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## Digital Preservation, Accessibility, and Use of Electronic Theses and Dissertations in University Libraries in Nigeria

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**Digital Preservation, Accessibility, and Use of Electronic Theses and Dissertations in  
University Libraries in Nigeria**

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### Abstract

This study examined the concepts and aspects of digitization; digital preservation; digital resources; and access to, use of, and challenges posed by electronic theses and dissertations (ETDs) in university libraries in six geopolitical zones of Nigeria. It adopted a documentary research approach to highlight a critical examination of the various aspects of digitization (to provide electronic information services) as practiced by various university libraries and some library schools in Nigeria. Print theses and dissertations (T/Ds) are digitized by document scanning or direct text input (alphanumeric characters) into computer systems. Digital resources include e-books, e-journals, ETDs, and other forms of documents in electronic formats. ETDs are preserved through digitization, archiving, and creation of websites and databases as well as through floating institutional digital repositories (IDRs). ETD access is facilitated by tools such as automated library catalogs and classification schemes, online public access catalog, indexes, abstracts, bibliographies, and mobile devices such as smartphones and personal computers. ETDs are capable of meeting research and publication needs of teaching, information service delivery, and knowledge sharing. Challenges to digital preservation, access, and use of ETDs include inadequate information and communications technology (ICT) facilities, low ICT proficiency, and erratic power supply. Thus, this study recommended that management teams of universities in Nigeria commit adequate funding to procure ICT facilities, thus providing automatic standby generating plants and increasing incentives for library and digital preservation staff. Collaboration among stakeholders such as university libraries and the National Library of Nigeria should be encouraged to create a national union catalog of T/Ds in Nigerian universities and thus enable a platform for a national database. Access to IDRs will further strengthen worldwide university networking. This study will thus add value to the existing studies on ICT application in university libraries and e-

resources in university libraries in Nigeria.

*Keywords:* digitization, digital resources, digital preservation, access tools, libraries, universities, Nigeria

## **Digital Preservation, Accessibility, and Use of Electronic Theses and Dissertations in University Libraries in Nigeria**

Libraries have long been established to directly or remotely acquire information materials and processes, organize and preserve these documents in all formats, and disseminate these resources to users on request. Today, the roles of libraries remain the same. The advent of information technology has positively transformed libraries into a hyperactive system. Libraries' fundamental roles are categorized into six, namely, knowledge conservation, information dissemination, education facilitation, research, culture promotion, and entertainment. However, the preservation of information resources remains the dominant philosophy of librarianship (Aguolu & Aguolu, 2002).

Universities are established to deliver education, promote research, and provide community service, and university libraries are created to facilitate the achievement of these objectives; one way to do so is to encourage the conduct of innovative research at the undergraduate and postgraduate levels to produce high-quality output documented as projects and theses and dissertations (T/Ds). The mission of university libraries is therefore to provide information resources to support undergraduate and postgraduate research (Ifidon & Ifidon, 2007). Universities worldwide are ranked on the basis of the research and innovative works conducted and produced by its students and academic staff as well as its cogent publication output.

Research works are perceived differently from one university to another. For example, the Federal University of Technology, Minna, Nigeria, considers research produced at the master's and doctoral levels as a "thesis" while an undergraduate research work is referred to as a "project." Meanwhile, at Bayero University, Kano, a master's research work is referred to as a

“dissertation” while a doctoral research work is called a “thesis.” Indeed, projects and T/Ds are supervised and assessed by and submitted to academic boards for the award of degrees, postgraduate diplomas, and higher degrees. Thus, Saka (2013) alluded to the notion that projects are pieces of research works submitted for the award of diplomas, degrees, postgraduate diplomas, and certificates while T/Ds are those submitted for the award of higher degrees.

The decline of print-based T/Ds can be reduced to the barest minimum level through digital preservation and digitization. Ajav, Afor, and Akorchur (2018) argued that the rationale behind the digitization of T/Ds into electronic resources is that print documents of research works are prone to deterioration (wear and tear, theft, and mutilation), which necessitates electronic security measures such as the installation of closed-circuit televisions (CCTVs) and the use of other modern storage devices. Mohammed’s (2020) study, which sought to determine the influence of preservation techniques on users’ research output in university libraries in Northern Nigeria, reported that the preservation of digital resources involved several preservation techniques including emulation, encapsulation, migration, refreshing, and republication as well as digitization, which was considered the top among those being used at the federal university libraries in Northern Nigeria. Digital preservation is an aspect of library management. As collections continue to accumulate in libraries, they must be frequently accessed and consulted by library users; hence, collection development management would be incomplete if the aspect of collection preservation is neglected.

According to Emezie and Anunobi (2019), digitization is “the conversion of print material, from traditional analogue to electronic material.” University libraries and library schools in Nigeria today have commenced digitization in earnest. Some of these include the University of Jos; Ahmadu Bello University, Zaria; the University of Nigeria, Nsukka; and Bayero University,

Kano (Saka, 2013). The digitization of T/Ds also involves several techniques such as researchers/students are required to submit their research works in both hard and soft copies (Saka, Kabir, & Salman, 2017; Saka & Ango, 2016), a backlog of already submitted printed copies undergo digitization via scanning (Katsina, 2006), and some universities in Nigeria distribute digitized documents using software platform D Space.

The Library School at the Federal University of Technology, Minna, Nigeria, has begun digitizing some aspects of degree and higher degree research works (projects and theses). This digitization project is ongoing in the department, and it aims to digitize each project/thesis through direct text input to a computer system. A database is being developed to include the following fields of information: title of the thesis, name of the student, year of the research/graduation, and name of the supervisor(s).

The advantages of digitization include space conservation, easy access, and the prevention of unauthorized access by unregistered users. Research outputs are stored and preserved to avoid loss, thereby guaranteeing future availability and accessibility (Olajide & Oludeyi, 2019). Digitizing research outputs can lead to the creation of a digital library, which means more collections of digital materials in text format can be accessed, retrieved, selected, organized, used, and maintained. Digital preservation entails the care and maintenance of T/Ds in digital or electronic format, which include e-journals, e-theses, e-books, e-technical reports, and other documents in electronic formats.

### **Methods**

This study followed the documentary research method. It involves the examination of various aspects of digitization as practiced by some Nigerian university libraries and a few library schools within the six geopolitical zones of Nigeria, with supporting examples cited

from empirical sources. The six geopolitical zones are North Central, North West, North East, South East, South West, and South South. Each university library has various digitization levels including e-library and information and communications technology (ICT) sections responsible for digitizing print collections, especially T/Ds, and managing e-resources and delivering e-information services.

As of October 5, 2020 (National Universities Commission, 2020), Nigeria has 171 universities established by the federal and state governments as well as private individuals and organizations. It has the largest number of universities in the African continent. Furthermore, most university libraries in Nigeria, especially its first-, second-, and third-generation universities (established around the 1960s, 1970s, and 1980s/1990s, respectively) and, to some extent, some fourth-generation universities (established around 2011 onward) are currently digitizing research works submitted by staff and students of various academic faculties and departments.

### **Preservation of Electronic Theses and Dissertations (ETDs)**

The concept of preservation can be perceived as the care and maintenance afforded to library, information center, and archive materials. Whether theses and dissertations are converted from print to electronic format, soft copies submitted by students are directly fed into computer systems. Thus, university libraries need to preserve these vital collections, which are now in digitized format. One way ETDs can be preserved is through storage. Digitized T/Ds are stored as video, audio, text, or images while media storage includes magnetic disks and tapes, optical disks, and other forms (Olajide & Oludeyi, 2019).

Meanwhile, archiving is a storage process. ETDs can also be stored in various media (secondary storage) such as hard disks, digital versatile disks (DVDs), and compact disks (CDs); however, the relevant technologies require the functional ability of these storage

options. As storage media, disks may also include flash drives, magnetic tapes, and old and lost floppy disks or diskettes.

### **University Websites**

ETDs can also be stored or preserved in university websites. The institutional digital repositories of theses are accessible on digital platforms on these websites, which are upgraded regularly through editing, updating, and uploading of digital content.

The need to create databases for ETDs exists; a database is an organized collection of information resources in electronic format. A list of ETDs, stored as a single document, enhances accessibility. The University of Jos library in Nigeria is a leading example in terms of ETD information sharing. The university library was able to create a Database for Theses and Dissertations (DATAD) where abstracts to T/Ds are not only digitized but also shared with collaborating institutions through links to the Association of African Universities in Ghana. These records of abstracts are equally available offline on CDs (Ndor, 2004).

Thus, to enable easy access to and maximize the utilization of shared information, university websites need to generate a database for both bibliographic and full-text information sources. This aspect would require two sets of databases to be created: Set 1 that contains bibliographic information, such as student name, year, title of the thesis, pagination, supervisor names, and university departments, and Set 2 that contains the full text of the work, including its chapters (Abubakar & Saka, 2009).

To secure scholarly content, unauthorized access to digitized resources must be monitored. Websites must be secure and password-protected. Desk officers are put in charge of such operations to ensure seamless access by authorized users (Saka & Song, 2013). Other electronic security measures should be deployed to double check the security of the

environment. Some of these would include CCTVs and radio frequency identification, which are currently being used by some private and public universities in Nigeria (Saka & Aliyu, 2017; Shehu, Maifata, & Achi, 2018).

### **Access to ETDs**

ETDs are stored and made available offline or online. Their accessibility is crucial to meeting users' information needs. Atanda and Adeyemi (2018) suggested that access tools such as computerized library catalogs, computerized bibliographies, abstracts, and indexes can be used to access ETDs offline. Users and researchers can retrieve ETDs online through public access catalogs, M-libraries, e-mails, and other electronic modes of communication. Other e-resources available online include e-books, e-journals, e-reports, and audiovisual resources accessed through the internet.

### **Automated Library Catalog**

Online access to e-resources has been further boosted by the implementation of the retrospective conversion facets of printed library catalogs. By digitizing or inputting entries in traditional catalogs into the computer system according to defined fields and in the order of author, title, and subject as multiple access points, regardless of the arrangement format, databases now exist offline in computers and can be accessed by library users.

Printed library catalog converted into digital format and stored offline can then be uploaded online as databases. Users of university libraries can remotely access these information resources online through their smartphones regardless of their location or distance from the library (Abdullahi & Saka, 2016). However, online public access catalog (OPAC) platforms are easier to use, as they locate material more quickly and are affordable to operate and extremely user-friendly by enabling bibliographic searches; nevertheless, an unstable computer

network and power supply are some obstacles to the effective use of OPAC (Emiri, 2019).

University library users can also access ETDs through class marks depending on the classification scheme adopted by university libraries. Most university libraries in Nigeria use the Library of Congress classification scheme. Atanda and Adeyemi (2018) stated that librarians and information professionals have been using classification schemes in organizing electronic information resources so that libraries can facilitate access to their electronic resources on the internet.

Indexes, abstracts, and bibliographies accelerate literature search and access to ETD resources in university libraries. With the compilation of keywords and bibliographical information of theses and abstract information, users can electronically access specific research information. As databases, these bibliographic tools also help users access complete research works especially those at degree and higher degree levels conducted and submitted by students.

### **Use of ETDs**

The importance of any study in any academic institution cannot be underestimated. The advent of ICT has changed the mode of information access in libraries, and users can now stay in their homes or anywhere and access the information they need without physically visiting libraries. Personal computers (PCs) and mobile devices such as smartphones have encouraged remote access to information despite the occasional restriction to registered users (Olajide & Oludeyi, 2019). Aliyu (2020) reported that university librarians in North West Nigeria were aware of the use of smartphones in providing reference services.

Meanwhile, universities today are ranked based on both students' and faculty members' research output, and ICT provides the gateway to these works. The role of research works must

not end with the awarding of certificates and promotions; research findings and recommendations must also build a foundation for national development. Journal articles based on these research findings are marks of scholarship (Saka, 2013).

Inevitably, students and faculty members write term papers and conduct small- and large-scale projects using electronic information resources both online and offline. Research and publication are imperative accomplishments for the academia, and quality research can be used to earn awards.

To avoid research duplication, ETDs help students, faculty members, and researchers know or identify studies that have already been conducted. ETDs are now used as reference materials for academic research and publications. The advantage of using ETDs for research and publication is that they contain primary research findings worldwide.

### **Information Service Delivery**

ETDs can be used to conduct and support teaching by faculty members. They can be packaged into courseware to promote interactivity and improve digital attitudes toward learning. They also facilitate the electronic dissemination of information like other channels such as CDs, DVDs, and flash drives; they conserve space, reduce teaching load, and enhance the economy of time and energy to teach broad topics to a large number of participants. Saka, Garba, and Abdullahi (2017) argued that students can stay in their homes with their PCs and engage in self-paced studies. By extension, the availability and use of ICT can lead to the practical teaching of students.

While these vital resources can be acquired by university libraries, they can also be delivered to users on request through different channels or media through users' e-mails, social media platforms, and/or soft copies forwarded to the university website for access and

consumption. The advent of ICT has narrowed the gap for organizations and individuals to socially and academically interact and cross-fertilize ideas online without necessarily meeting physically. Odhiambo (2018) and Uzoegbu and Okoro (2019) mentioned that research works in electronic format can be shared through social media platforms such as blogs, Twitter, Facebook, Mashup, Digg, Picasa, microblogs, Descoins social life, WhatsApp, LinkedIn, YouTube, Quora, and Foursquare. Apart from social media platforms, parts of electronic research works are disseminated through presentations at workshops, seminars, conferences, and public lectures.

### **Challenges to Digital Preservation**

Mommoh and Saka (2019) reported that the digital preservation of ETDs requires a reasonable number of ICT facilities such as computers, scanners, servers, printers, and other auxiliary storage media. However, most libraries in Nigeria are experiencing an acute shortage of these facilities. Hence, the pace of digitization processes in most university libraries is stunted. Osimetha (2019) further attributed this situation to inadequate funding Nigeria is also challenged by an acute shortage of electric power supply. Thus, neither digital preservation nor research access and use are possible. Constant power failures can lead to loss of data as well as entire work from the system. Another concern is the availability of sufficient bandwidth, which limits the extent to which one can access retrievable e-resources. Insufficiently functional bandwidths cause data fluctuations and slow access to internet/network resources. Ndagi et al. (2017) reported that the majority of postgraduate engineering students face the problem of slow access speed.

Inadequate ICT skills pose another challenge, as the level of ICT skills acquired or possessed by library staff and users is low. Alabi and Nongo (2017) and Emezie and Anunobi (2019) asserted that technical know-how on the part of both users and staff is a cause for

concern. Problems of software access and use; database availability; and scanning, editing, document analysis, and archiving knowledge are apparent. Because of the tediousness of digital preservation and the processes of preparing research output for consultation, library staff must be intrinsically and extrinsically motivated through recognition, rewards, financial incentives, and training and retraining programs, thereby promoting efficient and effective services.

### **Conclusion and Recommendations**

The digital preservation of ETDs involves building electronic or digital libraries with particular reference to T/Ds. Because of inadequate funding, erratic power supply, low technical know-how, internet issues, and poor ICT facilities, this study proposed the following practical recommendations:

1. The management teams of universities in Nigeria must allocate enough funding to the procurement of sufficient ICT facilities such as computers, scanners, satellite technologies, photocopiers, storage media, and automatic standby generating plants.
2. Because of incessant power failures, which might lead to loss of data and diminished service provision, university management teams in Nigeria must acquire automatic standby generating plants for sustained service delivery.
3. Because of the tedious nature of the entire digitization process and service provision, management teams of universities in Nigeria must ensure that concerned library staff are motivated through rewards, recognition, financial incentives, and training programs.
4. University libraries in Nigeria must collaborate with the National Library of Nigeria to provide a comprehensive national union catalog of T/Ds in Nigerian universities.
5. Users of university libraries, the Nigerian Library Association, researchers, and other stakeholders in the field of library and information science in Nigeria must be made aware of

and have access to databases of available ETDs in various universities regardless of their locations.

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