

# FUNCTIONALITY OF 21ST CENTURY DIGITAL LIBRARIES FOR INFORMATION SERVICES PROVISION IN NIGERIAN UNIVERSITIES: A REVIEW

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**Abstract:** This article examined the functionality of digital libraries for information services provision in Nigerian universities with a view to highlighting the role and functions of digital libraries to information services provision in university libraries and to possibly highlight the challenges inhibiting digital libraries from functioning effectively to positively affect information service provision in universities. The study is a review of literature and it utilized Google search engine to gather scholarly articles from databases that are open access and are relevant to the study. Literature reviewed has shown that there is gradual growth of digital libraries in Nigeria universities especially the private owned universities and there are also gradual acceptance of digital libraries and its functions by librarians as they are now embracing the roles of digital libraries in information services provision. However, numerous factors are inhibiting digital libraries from fulfilling its full potentials in libraries which ultimately affects services provision in university libraries negatively. This study practically implied that if Nigeria is to play an active role in the global village, the issue of development and utilization of digital library should be handed with seriousness and urgency as technology is evolving by the day.

**Keywords:** Digital Libraries, information Services, Service Provision, 21<sup>st</sup> Century, Library Functions, Nigeria.

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## **Introduction**

The term digital libraries were first popularized by the NSF/DARPA/NASA Digital Libraries initiatives in 1994. When discussing digitization of information resources, distinction is often being made between content that was created in a digital format i.e. born-digital, and information that was converted from a physical medium by digitalization, it should however be noted that many of the libraries in Nigeria are not wholly digital libraries, but are hybrid libraries. Hybrid libraries are libraries that have both physical collections and digital collections (Okiy. 2010). According to Etim, Ebong and Gilean (2012), digitization in libraries is a new environment for achieving an age long goal of making historical materials available to the 21<sup>st</sup> century generation of users. This however entails the adoption of technological innovations to capture, store, organize and preserve library and information resources such that, effective and efficient service delivery are endured. Library resources digitization is a process through which library materials are converted from the hard copies to electronic copies (Etim, Ebong & Gilea, 2012). National Library of Australia (2009) notes that, digitization is a process of creating digital surrogates (version) of analogue materials from the library's collection. Digital libraries therefore, are collection of texts, and images encoded so as to be stored, retrieved and read by computer. Furthermore, a digital library is a collection of documents in organized electronic form, available on the Internet or on CD ROM disks.

The advancement of the internet and information by the advent of ICT and its mass adoption in the 21<sup>st</sup> Century have changed many conventional libraries into electronic or digital libraries where books, journals, magazines and other information resources have revolutionized into e-books, e-journals, and e-magazines. Gichora and Kwanya (2015) stated that the recent (21<sup>st</sup> Century) developments in library operations have brought about changes in the manner libraries conceive and render information services to the extent that those seeking for information nowadays are better informed and are no longer confined to the walls of library before gaining access to information resources, hence the need for libraries to activate their digital continents and make them available online so as to better serve their user community in the age where users can conformably access information resources online from their homes without necessarily visiting the library. With the discovery of ICT libraries now use diverse types of technologies to support the services they provide. Everyday new technological

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innovations affect the way information is handled in libraries and information centers. The effects of new technologies are felt by libraries in every area. Computing technology, communication technology and mass storage technology are some of the areas of constant development that has restructured the way that libraries access, retrieve, store, use and disseminate information to users and function generally (Etim, Ebong & Gilea, 2012). In the 21st Century librarianship, the shift from traditional library into digital library is a development for almost all libraries in the world.

However, the growth of digital library requires every sector i.e. government and non-government bodies to work together in encouraging its creation and usage. Basic infrastructure for the connectivity and interoperability, including funding, human resource, training and leadership must be in place to support more digital projects (Norasiah, 2011). There is no gain saying that, the digital age has brought about many changes to libraries around the world which has transformed manual library services to electronic and subsequently digital library services especially in developing and developed nations of the world. Presently, the electronic and digital library age has transformed many aspects of library services. The card catalog has been replaced with OPAC in many libraries in the developed nations of the world such as the United State as users now search for information from their desktop' users download e-books (born digital and digitized information resources) onto their PDAs, full text retrieval of information sources is becoming common place and services are increasingly becoming personalized and pay as use (Mayega, 2014).

This development is also obtainable in the developing nations in Africa and Nigeria is no exception. However, in spite of the growth and acceptance of digital libraries and its services in Nigeria, the usage of digital library resources for effective information service provision in Nigerian university libraries are not encouraging and this development can be attributed to some factors inhibiting the proper utilization of digital library resources. Nnenna and Emenike (2015) noted that examples of such inhibiting factors include document selection dilemma, copyright issue, longevity of storage media, funding and bandwidth issue among others. It is on this basis this study examined the subject matter through the review of related literature on functionality of 21st Century digital libraries for information service provision in Nigerian universities.

### **Objectives of the Study**

The general objective of this study is to examine the functionality of 21st Century digital libraries in Nigerian universities as it affects service provision in

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university libraries. The specific objective is to explain the concept of digital libraries as well as overview of digital libraries in the 21st Century look into issues bothering on 21st Century digital libraries in Nigeria outline the functions of digital library in service provision in university libraries and outline and explain the challenges of digital libraries in Nigerian universities. In other to achieve the aforementioned objectives, the researcher made use of Google search engine to gather related literature from free/open access databases and journals online such as Ajol and Library Philosophy Practice and among others which was utilized by the researcher to review literature that helps to drive home the objectives of the study.

### **Review of Literature**

The literature in this section was reviewed on the following sub-headings: concept of digital libraries; overview of 21st Century digital libraries; functions of digital libraries in the 21st century; 21st century digital libraries in Nigeria and challenges of digital libraries in Nigeria.

### **Concept of Digital Libraries**

There is no single definition for digital libraries. The definition evolves as research expands and progresses. Within the context of librarianship, digital libraries may be viewed as technical services performed electronically with an entirely electronic application (Gani & Magoi, 2014). Trivedi (2010) on the other hand, 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.” According to Igwesi (2010, p16), “digital libraries are libraries in electronic form, with no physical location and contain digital information that could be accessed from any part of the world via the internet.” Also, the Digital Library Federation defines digital libraries as “Organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access to, internet, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily available for use by a defined community or set of communities” (Shiri 2003).

In the same vein, The DELOS Digital Library Reference Model defines a digital library as “An organization, which might be virtual, that comprehensively collects, manages and preserves for the long term rich digital content, and offers to its use communities specialized functionality on that content, of measurable

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quality and according to codified policies". Li and Furht (2014) 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. 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. Mutual 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, whereas users need to go and gain access to its electronic resources. The digital libraries of the 21<sup>st</sup> Century are synonymous to virtual libraries which are libraries 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/virtual library according to Costabile and Semeraro (1998) as cited by Gani & Magoi (2014), are characterized by the following features, 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, digital libraries increase speed and effectiveness in finding information and decreases mental effort put into each search of information in the net.

### **Overview of 21st Century Digital Libraries**

In the 21st Century the application of ICTs such as computers, internet, e-mail as well as other networked technologies has opened up new and wider possibilities and opportunities to global library and information services and produces which the traditional library cannot provide. This is evident by the evolution and emergence of virtual, digital, or libraries without borders. Mutula as cited by Abukakar (2010) noted that the digital library has evolved from conventional poly-media library characterized by the collections being in various formats with little automation. However, the contemporary trends in library and information services in the 21st century is heavily characterized with dramatic and dynamic shift from traditional library to digital, or virtual libraries as the case may be especially in the area of internet technology where information

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resources can be share conveniently, easily and in large volume or quantities. Lesk (2005) asserted that a digital library of the 21st century can be searched through using any phrase; it can be accessed all over the world; and it can be copies without error as such they address traditional problems of finding information, of delivering it to users and of preserving it for future use. Digital libraries in the 21<sup>st</sup> century are characterized by massive/rapid advances in modern technologies which help to improved digitalization process. In the present digital environment, software and hardware are the hallmark of digitization and indispensable in digitization process. Computer hardware and software with high quality specifications are required for effective digitization (Igwesi, 2010). According to Haris (2016), the 21st Century digital libraries are characterized by:

**Advanced Technology:** Haris noted that when discussing the advancement of technology in the library, there are many new things that can be associated to the enhancement of library services and management as libraries are now applying new features in providing information and knowledge to its users. For example, few years back, the library website might not seem so interesting enough for users. Recently, the rapid growth of information search engines could be attached to websites. Users feel it is more user's friendly and easy to navigates. Other technology such as RFID, automated checkout systems and online databases is among the good innovation in helping the library to cater for its users. Furthermore, the technology of cloud computing is giving benefit to library. Cloud computing is the system that using a network of remote services placed on the internet. In this case information of the website is stored in the remote location. Library easily can store their website continents in the cloud system and the administration of the website can be done remotely anywhere at any time.

**New Media/Web 2.0 Tools:** Haris (2016) posted that the growth of social media or Web 2.0 application in the digital age gives an added-value to an organization including library and create closer relationship between library and users. Social media can be described as the communication tools that enable other users to response immediately to an issue or topic. Applications such as Facebook, Blog, Twitter, Flickr and Instagram are most popular among users nowadays. This application is now being adopted and used by the library as communication tools to deliver information to its users. With these technologies (New Media/Web 2.0 tools) library users are able to communicate directly to the library staff on issues that are peculiar to them. Furthermore, some libraries are using WhatsApp

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application for their communication tool while some are using Facebook application to invite users by creating event calendar. Also, the Youtube application enable library to record video in educating users on using library collections.

Software/Hardware: One of the first decision being considered by any library management when embarking on digitization project is the selection of appropriate software and hardware suitable for the project. Ndor (2007) noted that “computer hardware and software are constantly changing. Computers are fast enough to handle almost any scanning and other digitization”. Hence, digital libraries in the 21<sup>st</sup> Century are equipped with the most recent version of software with good quality and digital library specifications that is considered eligible for satisfying the changing needs of the library users. Obviously, software is an indispensable component of digitization project since it is the software that presents the various templates that relates to various digital operations. Selecting very poor software will adversely jeopardize the digitization project in terms of time waste, extensive modification, stagnation and frustration. Some of the required software for digitization as noted by Fotoki (2006) include Digital imaging software (DIS) which is used to crop, rotate, colour, correct, resize, and save images in proper file formats once the images are scanned. Optical Character Recognition (OCR) used for scanning printed pages as images on a flatbed scanner and recognizing the letter as ASCII text, Digital Image Management Software (DIMS) is used to manage the large number of digital files. Also, Singh (2016) outlined the hardware requirements for a functional digital library which according to the author are:

24 hours internet connectivity

Computer servers

LAN or WAN

Scanners

Storage media: high power hard disk

Wi-fi tower and CDs

Digital camera

High power UPS

Converters

Networks

Multimedia interfaces

In the same vein, Signh (2016), asserted that the software adopted for use by digital libraries in the 21<sup>st</sup> Century are:

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Linux operating systems

Digital library software like Greenstone and D-Space

Editing software

Data Centre: According to Yatin, et. al. (2018), data centre is a repository for storage and manage that houses computing facilities like servers, routers, switches and firewalls, as well as supporting components like backup equipment, fire suppression facilities and air conditioning. A data center can be complex (dedicated in building) or can be simple (an area or room that houses only a few servers) data center also can be private or shared with others. A data center needs to be equipped with a guaranteed power supply and high bandwidth connectivity. It is because the resilience is critical so redundancy (duplication) of networks, power and other infrastructure is common to ensure continuity. Other facilities include the building management controls such as air conditioning for maintaining the environmental conditions for the equipment in data center within a specified envelope of temperature and humidity also needs security systems to ensure that the facility and its data remain secure. The major components of a data center are internet access, hosting, content of distribution, file for storage and backup, database management, ventilation and air conditioning (HVAC) and fire suppression, high-performance cabling infrastructure and high technology of security system like access control, video surveillance.

Digital Archive: Digital Archive is a center and place which is to stores and manage the content of electronic and digital information according to its segment and their characteristics. The purpose of implementing the management of electronic digital archive is to ensure the availability and accessibility of that information for long term access. The growth of vast amount of information Technology (IT) systems and network help people to store and keep the information for a very long time. It is also ensured that all important moments can be captured and stored for the human society. In addition, it can assist to store and preserved the valuable contents of national socio-cultural and heritage from the past. The process of digital archive consists of identifying, appraising, labeling and coding, and preservation of records which can be obtained in online and electronic formats (Yatin, et. al. 2018). This process, together the implementation of structured guidelines, policies and integrated systems, will allow the availability of that this digital record and object can be maintained throughout the time. Electronic information makes it possible to use information

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for many different purposes, more than has ever been possible before. Nowadays, as digital technologies rapidly replace the conventional, the conditions of archiving presence are once again changing drastically. Electronic

Records Archives: Previously, before the era of digitization of managing the records and information, people tend to store everything in physical form, which contains all the information being stored without having the classification. As a result, it generated challenges for the society on how to properly organize and manage the problems and issues arise from the real-situation accorded during those times. Today, with the emergence of electronic and digital record archive concept, it has become the current and most convenient way of keeping the record practically and systematically. As the rapid growth in today's society, there are massive increasing amount of information and record being created and store in electronic digital medium or format. All the valuable and important records can be stored online, which offers the society with various amounts of great benefits electronically (Yatin, et. al., 2018). With the benefits of having digital record and archive, the importance of digital archiving processes must be controlled and maintained from the early beginning of creation and used of process cycle until the dissemination of information to the end user. The system must be able to support various range of records and archive requirements according to the nature of the organization. This will help the society to access the records archive in the form of electronic and computerized easily. One of the most well-known electronic records archives managements being referred globally is ERA. Electronic Records Archives (ERA) is the National Archives and Records Administration's (NARA) developed system that allows an organization to store and manage the records activities with NARA through online systematically. This was designed to preserve and manage NARA's electronic information or records and other required objects or information, which includes records maintenance lists and the accessibility activities for all records (Yatin, etal2018).

### **Functions of Digital Libraries in the 21st Century**

The rapid development of the internet in the 1990s and its embrace by the digital library and information community enabled the concept of the digital libraries, whose function can be defined as the collection storage and processing of vast information and knowledge into a systemic project through digitalization and the internet, while providing convenient and highly efficient retrieval and inquiry services. To this effect, at a minimum, the core functions/services

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expected of a Digital Library System in the 21st Century according to Sun and Yuan (2012) include: a repository service for storing and managing digital objects a search service to facilitate information discovery: and a user interface through which end users interact with the digital objects.

21st Century Digitization and Services Provision in Nigeria University Libraries in most countries across the world in this 21st Century are striving to meet up with the change brought to librarianship by ensuring that their libraries go digital. African countries are of exception. However, Mutula (2004) observed that the problem of funding that face most African information environment has had a devastating effect on the development of digital libraries in the continent. Nevertheless, Resenbeg (2006) studied the state of digitization in university libraries in Sub-Saharan Africa and found that university libraries in Africa have progressed towards establishing digital library services at various speeds and levels. However, her research also discovered that all e-developments in Africa tend to depend heavily on external funding which is as a result of lack of proper funding affecting most libraries.

Abubakar (2010) reported that in Africa and Nigeria in particular, the issue of digital libraries is still at infancy. With a population of over 200 million people, Nigeria is the largest country in Africa and accounts for 47 percent of West African's population (Worldmeters, 2020). Nigeria is a very diverse nation. Her diversity is manifested in the area of her geographical features, land mass, varied topography and climatic conditions, peoples and cultures all of which speeds across its 36 States and the Federal Capital Territory (FCT). Although very rich in natural resources, its economy has been considered to be backward. The state of the library and information environment in Nigeria is not very encouraging. This is because it is limited by the existence of widespread poverty, high illiteracy rate, poor funding of education and libraries, lack of infrastructures, as well as large scale corruption that has eating deep into the fabrics of the Nigerian society. These and many more factors tend to create a very hostile and unpleasant information environment.

The above situation aptly presents a clear picture of the contemporary Nigerian society which is peculiar in nature, and within which libraries including digital libraries are expected to function. However, libraries in Nigeria are expected to provide an organized access to information and knowledge and more importantly in the form of a digital library due to the shift in paradigm for obvious reasons. Digital libraries development in Nigeria is quite a recent phenomenon. As reported by Ogunsola (2005), the Federal Ministry of Education had embarked on the establishment of National Virtual (Digital) Library project

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with the aim of sharing locally-available resources with libraries all over the world using digital technology.

However, despite the aforementioned effort, Gbaje (2007) observed that the National Universities Commission Virtual Library Project initiated in early 2002, the National Board for Colleges of Education Virtual Library, the National Open University Library Project and the UNESCO Virtual Library Pilot Project initiate in 2003 were some of the various initiatives by the Nigerian Ministry of Education regarding Virtual (Digital) libraries for higher institutions in Nigeria, yet none of the efforts had yielded any functional virtual (digital) library at that time. Furthermore, in recent years there has been a tremendous progress in the area of telecommunications industry in Nigeria, which perhaps can be considered a good omen and a viable avenue for establishing a sound and a functional digital library system in the country. Ndukwe (2005) reported that the Nigerian ICT industry had been boosted with millions of telephone lines that were connected. This shows a record achievement when compared with the total subscriber level of less than half a million in July, 2002. Also, internet service has grown steadily as Internet Service Providers (ISPs) and cybercafé operator continue to expand (Diso, 2005).

Besides the rapid growth of the telecommunications industry in Nigeria, another recent success story in digital library development in the country was reported by IT News Africa (2010) which stated that the Mobile Telephone Networks (MTN) Nigeria had successfully deployed and commissioned digital libraries in three (3) Universities in Nigeria. The three universities are the Ahmadu Bello University, Zaria, the University of Lagos and the University of Nigeria, Nsukka. The fourth one which has been slated for commissioning the next year at that time was to be established at the University of Benin. However, Etim, Ebong and Gilean (2012) reported that recently in Nigeria, a notable number of academic libraries have established links with digital collection on various databases. Some of these academic libraries include: Nimpe Adedipe Library, at University of Agriculture Abeokuta which has digital links with: Access to Global Online Research in Agriculture, AGORA, Health Inter Network access to Research Initiative HINARI, The Essential Electronics Agriculture Library, TEEAL, E-Granary Digital Library. Also, Kenneth Dike Library, at University of Ibadan apart from establishing links with the enhancement of research information, African Journals Online, Arab Social Science Research Virtual Library Just to mention a few.

University of Nigeria Library, Hezekiah Library, Obafemi Awolowo University Ile-Ife, National Open University Library Nigeria are all equally

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engaged in the initiatives. In the same vein, academic medical libraries are not left out. Neuropsychiatry Hospital Library, Aro Abeokuta has established links with HINARI, MEDLINE. The same goes with UCH Library Ibadan and Psychiatric Hospital Library Yaba. An extensive literature review revealed the position of Nigeria as regards library digitization. However, it is evident that Nigerian libraries are still in the stage of library hybridization and have not fully harness the functions and benefits of library digitization. Nevertheless, in recent times, a good number of Nigerian institutions have already put in place and are using the digital libraries already.

The trend is however more common in Nigerian tertiary institutions than at lower-level schools. Those (tertiary institutions) who do not have (digital libraries) are presently in the process of establishing one, bearing in mind that education today is driven by digital innovations and our libraries being the pivot of information and knowledge acquisition, preservation and dissemination need to conform to the tides of change. Commenting on the operations and services of digital library. Sonker and Mahawar (n.d) asserted that digital library service in a university environment is comprised of wide array of services that can help to assist members of the library with organizing collections of materials of making them more widely available. As listed by the authors, the services offered by the digital libraries include:

Catalogue Databases

Current Awareness Bulletins

Externally Purchased Databases

CD-ROM Databases

Remote Information Services

Internally Published Newsletters, Reports & Journals

Internet Information Sources Mirroring & Cataloguing  
e-mail

Bulletin Board Service

Netnews system

Audio and Video Communication

Electronic Table of Contents

Electronic Document Delivery Service

Electronic Theses and Dissertations

Reference Service

Electronic Publishing

Discussion groups and forums

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Central storage facilities for Hosting digital collections and indexes  
Tools for loading, storing, searching, and displaying digital objects  
Special Collection service

With digitization, academic libraries no longer restrict themselves to print services such as collection development, cataloguing and classification, circulation and reference services, current awards, selective dissemination, and other bibliographic service, but have extended their effort to interdisciplinary concept sand computer software and hardware and telecommunication engineering and technology. As observed by Campbell digital age: providing quality learning spaces, creating, metadata, offering virtual reference services, teaching information literacy, choosing resources and managing resource licenses, collecting and digitizing archival materials, and maintaining digital repositories.

### **Challenges of Digital Libraries in Nigeria**

Regardless of the efforts of library management to go digitize in other to meet the growing and changing needs of users, there are several factors inhibiting the proper transition of traditional library to hybrid and finally digital libraries in Nigeria. Some of the impediments to proper library digitization as highlighted by Etim, Ebong and Gilean (2012) are:

**Financial Constraints:** Often it has been noted that digital library management and librarians are willing and ready to make changes from the traditional method of library to novel trends, there is the negating factor of scarcity of funds. This factor over time his been viewed as a resultant posture of library management lukewarm approach to library development. Hence management exhibits their tight fist nature towards funds release for the procurement of novel library technologies and tools. Dearth of Qualified Competent Librarian with attitudinal problems are some other factors. Libraries especially in developing countries have personnel who are not librarians by qualification. Hence these persons who function as library personnel do not have the capacity of functioning properly in a digital library environment thus leading to the under development of the library in function and services rendered. Digital libraries require manpower skillful in ICT.

**Lack of Technical Know-How/Awareness:** Computer literacy in Nigeria is very low. The use of Internet facilities depends on one's technical know-how on the computer. Presently, in the industrialized nations, computer is a household name

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everywhere. While in Nigeria, not all educated Nigerians are computer literate. Most computer literates even have their knowledge restricted to the use of the computer as a word processor. This automatically means that internet literacy is very low.

Poverty Level of the Citizenry: Poverty level in Nigeria is high. Connectivity of individuals to the global village (Internet) is very expensive for the average Nigerian. An average Nigerian needs a huge sum of purchase a computer and to install Internet facilities which affects the use of digital library even when they are available and accessible. Also, Abubaka (2010) opined that the development and sustainability of digital libraries in Nigeria is severely challenged by the cross under funding of libraries and education, as well as their near total neglect; erratic and epileptic power supply; unstable nature of the National Information Technology Policy; and lack of comprehensive and adequate knowledge of ICTs among most Nigerian information professionals.

In the same vein, Igboechesi and Dang (2019) highlighted some challenges of digital libraries in university of Jos Library and they are “Mediocrity,” expertise challenge, and Librarian’s in-depth training Challenges among others. Mediocrity: so many aspects of the development needed to optimize the digital library are sometimes left at the mercy of a person that does not really understand or have the basic skills or expertise for it. Usually, you find that the primary elements of meritocracy like efficiency, effectiveness, agility, technical knowhow, speed and precision are all relegated to the background while select in needed people to head units at the library. Instead, aspects such as years of experience, age factors and connections are considered. This library as at the time of this article. Has limited librarians that are full experts in relation to the aspect of digitization and the technological advancement that is at par with the digital world and trends at the moment. More of the usual traditional formats are seen at play. Librarian’s in-depth Training Challenge: This aspect poses greater challenges as is the case with many libraries in Nigeria. Usually, skeletal trainings are carried out with no planning and work put into it. There are majority of library staff who only brag of their traditional roles and insistently repel and changes brought about by these new technologies as a result of training deficit, while just a few show interests but with title expertise.

### **Findings of the Study**

From the literature reviewed, the study revealed that: through the growth of digital libraries in Nigerian university library is at a slow pace even in this 21st

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Century, the librarians acceptance and readiness to utilize the digital library resources for services provision in University libraries is encouraging; there are numerous functions played by digital library to affect services provision in the 21st Century; University libraries can effectively render specialized services to their user community with the availability of a functional digital library; and there are numerous challenges facing the availability and use of digital library and its resources for rendering effective services in Nigerian University libraries.

### **Conclusion and Recommendations**

As the world is constantly changing and advances in technological innovations becoming the order of the day, so will the roles of digital libraries continue to evolve in this fast-changing world without borders. The functionality, roles and benefits of digital libraries in developed nations of the world can no longer be overemphasized as it is evident from the services that are rendered to users of the library. As the world is geared and heading towards a paperless and knowledge society, the roles played by digital libraries for effective service provision in other to satisfy the users of the library will also continue to change. It is therefore imperative to state that, the digital libraries through its functions have become powerful tools for providing access to networked global information resources across the world.

Therefore, if Nigeria is to play an active role in the global village, the issue of development and use of digital library resources for the provision of effective information services should be handled with seriousness and urgency as technology is evolving by the day. In view of the foregoing, the following recommendations were made. Funding should be adequately provided on a regular basis; this is to ensure that the cutting-edge technology infrastructures are provided and maintain to ensure effective digital library services. Library staff should be trained on the utilization of these digitized resources so as to improve their level of ICT literacy. Adequate and proper maintenance culture should be exhibited by library staff so as to prolong the lifespan of digitized resources.

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