for Policy and Strategic Studies, Kuru, Jos, the International Livestock Centre for Africa (ILCA), the Federal Institute for Industrial Research (FIIR), Oshodi, Lagos, the Nigerian Institute for International Affairs (NIIA), the British Council Library, the United States Information Service (USIS), and the Raw Materials Research and Development Council among others Library have implemented various degrees of automation in their library services. In fact, the Raw Materials Research and Development Council Library pioneered the development of indigenous Windows-based library software called *X-Lib*.

The growth from having computer to automating library operations in Nigerian universities accelerated greatly in the 1990s, when the World Bank intervened with a loan to improve the institutional capacities and with specific focus on automating the universities libraries. Abdulkadir, (1995) highlighted that the setting up of a technical committee to design hardware and software prototypes along with the World Bank intervention, eventually led to the introduction and development of university electronic resources databases through the Nigerian Universities Management Information System (NUMIS), electronic connectivity and through the Nigerian Universities Network (NUNet), and automation of university libraries and also through the TINLIB library software. NUMIS strives to increase control, access and updating of information, production

of regular reports, and effectiveness in management of decision making. Whereas, NUNet aimed at setting the pace and direction for network computer and information resource in the universities through intra-campus inter-university and global electronic connectivity. This brought about Wide Area Network (WAN) and Local Area Network (LAN) in the university environment. Nok (2006) confirmed that to a large extent, the existence of a university Wide Area Network (WAN) and a Local Area Network (LAN) helps in the establishment of internet in the university libraries. The establishments of internet in Nigeria universities by extension necessitated the need to provide space and computers where users will comfortably browse. That is why, Ayo (2000) affirmed that with the internet, university libraries are able to provide in academic search, website management, database management and general online services.

One other giant step associated with the digital libraries development is the Nigeria Virtual Library Project in early part of 2002 by the Federal Government of Nigeria and the National workshop organized by UNESCO on the Pilot Virtual Library Project in May 2003 Gbaje (2007). The mission was to provide, in an equitable and cost effective manner, enhanced access to national and international library and information resources and for sharing locally-available resources with libraries all over the world using digital technology.

## **DEVELOPMENT OF DIGITAL LIBRARIES IN NORTHWEST UNIVERSITIES**

The university libraries in the Northwest Nigerian universities were established to support academic programmes of their universities. Relevant library resources were acquired by the libraries basically to satisfy the information needs of the academic staff and students for teaching, learning and research. Historically, it is well known that collection development in these libraries started with printed resources essentially books and journals alongside students dissertations and theses. Recently, with advent of information and communication technologies (ICT), library resources shifted from printed to electronic format, now ICT driven. This development also led to library computerization in early 1970s.

With the advent of Internet and global revolution and innovations, electronic publishing came in given birth to electronic books/journals and online databases, commonly referred to as electronic information resources. Therefore the phenomenon of library computerization, digitization, electronic publishing and subscription to electronic resources led to the evolution and development of digital libraries in Nigeria in general and northwest universities is not an exception (Lawal 2008).

Western countries have well developed digital library system in their universities, but in Nigeria, the concept of digital librarianship is recent. Gani (2014) noted that digital libraries in Northwest Nigeria were established between 2005 and 2013 through linkages, collaboration, and government's funds (TETFund) which is about a decade now as shown on the table below.

**Years of Establishing Digital Library in Northwest Nigeria**

S/N	Universities	Year of Establishment	Year of Establishment DL
1	Ahmadu Bello University, Zaria	1962	2005
2	Bayero University, Kano	1976	2006
3	Usmanu Danfodio University, Sokoto state	1976	2009
4	Nigerian Defence Academy Kaduna, Kaduna State	1985	2008
5	Police Academy University Wudil, Kano State	2012	2012
6	Federal University Dutse-ma, Katsina, Katsina State.	2012	2013
7	Federal University Dutse, Jigawa, Jigawa State	2012	2013
8	Federal University Birnin Kebbi, Kebbi State	2012	2013
9	Federal University Gusau, Zamfara State	2012	2013
10	Kano University of Technology Wudil. Kano State	2000	2007
11	Northwest University Kano. Kano State	2012	2013
12	Kaduna State University Kaduna. Kaduna State	2004	2005
13	Umaru Musa Yar'adua University Katsina. Katsina State	2006	2008
14	Kebbi State University of Technology Aleiro. Kebbi State	2006	2008
15	Sokoto State University, Sokoto State	2009	2010
16	Katsina University, Katsina State.	2005	2010

**Source: Gani MLS These 2014**

The provision of electronic resources globally in the 21<sup>st</sup> century is an integral part of world university ranking and Nigerian universities are sometime reportedly poor in universal ranking due to non-availability of digital libraries in the cyberspace. The above table spotted the years of establishment of digital libraries in the Northwest Universities. Thus, the table also confirmed Ibrahim (2011) who noted that e-library is as 'new phenomenon and most in the Nigerian University libraries that relies on the use of I C T, mainly computers and Internet.

By and large, the 1<sup>st</sup> generation Universities were relying heavily on the printed resources at the inceptions of their Universities. This is because of the fact that digitization is a recent phenomenon in the global trend of knowledge. However, it can be observed from the table above

that irrespective of 1<sup>st</sup> 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> generations' Universities, digitization of library resources and services commenced almost the same decade in all the Universities in Northwest.

## **PROSPECTS AND BENEFITS OF DIGITAL LIBRARY SERVICES IN NORTHWEST ZONE**

Digital libraries present several prospects to the users far beyond what poly-media libraries provides. Having a global reach to all national and international networks through the digital library is a great advantage to educational advancement in the Northwest zone. The digital libraries do not only support the conventional university system but also the distance learning programmes in Nigeria. Researchers in the Northwest Universities gain access to full current and updated information using the digital libraries.

Digitalization of local content was given much attention in the New Universities due to the digital libraries existence. Tsebe (2005) noted that there was a need for country-level bodies to drive towards local content digital development which can be achieved through the digital library. The implication is that the Universities would digitize and preserve historic and intellectual heritage of the nation. Digitization leads to conservation of space as multiple copies of resources digitized occupy very minimal space.

Dignity of the librarians' profession in the Northwest Universities cannot be underestimated because this new trend has widened the scope of librarianship through new skills and effective services. Librarians also perform roles of computer and information scientist leading to high respect in librarianship and also the quest for libraries in all sectors in the Northwest. In addition, every library aims at achieving users' satisfaction which the digital libraries provide by offering better efficient and effective services as long as the basic infrastructures are on ground.

Above all, more and more customers of the libraries now have fast and easy access to the collections of sister's libraries without moving round the globe. Magoi (2014) noted that digital library services do not only allow the readers to enjoy the convenience of resources sharing, but also enable the resources of the academic libraries to get maximum utilization irrespective of time and space.

## **CHALLENGES OF DIGITAL LIBRARY SERVICES IN NORTHWEST ZONE**

The level of digital libraries acceptance in Nigeria universities can be said to be of very high level, despite the numerous challenges facing the application and image of the new technology.

Kamba (2011) noted the lack of policy frameworks at the tertiary level to guide the adoption of this technology to realize its full potential benefits, affirmed that, 'it is a gradual process.' This is because the digital library project at the university level moves uncoordinated and unorganized pace. Moreso, the poor state of the Nigerian economy is not favourable to digital libraries development. It is against this background that the National Library of Nigerian (2006) affirmed that the maintenance of e-librarians is not possible without TETFund and other international bodies interventions. The Northwest Nigerian Universities are challenged by the trends in the global digital society which is associated with use of ICT. The most challenges of the northwest Universities in coping with the standards existing in other parts of the world include: The application of ICT facilities, slow pace in provision of virtual reference services, No define strategy of dissemination of information and access to users through electronic access cards More also, the range of problems associated to digitization in libraries as noted in the third world countries in which the northwest in Nigeria is no exception are

- **Funding:** this actually stalks the management process of digital libraries in the Northwest.
- **Lack of keeping to standards:** As earlier noted Northwest Universities are finding it difficult to cope with the standards existing in other parts of the world.
- **Lack of Acquisition of new skills and training of staff:** It is a fact that Librarians need more than basic ICT Kills to be able to cope with the challenges of managing the digital libraries.
- **Poblem of infrastructures:** The country constant experience disruption in electricity power supply and also vandalization of telephone wires affects digital libraries usage.
- **Abuse of digital library technology:** Users consciously or unconsciously change the use of digital library technology into wrong browsing, music, football watching, etc.
- **Licensing, ownership and cost:** In the digital environment, acquisition of resources is done through licensing which is very confusing, problematic and also very costly.

## CONCLUSION

From the fore-going, it is noted that Northwest Nigerian universities started the development of their digital libraries about a decade ago. This has shown that the northwest universities are not left

behind in the global trend of I C T in their universities. The digital libraries today are providing service utilizing ICT facilities and infrastructures. Though they are faced with numerous challenges however, the university libraries could gradually overcome such challenges in the course of time. The most important, librarians should keep themselves abreast to the new technology and skills of the digital environment. Nigerian libraries also need the support of private establishment, federal and state government's to overcome the challenges posed in the digital environment globalization

## **RECOMMENDATION**

From the above, the following could be recommended:

1. The virtual library project of the Nigerian University commission (NUC) should be well funded and managed to support the digital libraries in various universities.
2. Globalization is the main issue for a successful running of the digital library, therefore, there is the need for inter-library connectivity to facilitated information resource sharing in Nigeria.
3. There is need for CULNU to ensure a unify method of linking Nigeria University libraries together through a particular network.
4. Since the universities are in the hybrid stage in the country, it is advisable that the University libraries should maintain hybrid collections since our libraries cannot become completely digital in a short while.
5. In negotiation for licensing, librarians should carefully study the contract and if possible study other counterparts with and outside the country before signing a contract. The negotiation should also include right to retrospective conversion and digitization of local content. Legal backing from the government is also necessary for a unified way of digitizing and wider access to resources.
6. University libraries in Nigeria should adopt integrated system based on the latest web 4.0 and other data search and presentation standards which is a unified way of searching and presentation of result.

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