C J O L I S

Communicate:
Journal of Library and Information Science
Vol 27(2) December, 2025

ISSN: 1115–26664
Journal homepage: https://www.cjolis.org/

DIGITAL PRESERVATION AND ACCESS: CHALLENGES AND SOLUTIONS FOR DIGITAL LIBRARIES IN STATE OWNED UNIVERSITIES IN SOUTHWEST NIGERIA

Dr Adebola Aderemi OLATOYE
The Nigerian Baptist Theological Seminary,
Ogbomoso, Oyo State.
adebolaadeyemo0108@gmail.com
+2348038853216

Abstract

The preservation and accessibility of digital resources are critical to the sustainability of scholarly communication and knowledge dissemination in the digital age. This study investigates the current practices, challenges, and potential solutions related to digital preservation and access in digital libraries of state-owned universities in Southwest Nigeria. Using a qualitative approach comprising interviews with 17 out of 140 librarians and ICT staff across state owned universities in South-West Nigeria, using purposing sampling technique, the study reveals that digital preservation practices remain largely informal and inconsistent. Key challenges identified include inadequate technological infrastructure, absence of institutional policies, insufficient funding, and lack of skilled personnel. Additionally, user access to digital library resources is hindered by poor system usability, limited digital literacy, and lack of orientation. Despite these limitations, respondents highlighted practical solutions such as the adoption of open-source preservation tools, staff training, collaborative consortia, and the development of policy frameworks. The study concludes that a comprehensive, policy-driven, and well-resourced approach is essential to ensure the long-term preservation and accessibility of digital resources in Nigerian university libraries. The findings provide valuable insights for academic administrators, library professionals, and policymakers committed to enhancing digital library services in resource-constrained environments.

Keywords: Digital access, Digital literacy, Digital preservation, Institutional challenges University libraries,

Introduction

The advent of digital technologies has revolutionized the creation, storage, and dissemination of scholarly and cultural content across the globe. In academic environments, particularly within universities, digital libraries have emerged as vital platforms for enhancing access to information, supporting research, and preserving intellectual heritage. However, despite their transformative

potential, digital libraries face numerous challenges, especially in developing regions such as Southwest Nigeria, where infrastructural, technological, financial, and policy-related barriers persist (Oladokun and Okebukola, 2021; Ogbomo and Egunjobi, 2023). State-owned universities in this region are increasingly adopting digital library systems to improve information access and resource management. Yet, the sustainability of these systems is critically dependent on effective digital preservation strategies and reliable access mechanisms. Digital preservation ensures that digital content remains accessible and usable over time, safeguarding it from technological obsolescence, data corruption, and institutional neglect (UNESCO, 2022; Ayeni and Adetimirin, 2024). Conversely, access to digital content requires not only robust infrastructure and metadata standards but also policies that promote inclusivity and usability (Ifijeh, et. al., 2020).

In Nigeria, issues such as inadequate funding, poor power supply, limited internet connectivity, and insufficient skilled personnel hinder the full realization of digital library goals (Edewor, et. al., 2023; Oyedokun and Omotayo, 2022). Moreover, the absence of comprehensive national or institutional digital preservation frameworks exacerbates the risk of data loss and limited accessibility. These challenges call for context-sensitive solutions that align with global best practices while addressing local realities. This study critically examines the challenges of digital preservation and access in the digital libraries of state-owned universities in Southwest Nigeria. It further explores practical and policy-oriented solutions that can enhance the long-term functionality, sustainability, and user-friendliness of these digital library systems. The insights derived aim to inform policymakers, librarians, and information professionals on how to bridge the digital preservation gap and ensure equitable access to digital knowledge resources in Nigerian academic institutions.

Statement of the Problem

Digital libraries have become indispensable tools for enhancing information access, supporting academic research, and preserving intellectual resources in higher education. In state-owned universities across Southwest Nigeria, the implementation of digital library systems is viewed as a strategic move to address the growing demand for timely and remote access to scholarly materials. However, despite this recognition, the long-term sustainability of these digital systems

is severely threatened by significant challenges in digital preservation and access. Many of these institutions face persistent issues such as inadequate funding, poor ICT infrastructure, lack of skilled manpower, weak institutional policies, and inconsistent power supply (Oyedokun and Omotayo, 2022; Edewor, et. al., 2023). Consequently, digital resources are often poorly curated, inadequately backed up, and vulnerable to technological obsolescence and data loss. Moreover, access to these resources is frequently hampered by limited bandwidth, incompatible platforms, and insufficient user training, thus widening the digital divide within the academic community (Ifijeh, et. al., 2020).

While studies have highlighted some of these issues independently, there is a dearth of comprehensive research that critically investigates both the preservation and access dimensions in the specific context of state-owned universities in Southwest Nigeria. Without a holistic understanding of these interrelated challenges, institutions may continue to invest in digital infrastructure without achieving the intended outcomes of long-term preservation and equitable access. This study, therefore, seeks to address this gap by examining the core challenges hindering effective digital preservation and access in these universities, and by identifying viable, context-sensitive solutions that align with both global standards and local realities.

Objectives of the Study

The primary objective of this study is to investigate the challenges and propose solutions related to digital preservation and access in digital libraries of state-owned universities in Southwest Nigeria. Specifically, the study aims to:

i. Identify the current preservation practices in state-owned university libraries in Southwest Nigeria.
ii. Examine the major challenges affecting digital preservation and access to digital resources in these institutions.
iii. Assess the level of accessibility and usability of digital library resources among staff and students.
iv. Evaluate the institutional policies, infrastructure, and human resources supporting digital library operations.

Research Questions

To guide the study, the following research questions are formulated:

i. What digital preservation strategies are currently in use in the digital libraries of state-owned universities in Southwest Nigeria?
ii. What are the major challenges affecting the preservation and accessibility of digital resources in these institutions?
iii. How accessible and user-friendly are the digital library systems for the academic community (students, staff, and researchers)?
iv. What institutional policies, technological infrastructure, and human capacities are in place to support digital preservation and access?
v. What solutions can be adopted to enhance sustainable digital preservation and improve access to digital resources in state-owned university libraries?

Literature Review

i. Conceptual Reviews

Digital libraries are repositories that provide access to digital content, including e-books, journals, theses, audio-visual materials, and institutional records. Ifijeh, et. al (2020) averred that they play a crucial role in the academic ecosystem by facilitating knowledge dissemination and long-term preservation of scholarly works. According to UNESCO (2022), digital preservation refers to the processes and strategies involved in ensuring that digital information remains accessible and usable over time, regardless of the obsolescence of hardware or software platforms. Digital preservation is not merely a technical concern but also encompasses organizational, legal, and policy considerations necessary for safeguarding intellectual capital.

In academic libraries globally, digital preservation practices include the use of institutional repositories, cloud storage, metadata standards, and migration techniques to protect digital assets (Ayeni and Adetimirin, 2024). However, studies reveal that these practices are inconsistently implemented in many developing countries due to infrastructural and financial

limitations. In the Nigerian context, Edewor, et. al (2023) and Oladokun and Okebukola (2021) opined that university libraries often lack adequate funding and skilled personnel required to deploy and manage effective digital preservation systems. As a result, the digital assets they house are at high risk of loss or obsolescence.

Several challenges impede digital preservation and access in state-owned university libraries in Nigeria. Oyedokun and Omotayo (2022) postulated that these include unreliable electricity supply, poor internet connectivity, obsolete hardware, and insufficient storage infrastructure. Moreover, Ogbomo and Egunjobi (2023) noted that there is often a lack of institutional policies guiding digital preservation, leading to fragmented or non-existent practices. From the user perspective, access is also constrained by limited digital literacy among library patrons and inadequate user support systems, which reduce the usability and reach of digital library platforms (Ifijeh, et. al., 2020). Additionally, many digital libraries in Nigeria rely on donor-funded projects or proprietary platforms that are difficult to sustain long-term. The lack of interoperability between systems and non-adherence to international metadata standards further complicate access and data retrieval (UNESCO, 2022). These limitations collectively weaken the role of digital libraries in supporting research, teaching, and learning.

Effective digital preservation and access require robust institutional support, including well-defined policies, committed leadership, and continuous professional development for library staff. However, for Oladokun and Okebukola (2021), most Nigerian university libraries operate without a clear digital preservation policy or disaster recovery plan. A study by Ezeani and Eke (2022) found that even when policies exist, they are not adequately implemented due to resource constraints and lack of administrative will. Globally, institutions adopt frameworks such as the Open Archival Information System (OAIS) model to structure digital preservation strategies. In contrast, most Nigerian institutions are yet to implement such models, highlighting a critical gap in policy adaptation and technological investment (Ayeni and Adetimirin, 2024).

To overcome the existing challenges, researchers have proposed a variety of strategies, including the development of open-source digital library platforms, staff training in digital curation, improved ICT infrastructure, and advocacy for sustainable funding (Edewor, et. al., 2023; Oyedokun and Omotayo, 2022). Collaborative efforts, such as inter-university digital preservation

networks and public-private partnerships, have also been recommended to pool resources and share best practices. Furthermore, institutions are encouraged to adopt metadata standards like Dublin Core and preservation tools like LOCKSS (Lots of Copies Keep Stuff Safe) and CLOCKSS, which ensure redundancy and protect against data loss (UNESCO, 2022). Locally, contextualizing global models to fit Nigeria's socio-economic and technological environment is essential for the effectiveness of such interventions.

ii. Empirical Reviews

Empirical studies in the Nigerian context have consistently shown that digital preservation practices are underdeveloped and inconsistent across university libraries. For instance, Ifijeh, et. al (2020) conducted a survey of academic libraries in Southwest Nigeria and found that while most institutions had started digitizing resources, very few had formal preservation strategies. The majority relied on ad hoc methods such as saving files on CDs, flash drives, or local servers without routine backup procedures. These practices leave digital content vulnerable to corruption, hardware failure, and obsolescence. Similarly, Ayeni and Adetimirin (2024) used a mixed-method approach to assess digital preservation strategies in six Nigerian universities. Their findings revealed that although librarians understood the importance of digital preservation, implementation was weak due to poor funding, lack of standards, and minimal training.

Several studies have empirically established the challenges that inhibit effective digital preservation and access in Nigerian university libraries. Oyedokun and Omotayo (2022) employed a descriptive survey of librarians in public universities in Southwest Nigeria and identified critical challenges such as inadequate ICT infrastructure, erratic power supply, and absence of institutional digital preservation policies. Their findings showed that 82% of respondents rated their libraries' preservation infrastructure as "poor," and 76% had not received formal training in digital archiving. In another study, Ogbomo and Egunjobi (2023) investigated the correlation between institutional policy absence and digital content loss. Using regression analysis, the study found a significant relationship ($p < 0.05$) between poor policy implementation and frequent data loss incidents in university libraries. The authors argued that institutional neglect, rather than technological unavailability, was the dominant barrier.

Edewor, et. al (2023) conducted a user-experience study involving 450 students and staff across three state-owned universities in Southwest Nigeria. Their results indicated that 68% of users found digital libraries difficult to navigate, and only 27% accessed digital resources regularly. Common issues included slow loading times, login errors, and confusing interfaces. The authors recommended the redesign of digital platforms with user-centered design principles and better bandwidth allocation. Another empirical work by Okoro and Lawal (2021) highlighted that students' digital literacy significantly influenced digital library usage. A correlation analysis revealed that students with moderate to high digital skills were 2.5 times more likely to use digital library resources effectively compared to those with low digital skills. The authors emphasized the need for integrating digital literacy programs into university orientation activities.

Ezeani and Eke (2022) examined the extent of institutional support and staff preparedness for digital preservation in Nigerian universities. The study used interviews and document analysis and revealed that over 60% of university libraries lacked specialized staff in digital preservation. Furthermore, only two out of eight universities had an operational digital preservation policy. The study concluded that without strategic human capital investment, digital library systems would remain underutilized and unsustainable. Additionally, Ajibola and Usman (2023) used a cross-sectional survey to explore librarians' readiness for digital preservation tasks. Results showed that although 71% of respondents expressed willingness to adopt digital technologies, only 35% had received relevant training in the past two years. The authors highlighted a pressing need for regular workshops, certifications, and collaboration with ICT departments.

Empirical evidence also points toward possible solutions. For instance, Fagbohun and Udo (2021) implemented a pilot digital preservation program using DSpace in a state university and reported increased data security and access stability. Their experimental study demonstrated that integrating open-source tools, coupled with routine staff training, significantly improved preservation outcomes within six months. Likewise, Adebayo and Emeka (2023) conducted an impact assessment of consortium-based digital resource sharing in three Nigerian universities. The results showed improved resource availability, cost efficiency, and inter-institutional collaboration. The authors advocated for more government support and policy harmonization to enable wider adoption of such models.

Research Methodology

The study adopted the descriptive survey design, the study population comprise the 140 librarians in state-owned universities in Southwest Nigeria; using purposive sampling technique and a sample of 17 senior and experienced librarians; the study adopted structured interview to gather qualitative data from the respondents from the state-owned university libraries in Southwest Nigeria. The data were analysed using thematic content analysis.

Table 1: Study Population

State-owned University in Southwestern Nigeria	Number of Librarians	Librarians Interviewed
Adeleke Ajasin University, Ondo State	6	1
Bamidele Olomilua University of Sci & Tech, Ekiti State	7	1
Ekiti State University	24	2
First Technical University, Oyo State	4	1
Ladoke Akintola University of Tech, Oyo State	20	2
Lagos State University	17	2
Lagos State University of Sci & Tech	9	1
Olabisi Onabanjo University, Ogun State	15	2
Ondo State University of Medical Sciences	9	1
Ondo State University of Sci & Tech	7	1
Osun State University	9	1
Tai Solarin University of Education, Ogun State	13	2
Total	**140**	**17**

Presentation of Results and Discussion of Findings

1. What digital preservation strategies are currently in use in the digital libraries of state-owned universities in Southwest Nigeria?

The study revealed that most state-owned university libraries in Southwest Nigeria employ basic digital preservation strategies, such as periodic backups, use of external storage devices, and

limited use of cloud storage platforms. However, these practices are inconsistent and largely uncoordinated. Few libraries have adopted standardized preservation frameworks such as the Open Archival Information System (OAIS), and there is limited awareness of globally recognized preservation tools like LOCKSS or CLOCKSS. Moreover, metadata practices such as the application of Dublin Core or METS standards are rarely implemented systematically. These findings align with previous studies (Ayeni and Adetimirin, 2024; Ifijeh, et. al., 2020), which indicate that while there is an awareness of digital preservation needs, practical implementation remains poor due to lack of training, resources, and policy direction.

2. What are the major challenges affecting the preservation and accessibility of digital resources in these institutions?

The study identified several interrelated challenges. Chief among them are infrastructural deficits such as inadequate internet bandwidth, erratic power supply, and obsolete hardware and software. In addition, the absence of a dedicated budget line for digital preservation, lack of skilled ICT and library professionals, and institutional neglect of digital curation responsibilities exacerbate the situation. Participants noted that without centralized digital preservation policies or disaster recovery plans, valuable digital collections are at risk of corruption, loss, or inaccessibility. These challenges confirm the findings of Oyedokun and Omotayo (2022), who reported that technical and institutional limitations continue to undermine digital library systems in Nigerian universities.

3. How accessible and user-friendly are the digital library systems for the academic community (students, staff, and researchers)?

Findings suggest that although digital libraries have been deployed in most state-owned universities studied, actual access and usage levels are low. Students and faculty report difficulty accessing digital resources due to poor user interfaces, unreliable logins, frequent system downtime, and lack of awareness or orientation on how to use the platforms. The absence of mobile-friendly access and search functionalities further limits usability. Moreover, digital literacy among users varies widely, and most libraries do not provide regular training or user

support. These findings reinforce the conclusions by Ifijeh, et. al. (2020), who argue that effective access requires not only digital infrastructure but also user-centered design and continuous engagement.

4. What institutional policies, technological infrastructure, and human capacities are in place to support digital preservation and access?

The study found that institutional support structures for digital preservation and access are weak or non-existent. Most libraries operate without formal digital preservation policies or ICT governance frameworks. Where policies exist, they are either outdated or poorly implemented. Technological infrastructure remains largely underdeveloped, with several libraries relying on outdated servers and operating systems. Human capacity is another major gap: many staff members lack formal training in digital curation, metadata standards, or system administration. The findings reflect earlier work by Ezeani and Eke (2022), who noted that the lack of skilled professionals and policy enforcement is a key limitation to digital library sustainability in Nigeria.

5. What solutions can be adopted to enhance sustainable digital preservation and improve access to digital resources in state-owned university libraries?

Respondents proposed several practical and context-specific solutions. These include increased investment in ICT infrastructure, staff training in digital preservation technologies, development and enforcement of digital preservation policies, and stronger collaborations between university libraries and ICT departments. Some suggested forming regional consortia for resource sharing and capacity building. Others advocated for the adoption of open-source platforms, integration of international metadata and preservation standards, and inclusion of digital literacy in the university curriculum. These recommendations are consistent with global best practices highlighted by UNESCO (2022) and scholars like Ayeni and Adetimirin (2024), who call for strategic planning, policy formulation, and sustained funding as critical to digital preservation success in the Global South.

Conclusion

This study critically examined the current state of digital preservation and access in digital libraries across state-owned universities in Southwest Nigeria. Drawing from empirical data, it is evident that although many of these institutions have made modest strides in the digitization of information resources, the sustainability and reliability of these efforts remain largely compromised by systemic challenges. These include inadequate technological infrastructure, erratic power supply, poor funding, lack of institutional policies, and insufficient human capacity. Digital preservation, which is central to ensuring long-term access to scholarly resources, is still being implemented in fragmented and informal ways. Libraries often lack standardized preservation frameworks, fail to apply metadata standards consistently, and depend on outdated or fragile storage media. As such, valuable digital resources remain vulnerable to loss, degradation, or inaccessibility over time.

Furthermore, the usability and accessibility of digital library platforms are undermined by technical difficulties, poor user interfaces, and limited user training. The academic community, which comprise of students, researchers, and staff, are often unaware of the digital services available or are unable to use them effectively due to low digital literacy and a lack of institutional support mechanisms. Institutional commitment to digital library development is equally limited. Few universities have developed formal digital preservation policies or made long-term investment plans for upgrading infrastructure and training personnel. Where policies exist, they are either outdated or not enforced. This suggests a disconnect between the vision of sustainable knowledge access and the operational realities on the ground.

Despite these challenges, the study also revealed opportunities for progress. Solutions such as adopting open-source digital library software, forming regional consortia for resource sharing, investing in staff training, and integrating digital literacy into university curricula can significantly improve the situation. Moreover, strategic policy development, consistent funding, and partnerships with international preservation networks can help bridge the technological and institutional gaps. In conclusion, the long-term viability of digital libraries in state-owned universities in Southwest Nigeria hinges on a comprehensive, policy-driven approach that recognizes digital preservation and access not merely as technical tasks, but as core components of academic continuity and scholarly communication. Addressing the identified gaps with

actionable solutions will be critical to transforming these libraries into resilient and inclusive knowledge environments capable of supporting research, teaching, and lifelong learning in the digital age.

Recommendations

Based on the findings and conclusions, the following recommendations are suggested:

i. Universities should standardize digital preservation practices by adopting internationally recognized frameworks such as the OAIS model and tools like LOCKSS or DSpace. Librarians and ICT staff should receive regular training on metadata standards, file migration, version control, and redundancy systems to ensure long-term content usability.

ii. University management and policymakers must address core infrastructural issues—such as poor power supply, internet access, and server capacity—through targeted investment and partnerships. A designated budget for digital library infrastructure and maintenance should be integrated into university planning.

iii. Libraries should improve the usability of digital platforms by deploying user-friendly interfaces, ensuring mobile compatibility, and providing multilingual or accessibility-friendly features. Additionally, regular digital literacy workshops for students and faculty should be institutionalized to promote resource usage and confidence in digital platforms.

iv. Each university should develop and implement a comprehensive digital preservation and access policy that defines responsibilities, technical requirements, and sustainability plans. Investment in staff development—particularly in digital librarianship and ICT—is crucial to building the internal capacity required to manage evolving digital systems.

v. Universities should consider forming regional consortia to share digital preservation infrastructure and expertise. Open-source platforms (e.g., Koha, Greenstone, DSpace) should be adopted to reduce costs and improve system flexibility. Furthermore, strategic collaborations with national and international bodies (e.g., UNESCO, IFLA) can help align local practices with global standards.

References

Adebayo, O., & Emeka, F. (2023). Consortium-based digital resource sharing and access enhancement in Nigerian universities: A case study. *Library Philosophy and Practice*, 1–15. https://digitalcommons.unl.edu/libphilprac/

Ajibola, T. S., & Usman, M. I. (2023). Librarians' readiness for digital preservation practices in selected Nigerian university libraries. *African Journal of Library, Archives and Information Science*, *33*(2), 102–114.

Ayeni, O. F., & Adetimirin, A. E. (2024). Strategies for sustainable digital preservation in Nigerian university libraries. *African Journal of Library, Archives and Information Science*, *34*(1), 56–68.

Edewor, N., Osayande, O., & Ogbebor, G. (2023). Infrastructural challenges in digital library implementation in public universities in Nigeria. *Library Philosophy and Practice*, 1–12. https://digitalcommons.unl.edu/libphilprac/

Ezeani, C. N., & Eke, H. N. (2022). Policy frameworks for digital preservation in Nigerian academic libraries: Gaps and prospects. *Nigerian Libraries*, *56*(1), 72–84.

Fagbohun, A. A., & Udo, E. O. (2021). Pilot implementation of DSpace for digital preservation in a Nigerian university: An assessment of outcomes. *International Journal of Digital Library Systems*, *12*(2), 44–58.

Ifijeh, G., Ilogho, J. E., & Yusuf, F. (2020). Digital libraries and digital preservation practices in Nigerian academic institutions. *Information Development*, *36*(4), 546–555. https://doi.org/10.1177/0266666920908225

Ogbomo, M. O., & Egunjobi, R. A. (2023). Digital preservation strategies and challenges in Nigerian university libraries. *Nigerian Libraries*, *56*(2), 41–53.

Okoro, C. O., & Lawal, A. M. (2021). Digital literacy and the use of digital library resources among students in selected Nigerian universities. *Information Impact: Journal of Information and Knowledge Management*, *12*(1), 78–90.

Oladokun, O. S., & Okebukola, P. A. (2021). The role of digital libraries in knowledge access and preservation in Nigeria. *International Journal of Library and Information Science Studies*, *7*(2), 22–34.

Oyedokun, T. T., & Omotayo, B. O. (2022). Barriers to effective access to digital library resources in public universities in Southwest Nigeria. *Journal of Applied Information Science and Technology*, *15*(2), 88–99.

UNESCO. (2022). Guidelines for the preservation of digital heritage. *United Nations Educational, Scientific and Cultural Organization*. https://unesdoc.unesco.org/