

# Challenges of Digital Archives Management: Infrastructure, Funding, and Sustainability Issues

Ayegba Abdullahi, Ndubuisi Stanley John, Olajide Olaniyi, Okoli Ngozi Faith, Zakka Katmak John, Nnamani Chidimma Bright, Amafor Chiamaka Francisca, Aminu Mohammad Abdulkadir, Onyekwena Chukwuma Obumneme

Management of Information Technology Department,  
African University of Science and Technology, Abuja, Nigeria

## ABSTRACT

Digital archives are important tools for preserving cultural heritage, institutional records, academic materials, and government information in the digital age. In Nigeria, many institutions such as libraries, universities, museums, government agencies, and research centers are gradually adopting digital archiving systems to improve information storage and accessibility. Despite these efforts, digital archives in Nigeria face several serious challenges that hinder their effectiveness and long-term sustainability. This study examines the major challenges affecting digital archives in Nigeria, including inadequate funding, unstable electricity supply, poor internet connectivity, shortage of skilled personnel, technological obsolescence, and the high cost of Information and Communication Technology (ICT) infrastructure. The study adopted a qualitative research method using secondary data from books, journals, reports, and online scholarly materials. Findings revealed that these challenges significantly affect digital preservation, accessibility, security, and management of digital records in Nigeria. The study concludes that improved government support, stable infrastructure, adequate funding, and continuous staff training are necessary for the successful development and sustainability of digital archives in Nigeria to enable us to achieve the benefits.

**KEYWORDS:** Digital archives, Digital preservation, ICT infrastructure, Internet connectivity, Technological obsolescence.

## 1. INTRODUCTION

The rapid advancement in information and communication technology has transformed the way information is created, stored, preserved, and accessed across the world. One of the major developments in this regard is the emergence of digital archives. A digital archive refers to a collection of digital materials such as electronic documents, images, audio recordings, videos, databases, and other forms of electronic information that are systematically organized and preserved for future access and use. Digital archives are commonly used in libraries, universities, government institutions, museums, media organizations, and research centers for the purpose of long-term information preservation

and accessibility. Generally, an archive consists of records that have been selected for permanent or long-term preservation for their historical value, enduring research value, operational needs, and risk of content loss (Yaday, 2016).

According to the International Council on Archives, digital archives involve the management and preservation of electronic records in a way that ensures their accessibility, authenticity, reliability, and usability over time. Unlike traditional archives that depend mainly on physical storage spaces, digital archives store information electronically through computers, servers, cloud storage systems, and other digital technologies.

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Digital archives offer numerous advantages over physical archives. They provide faster access to information, reduce physical storage problems, improve information sharing, support remote access, and enhance preservation of fragile materials. Through digital archives, users can access information from different locations without physically visiting the archive center. This has greatly improved research, education, and administrative efficiency in many institutions. According to Abdullahi and Abubakar (2024), digital archives enable more efficient storage, retrieval, and protection of biographical data, ensuring that records are preserved for future generations while overcoming the limitations of physical archives. Despite these benefits, digital archives are faced with several challenges that hinder their proper operation and sustainability. The management of digital records requires adequate infrastructure, technical expertise, financial resources, security measures, and continuous technological updates. In many developing countries such as Nigeria, the challenges become more serious due to poor technological infrastructure, unstable electricity supply, limited funding, and inadequate digital literacy. This study therefore focuses on examining the major challenges associated with digital archives and their implications for effective information preservation and accessibility.

## 2. MATERIALS AND METHOD

This study adopted the explanatory research method. The explanatory research design was considered suitable because it enabled the researchers to critically explain and analyze the various challenges affecting digital archives in Nigeria. The study relied mainly on secondary sources of data collection, such as information obtained from textbooks, scholarly journals, conference papers, online publications, institutional reports, government documents, and library resources related to digital archives and digital preservation in Nigeria. The explanatory research method enabled the authors to critically identify the major challenges confronting digital archival systems in Nigeria; this enabled the authors to provide better clarity of the problems to readers and recommended solutions to the challenges.

## 3. RESULTS AND DISCUSSION

The study identified several major challenges affecting digital archives in Nigeria. These challenges are discussed below.

### 3.1. Inadequate Funding

One of the major challenges confronting digital archives in Nigeria is inadequate funding. The establishment and maintenance of digital archival

systems require substantial financial resources. Public and private institutions must invest in computers, servers, internet facilities, storage devices, digitization equipment, backup systems, and cybersecurity technologies. In Nigeria, many government and private institutions like libraries, museums, and educational establishments operate under limited budgets. As a result, many digital archive projects are either poorly implemented or abandoned midway due to insufficient funding. According to Nwachukwu and Salisu (2021), inadequate financial support significantly affects the sustainability of digital preservation projects in Nigeria. Furthermore, regular software upgrades, equipment replacement, staff training, and maintenance of ICT infrastructure require continuous financial commitment, which many institutions find difficult to sustain.

This funding gap often forces institutions to prioritize immediate operational needs over long-term digital preservation goals. In many cases, only partial digitization is achieved, leaving large volumes of records still unmanaged or improperly stored. Delays in releasing funds also slow down project implementation and reduce overall efficiency. Some institutions are unable to scale their systems beyond basic functionality due to financial constraints. Ultimately, inadequate funding remains a key factor limiting the growth and sustainability of digital archiving in Nigeria.

### 3.2. Unstable Electricity Supply

Electricity supply remains a major infrastructural challenge affecting digital archives in Nigeria. Digital archival systems depend heavily on constant electricity for operating computers, servers, internet systems, cooling facilities, and storage devices. However, Nigeria continues to experience frequent power outages and unstable electricity supply. These interruptions negatively affect the operation of digital archives and may result in system crashes, hardware damage, and loss of important digital records. Many institutions rely on generators and alternative energy sources to sustain their digital systems. However, the high cost of fuel and generator maintenance increases operational expenses considerably. Unstable electricity therefore constitutes a serious threat to the effective management of digital archives in Nigeria.

These constant power interruptions also reduce system reliability, making it difficult for staff to maintain uninterrupted access to stored information. In many cases, ongoing work is suddenly disrupted, forcing users to restart processes or repeat failed

tasks. Over time, this reduces productivity and slows down daily archival operations. The instability can also shorten the lifespan of sensitive ICT equipment due to frequent power surges and shutdowns. Ultimately, inconsistent electricity supply remains one of the most persistent barriers to sustainable digital archiving in the country.

### 3.3. Poor Internet Connectivity

Digital archives require reliable internet connectivity for information sharing, online access, cloud storage operations, and remote retrieval of digital resources. Unfortunately, internet services in many parts of Nigeria remain slow, unstable, and expensive. Poor internet connectivity limits access to digital archival resources, especially in rural areas where telecommunications infrastructure is inadequate. Users often experience difficulties downloading, uploading, or accessing archived information online. Additionally, some institutions cannot afford high-speed internet services due to financial constraints, and this reduces the effectiveness and accessibility of digital archives across the country. This situation often results in frequent interruptions during online access to important records, where users experience delays and are sometimes forced to wait long periods before documents can fully load or be successfully transferred. Unstable connectivity can also lead to incomplete uploads, which may result in missing, corrupted, or partially stored archived files that compromise the integrity of digital records. In response to these challenges, many institutions resort to offline storage methods as a backup, but this reduces the overall efficiency and advantages of digital archiving systems, especially in terms of accessibility and real-time information sharing. Overall, weak and unreliable internet infrastructure continues to significantly slow down the full adoption and effective use of digital archival practices in Nigeria.

### 3.4. Shortage of Skilled Personnel

Effective management of digital archives requires professionals with technical expertise in digital preservation, database management, metadata creation, information technology, cybersecurity, and electronic records management. In Nigeria, there is a shortage of adequately trained personnel capable of managing sophisticated digital archival systems. Many archivists and librarians were originally trained in traditional records management practices and may lack advanced ICT skills needed for digital preservation.

According to Smith (2020), continuous training and professional development are necessary for archival personnel to cope with emerging digital technologies

and preservation standards. However, many Nigerian institutions provide limited opportunities for staff training and ICT capacity development. These skills gaps often lead to inefficiencies in how digital records are organized, stored, and retrieved. In some cases, improper handling of digital systems increases the risk of accidental loss or data corruption of important files.

Also, the fast pace of technological change also makes it difficult for staff to keep up without regular retraining, and this is the reason why some institutions may rely heavily on a few skilled individuals, which will create bottlenecks in workflow and system management. Strengthening human capacity through consistent training and professional development is therefore essential for sustainable digital archiving.

### 3.5. Technological Obsolescence

Rapid technological advancement has created another major challenge for digital archives in Nigeria. Hardware devices, software applications, and digital storage formats become outdated within short periods. Information stored using obsolete technologies may become inaccessible when the supporting software or hardware systems are no longer available. For instance, digital records stored on outdated media such as floppy disks, magnetic tapes, or old software systems may be difficult to retrieve using modern technologies. To address this problem, institutions must regularly migrate archived information to updated formats and storage systems. However, such migration processes require technical expertise and financial resources, which are often inadequate in Nigeria. In many cases, institutions delay this migration process until it becomes urgent, increasing the risk of data loss. Compatibility issues between old and new systems can also make the transfer of records slow and complicated. There is also the challenge of training staff to understand and manage evolving technologies effectively. Without continuous upgrades, important historical and administrative records may gradually become unreadable or permanently lost. This makes long-term digital preservation a constant and ongoing responsibility rather than a one-time task.

### 3.6. High Cost of ICT Infrastructure

One of the biggest challenges facing digital archiving in Nigeria is simply the cost of setting up and maintaining the technology needed to make it work. Digital archives are not just about storing documents on a computer; they rely on a whole system of tools working together. These include computers, servers that store large amounts of data, scanners for

converting paper files into digital form, specialized software, internet services, backup systems, and even steady power supply. All of these require a lot of money to acquire in the first place. This is one of the challenges facing Sir Abubakar Tafawa Balewa University, Bauchi State Digital Archive. According to Abdullahi and Abubakar (2024) in their work, "Assessing the impact of digital archives on the biographical records of Sir Abubakar Tafawa Balewa in Bauchi, Nigeria, and its relevance to African studies," their investigation revealed an absence of necessary technical infrastructure such as imaging software, computers, scanners, and cameras. They went further to state that this deficiency has hindered the conversion of analogue documents to digital formats.

For many schools, government offices, and smaller institutions, putting together this kind of setup is very difficult because the funds needed are sometimes not available. As a result, many organizations continue to rely on traditional paper records because going digital feels too expensive or unrealistic for them. Even when an institution is able to set up a digital archive, the cost does not stop there. Technology keeps changing quickly, so systems need regular updates and upgrades to stay functional and secure. Without these updates, computers and software can become outdated or even stop working properly with newer systems. Maintenance cost is also another aspect given that the ICT equipment can develop faults over time due to wear and tear, constant use, or power issues.

#### 4. CONCLUSION

In conclusion, digital archives have become an essential aspect of modern information management, preservation, and accessibility in today's digital age. The study revealed that although digital archives provide numerous benefits such as improved access to information, easier preservation of records, and support for research and administrative activities, their effective implementation in Nigeria is still faced with several significant challenges. Issues such as inadequate funding, unstable electricity supply, poor internet connectivity, shortage of skilled personnel, technological obsolescence, and the high cost of ICT infrastructure continue to limit the growth and sustainability of digital archival systems across many institutions.

The findings further show that the successful management of digital archives requires continuous

investment in technology, infrastructure, staff training, and maintenance. Without proper attention to these areas, valuable digital records may become inaccessible or permanently lost over time. Therefore, there is a strong need for government agencies, educational institutions, libraries, and other stakeholders to collaborate in providing adequate financial support, stable technological infrastructure, and regular capacity development for professionals involved in digital preservation. Addressing these challenges will not only improve the efficiency of digital archives in Nigeria but will also ensure long-term preservation and accessibility of important information for future generations.

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