Digital Transformation and the Future of Library Services in Nigeria

Abu, Isa Omali (CLN, PhD)
University Library Services
Federal University of Technology, Minna
isaomali@futminna.edu.ng

Abstract

Digital transformation is reshaping how libraries organise knowledge, support learning, preserve cultural heritage, and engage their communities. In Nigeria, its significance extends beyond acquiring electronic resources to redesigning services, professional competencies, institutional policies, and relationships with users. This article examines the implications of digital transformation for the future of Nigerian library services through a narrative review of selected Nigerian and African scholarship, professional conference publications, and international policy documents. It focuses particularly on literature published between 2023 and 2026. The discussion identifies opportunities in remote access, institutional repositories, artificial intelligence, digital literacy, research support, and the preservation of community knowledge. It also examines persistent constraints involving infrastructure, funding, staff development, accessibility, and institutional governance. Evidence from Nigeria, Ghana, and South Africa suggests that technological investment yields limited benefits when organisations overlook organisational readiness and user needs. The article proposes a phased approach that connects infrastructure and workforce development with inclusive service design, responsible innovation, and measurable outcomes. It concludes that Nigerian libraries' future relevance will depend on their ability to provide reliable, equitable, and trusted access to knowledge across physical and digital environments.

Keywords: Digital transformation, library services, Nigeria, African libraries, artificial intelligence, digital inclusion

Introduction

Libraries occupy an important position in Nigeria's educational, cultural, and information systems. Their responsibilities include supporting teaching and research, encouraging reading, preserving documentary heritage, and enabling informed participation in society. Digital technologies are changing how libraries fulfil these responsibilities. Online catalogues, electronic databases, institutional repositories, virtual reference platforms, and artificial intelligence applications offer opportunities to extend services beyond library buildings.

However, technological availability does not automatically produce effective access. In their review of digital resources and services in Nigerian public university libraries, Idhalama et al. (2025) identify ongoing difficulties related to infrastructure, funding, and user awareness. Their discussion highlights a central concern: an institution may acquire digital resources without ensuring that its intended users can discover, access, and use them effectively.

Recent professional discussions also demonstrate the relevance of this issue. The Nigerian Library Association's (NLA, 2024) 62nd annual conference addressed diversity and inclusiveness through innovative service delivery. Its 63rd conference subsequently focused on the Fifth Industrial Revolution and the future of library and information services (NLA, 2025). These themes place inclusion and technological change at the centre of the profession's contemporary agenda. They do not, by themselves, establish the extent of implementation across Nigerian libraries.

This article examines how Nigerian libraries can translate digital investment into reliable and inclusive services. It aims to distinguish digital transformation from digitisation and automation, assess recent evidence from

Nigeria and Africa, and propose priorities for sustainable implementation. The central argument is that service outcomes depend on coordinating technology, professional capacity, institutional governance, and users' circumstances. It contributes a practice-oriented synthesis that links resource availability, organisational readiness, and operational workflows to a sequence of service decisions. It asks which conditions to address before expansion and how libraries can assess whether a digital initiative improves access.

Review Approach and Scope

This article is a narrative review and conceptual discussion of selected scholarly publications, official policy documents, and professional association sources. It concentrates on Nigerian and African scholarship published from 2023 to 2026 and includes earlier policy documents where they inform inclusion, open scholarship, and personal data governance. The sources are selected for their relevance to service delivery and institutional readiness; the review is interpretive rather than comprehensive.

The synthesis organises the selected literature around resource access, organisational readiness, operational workflows, inclusion, and emerging technologies. Empirical studies inform descriptions of the institutions or participants examined; reviews provide secondary interpretations; policy documents establish normative directions; and conference themes indicate professional priorities. These source types are not treated as equivalent evidence of service improvement. The review does not provide an exhaustive search or formal quality appraisal and cannot establish national adoption rates or causal effects. Its evidence base is weighted towards academic libraries, so implications for public, school, and special libraries are proposals requiring local assessment.

Understanding Digital Transformation in Libraries

Digital transformation involves a sustained change in how an organisation creates and delivers value through digital technologies. In libraries, it extends beyond converting printed documents into electronic files or automating existing procedures.

Three related processes are useful to distinguish. Digitisation converts analogue materials into digital formats. Digitalisation uses technology to improve activities such as circulation, cataloguing, and reference services. Digital transformation connects these developments to broader changes in institutional strategy, staffing, service design, and evaluation.

For example, scanning theses constitutes digitisation. Providing an online platform that lets users search and retrieve them constitutes digitalisation. Establishing coordinated deposit procedures, rights management, preservation arrangements, researcher support, and discoverability measures represents a broader transformation of scholarly communication.

A socio-technical perspective helps explain these relationships. In their comparative study of selected Ghanaian and South African academic libraries, Darko Adjei and King (2024) link technological readiness to organisational and human factors. Applied to Nigeria, this perspective suggests that an effective digital library requires alignment among infrastructure, professional competence, institutional procedures, and users' circumstances.

Digital transformation should therefore be assessed through improvements in service quality and public value. Procurement and digitisation counts indicate activity, but they do not show whether users can locate relevant materials, access them reliably, or complete information tasks successfully.

Recent Nigerian and African Evidence

Developments in Nigeria

Recent Nigerian literature presents a mixed picture of opportunity and uneven readiness. Odunlade and Ojo (2023), examining selected university libraries in South-West Nigeria, report that digital transformation had not been fully embraced and identify funding and infrastructure as major constraints. Its focus

on selected institutions in one region limits national generalisation, but its findings highlight the organisational conditions surrounding technology adoption.

Idhalama et al. (2025) similarly identify a gap between providing digital resources and making them practically accessible. Their review supports a service-oriented understanding of transformation: digital collections require effective discovery systems, user education, dependable access, and continuing institutional support.

More recent evidence indicates that some Nigerian librarians show substantial interest in artificial intelligence. Odelami et al. (2026) surveyed 102 librarians associated with the 2024 NLA Information Technology Section Conference. They report high awareness of AI tools and favourable perceptions of their usefulness and ease of use for knowledge sharing. However, the conference-based group should not be treated as representative of all Nigerian librarians. Awareness and positive attitudes also do not establish successful institutional deployment.

Together, these studies suggest that willingness to innovate can coexist with implementation limitations. The practical challenge is to convert professional interest into dependable services supported by appropriate resources and policies.

Comparative African Evidence

Comparative African research reinforces the importance of organisational readiness. Darko Adjei and King (2024) studied four selected academic libraries across Ghana and South Africa. Although the South African institutions showed greater readiness, the study identified skills, policy, infrastructure, and budgetary challenges across all participating institutions. These findings caution against treating African libraries as a uniform technological environment.

Operational processes also deserve attention. Abrahams and Ngulube (2024) used interviews and observation involving 12 librarians in a South African academic library to examine electronic resource workflows. They identified needs for stronger staff knowledge and documented, streamlined procedures. This single case highlights operational bottlenecks but does not establish the scale of any improvement transferable to Nigerian institutions.

At the continental level, Nkomo and Matli (2025) synthesise 13 studies on AI in African university libraries. Their review identifies financial constraints, limited awareness, and ethical concerns alongside opportunities for virtual assistance, resource discovery, and collection management. These findings offer comparative insight for Nigeria, but recommendations require adaptation to local mandates, resources, and user populations.

Taken together, the reviewed studies distinguish three issues that should remain separate in policy decisions: access to technology, readiness to use it, and evidence of better services. Nigerian reviews emphasise access and resource constraints; the Ghanaian and South African comparison highlights organisational readiness; and the South African workflow study demonstrates the importance of operational procedures (Abrahams & Ngulube, 2024; Darko Adjei & King, 2024; Idhalama et al., 2025). This synthesis supports a phased strategy in which service reliability and staff capability develop alongside technological investment.

Emerging Directions for Library Services in Nigeria

Remote and Hybrid Access

Future services should let users move easily between physical and digital environments. A student may consult a librarian in person, retrieve an electronic article remotely, and return to the library for research guidance. Service design should support this continuity. Academic libraries can prioritise searchable catalogues, dependable remote access to licensed resources, online consultations, and clear guides. Public libraries can combine reading spaces and lending services with digital learning support and assisted access to online information.

Mobile-friendly interfaces and low-bandwidth options deserve particular attention. Large files, complicated

registration procedures, and inaccessible web pages can restrict the usefulness of otherwise valuable resources. Downloadable guides, compressed documents, and clearly stated access requirements offer practical improvements.

Institutional Repositories and Open Scholarship

Repositories can strengthen the visibility and preservation of Nigerian research. Their value depends on consistent deposit practices, accurate metadata, rights clearance, and continuing maintenance.

UNESCO's (2021) Recommendation on Open Science provides a broader framework for improving access to and sharing of scientific knowledge. Within this framework, Nigerian academic libraries can expand support for open-access publishing, repository deposits, research data documentation, and responsible sharing.

Libraries should also help researchers distinguish credible publication opportunities from misleading solicitations. Such support requires collaboration among librarians, research offices, academic departments, and institutional leadership.

Open access must be implemented responsibly. Confidential information, restricted research data, and materials without appropriate permissions require controlled handling. Repository policies should clarify what may be shared, under what conditions, and by whom.

Artificial Intelligence and Professional Mediation

AI offers possible applications in routine enquiries, metadata suggestions, search assistance, translation, and information organisation. Libraries should select applications in response to clearly defined service problems and evaluate them against existing alternatives. Selection should consider the quality of available information, staff capacity to review outputs, and ongoing operating costs.

For example, a library considering a chatbot should specify the enquiries it may answer, the approved information sources it should use, and when users must be referred to a librarian. Evaluation should assess accuracy, accessibility, response quality, and how it handles personal information.

Miao and Holmes (2023) advocate a human-centred approach to generative AI in education and research. For libraries, this supports professional oversight and critical assessment of generated content. Librarians should verify suggested references, monitor misleading responses, and explain the limitations of AI-assisted services.

The positive attitudes reported by Odelami et al. (2026) support carefully designed training and experimentation. They should not be interpreted as evidence that all libraries are ready for large-scale AI deployment. Training should distinguish personal experimentation from institutional approval for processing user information or providing automated advice.

Digital Information and AI Literacy

Libraries can help users develop the skills needed to participate meaningfully in digital environments. These skills include effective searching, source evaluation, privacy awareness, reference management, and the responsible use of AI-generated information.

Instruction should be linked to practical tasks. Undergraduate students may need help evaluating sources and tracing references. Researchers may require guidance on data management and publication choices. Public library users may benefit from support with online applications and identifying deceptive information.

The IFLA–UNESCO Public Library Manifesto identifies information and digital literacy, equitable access, and lifelong learning as important library responsibilities (International Federation of Library Associations and Institutions [IFLA] & UNESCO, 2022). Nigerian libraries can translate these principles into programmes suited to their communities.

Preservation of Nigerian Knowledge and Cultural Heritage

Digital transformation also creates opportunities to document local histories, oral

traditions, community publications, and indigenous knowledge. Such collections can increase the visibility of Nigerian experiences that are underrepresented in mainstream information systems.

Preservation initiatives should involve the communities whose knowledge is being documented. Communities should be consulted on decisions about consent, description, attribution, access, and reuse. Some materials may be suitable for open publication, while others may require restricted access.

Scanning alone does not secure long-term preservation. Libraries also need organised storage, descriptive metadata, integrity checks, multiple copies, and plans for changing file formats and technologies. Preservation responsibilities should be assigned and funded throughout the life of a collection.

Constraints and Governance Priorities

Infrastructure and Sustainable Funding

Digital services require recurring expenditure on connectivity, electricity, maintenance, security, subscriptions, and equipment replacement. Funding arrangements that concentrate on initial procurement can leave libraries unable to sustain services.

Library budgets should therefore account for total ownership costs. Open-source systems may reduce licence expenditure, but they still require technical support, hosting, staff development, and maintenance. Shared services may be appropriate where institutions can establish clear responsibilities and sustainable funding arrangements.

Nigeria's National Digital Economy Policy and Strategy identifies digital literacy, infrastructure, and indigenous content among its priorities (Federal Ministry of Communications and Digital Economy, 2019). Library development can contribute to these objectives through practical access and learning services.

Workforce Development and Leadership

Professional development should extend beyond occasional workshops. Libraries need ongoing opportunities for supervised practice, peer learning, and applying new skills to real services.

Training priorities may include electronic resource management, metadata, accessibility, repository administration, cybersecurity awareness, and AI evaluation. Responsibilities should reflect institutional size: smaller libraries may depend on shared expertise, while larger institutions may support specialist roles.

Leadership must also provide time, incentives, and clear expectations. Staff participation in planning can help identify operational difficulties and improve the adoption of new procedures.

Inclusion, Privacy and Trust

An inclusive assessment of digital transformation should consider users who face the greatest barriers. These may include people with disabilities, users with limited connectivity, individuals without personal devices, and those with limited digital confidence.

Libraries should retain assisted access while improving digital provision. Procurement and service design should consider accessible documents, keyboard navigation, readable interfaces, and appropriate language support.

Privacy is equally important. Borrowing records, search histories, registration details, and reference enquiries can reveal sensitive interests. The Nigeria Data Protection Act 2023 provides the national legal context for personal data processing (Federal Republic of Nigeria, 2023). Libraries should establish appropriate access controls, retention arrangements, privacy information, and procedures for reviewing external service providers.

A Phased Framework for Implementation

Nigerian libraries can adopt a phased approach that matches ambition to institutional capacity.

The phases below are proposed decision stages rather than a fixed timetable or an empirically validated model. Institutions may revisit earlier stages when funding, staffing, or user needs change. Table 1 translates the

stages into responsibilities and observable checks; local targets should be agreed after the baseline assessment.

First, establish a service baseline. The library management team should work with staff and users to assess infrastructure, professional skills, accessibility, expenditure, and recurring service failures. A student's ability to retrieve a required article or a public library user's ability to complete an online application can provide practical starting points. The assessment should produce a ranked list of service needs, named responsibilities, and realistic resource requirements.

Second, strengthen essential services. Library and information technology staff should improve catalogue accuracy, connectivity, access instructions, user support, and the reliability of existing electronic resources. Budget decisions should include recurring maintenance and replacement costs. Assess progress against the baseline before introducing additional platforms.

Third, integrate workflows and responsibilities. Library managers should connect acquisition, description, discovery, user support, and preservation through documented procedures. Assign responsibility for maintenance, training, privacy, and evaluation explicitly. Shared services require agreements covering funding, technical support, access rights, and continuity if a participating institution withdraws.

Fourth, pilot emerging services. Libraries should test AI applications or other innovations on a manageable scale, with defined users, approved information sources, and a route to professional assistance. Success criteria should cover accuracy, accessibility, user benefit, staff effort, and cost. Expansion should depend on demonstrated value and resolving problems identified during the pilot.

Finally, evaluate and revise. Library management should review successful resource access, enquiry resolution, service availability, user task completion, accessibility, and demonstrated learning. Interpret usage figures alongside user feedback and the experiences of underserved groups. An increase in visits or downloads may indicate engagement, but it does not by itself demonstrate improved learning or research quality.

Table 1: Proposed implementation stages and evaluation checks

Stage	Suggested lead	Evidence for the next decision
Assess needs	Library management with users	Record baseline access tests, accessibility barriers, staff skills, and recurring costs.
Stabilise services	Library systems and IT teams	Repeated task tests show reliable access; support and maintenance responsibilities are assigned.
Integrate workflows	Service managers	Document and use deposit, discovery, support, privacy, and preservation procedures.
Pilot innovations	Service lead with IT and governance staff	Predefined tests assess accuracy, access, user benefit, staff effort, and operating cost.
Review and adapt	Library management with user representatives	Compare results and costs with the baseline; justify expansion, redesign, or closure.

For example, successful access can be measured as completed retrievals divided by attempted retrievals in an agreed task test. Enquiry resolution can be assessed through anonymised service records and user confirmation. Accessibility should combine interface checks with voluntary user testing. Report the observation period and denominator, minimise personal data collection, and examine differences between user groups where participation and privacy arrangements permit. These indicators assess service delivery; they do not by themselves establish improvements in learning or research quality.

The NLA can support this process through shared training materials, professional guidance, and conference sessions that report implementation outcomes. Building on the inclusion and innovation themes of its recent conferences, the association could encourage institutions to document costs, difficulties, and lessons alongside successful projects (NLA, 2024, 2025).

Research Priorities and Limitations

The selected literature supports a reasoned implementation proposal, but its heterogeneous designs do not permit a pooled estimate of effectiveness. The narrow source base, emphasis on academic libraries, and selective review approach may underrepresent unsuccessful projects and settings with limited publication capacity. These limitations restrict both generalisation and claims about future outcomes.

Future Nigerian research should extend beyond measuring awareness and attitudes towards technology. More longitudinal and comparative studies are needed to establish whether digital initiatives improve access, learning, research support, and service efficiency.

Public and school libraries also require greater attention. Evidence drawn predominantly from universities cannot adequately explain the needs of children, rural communities, informal learners, and other public library populations.

Collaboration among African institutions could support comparative research, shared training, and the exchange of practical experience. Such cooperation should examine contextual differences rather than assume that an approach successful in one institution will transfer unchanged to another.

Conclusion

Digital transformation offers Nigerian libraries an opportunity to extend access, strengthen research support, preserve local knowledge, and develop new forms of community engagement. Recent Nigerian and African evidence nevertheless shows that these benefits depend on more than technological acquisition.

Dependable infrastructure, sustainable funding, professional competence, inclusive design, and trustworthy governance will shape the future of library services in Nigeria. Institutions should begin with demonstrable access problems, strengthen core services, and expand innovations when evaluation supports them. The proposed phased approach offers a practical direction rather than a validated model; its effectiveness requires testing across different library settings. Progress should ultimately be judged by whether people can obtain, understand, and use information more effectively.

References

Abrahams, R., & Ngulube, P. (2024). Using lean concepts to enhance electronic resource workflows and operations at an academic library in South Africa. *Journal of Electronic Resources Librarianship, 36*(3), 177–189. https://doi.org/10.1080/1941126X.2024.2383519

Darko Adjei, N., & King, L. (2024). Academic libraries' readiness in the Fourth Industrial Revolution: A comparative study between Ghana and South Africa. *Library Management, 45*(8–9), 581–596. https://doi.org/10.1108/LM-03-2024-0034

Federal Ministry of Communications and Digital Economy. (2019). *National digital economy policy and strategy (2020–2030)*. https://nitda.gov.ng/wp-content/uploads/2020/06/National-Digital-Economy-Policy-and-Strategy.pdf

Federal Republic of Nigeria. (2023). *Nigeria Data Protection Act, 2023*. https://www.ndpc.gov.ng/ndp-act-2023/

Idhalama, O. U., Oredo, J. O., & Makori, E. O. (2025). Evaluating the availability and accessibility of digital resources and services in public university libraries in Nigeria. *Alexandria: The Journal of National and International Library and Information Issues, 35*(1–2), 89–103.

https://doi.org/10.1177/0955749025133 5954

International Federation of Library Associations and Institutions, & UNESCO. (2022). *IFLA–UNESCO public library manifesto 2022*. https://repository.ifla.org/bitstreams/d41 4c76e-17ef-4581-9c0f-cc6e250a2743/download

Miao, F., & Holmes, W. (2023). *Guidance for generative AI in education and research*. UNESCO. https://www.unesco.org/en/articles/guid ance-generative-ai-education-and-research

Nigerian Library Association. (2024). *Proceedings of the 62nd Nigerian Library Association conference on promoting diversity and inclusiveness through innovative library and information service delivery in Nigeria, Port Harcourt, 7th–12th July, 2024.* https://nla.org.ng/pub/proceedings-of-the-62nd-nigerian-library-association-conference

Nigerian Library Association. (2025). *Proceedings of the 63rd Nigerian Library Association conference on the 5th Industrial Revolution and the future of library and information service delivery in a changing world, Benin City, 6th–11th July, 2025* (Vol. 2). https://nla.org.ng/pub/proceedings-of-the-63rd-nigerian-library-association-conference-vol-2

Nkomo, S., & Matli, W. (2025). Adoption of artificial intelligence for library services at universities in Africa: Are we there yet? *South African Journal of Libraries and Information Science, 91*(2), 1–12. https://doi.org/10.7553/91-2-2469

Odelami, B. J., Ebhonu, S. I., Oradugba, F. L., & Usman, A. I. (2026). Librarians' propensity to use AI technologies for knowledge sharing in Nigeria based on the Technology Acceptance Model. *Alexandria: The Journal of National and International Library and Information Issues*. Advance online publication. https://doi.org/10.1177/0955749025141 4717

Odunlade, R. O., & Ojo, J. O. (2023). Digital transformation and service delivery in academic libraries: A post-COVID-19 approach. *Lokoja Journal of Information Science Research, 1*(1), 41–59. https://ir.unilag.edu.ng/handle/12345678 9/13173

UNESCO. (2021). *Recommendation on open science*. https://www.unesco.org/en/legal-affairs/recommendation-open-science