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The Role of Academic Library Support in Digital Transformation at Federal Polytechnic Kaltungo

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Abstract

Digital transformation is reshaping academic library operations, information access, research support and learning. For newly established institutions, however, the transition may begin from predominantly manual library operations and progress gradually as infrastructure, staffing and institutional capacity develop. This study examines the role of Federal Polytechnic Kaltungo Library in supporting research and learning during this transition, with particular attention to electronic-resource services, user-support strategies, implementation challenges and future readiness. The study adopts a qualitative institutional case-study approach based on the authors' firsthand professional observations and experiences as library staff, complemented by relevant library and institutional documentation from the establishment of the Polytechnic in 2021 to date. This study highlights that the Federal Polytechnic Kaltungo Library has a dedicated building, print and electronic information resources, user-education activities and academic-support practices. Yet, it relies on predominantly manual procedures in some of its operations. Although computers, projectors and other electronic equipment are available, unreliable electricity and the absence of internet connectivity within the library limit their effective and sustained utilisation, thereby delaying the full implementation of library automation. Library staff continue to support research and learning through sensitisation, orientation, departmental collaboration, and assignment support. The study argues that we should understand digital transformation as a phased institutional process rather than merely acquiring electronic resources.

Keywords: *Academic libraries, Digital transformation, Electronic resources, Library automation, Research support*

1. Introduction

Academic libraries have moved beyond their traditional role of collecting, organising, preserving and lending print resources (Ajegbomogun and Ajegbomogun, 2015; Jain, 2013). Contemporary academic libraries are increasingly expected to provide electronic resources, support information discovery, develop users' information competencies and assist students and academic staff with research and learning. Digital transformation therefore affects not only the technologies used by libraries but also how library staff design, deliver and evaluate services.

For a newly established academic institution, digital transformation may not begin with a fully automated library. It can begin with manual cataloguing, circulation, user registration, borrower records and other basic procedures, followed by the gradual introduction of electronic resources and ICT-supported services. The experience of Federal Polytechnic Kaltungo Library illustrates this transitional pathway.

The Polytechnic was established in 2021, and the library has developed alongside the institution. A dedicated library building was constructed in 2023. Since its establishment, the library has combined conventional print-based services with emerging electronic resources and user-support activities.

The transition from a predominantly manual system to a digitally supported library is affected by infrastructure and institutional conditions. Reliable electricity, ICT equipment, connectivity, appropriate software, staff competencies,

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user awareness and institutional commitment are all necessary. Recent Nigerian research found that ICT deployment in an academic library was constrained by erratic power supply, inadequate funding and insufficient ICT skills, while recommending stable electricity, staff training and increased investment (Mesagan & Hossana, 2025).

At Federal Polytechnic Kaltungo Library, unreliable electricity is a particularly important constraint. Although electronic materials are available, interruptions in electricity supply limit the consistent operation of computers and other ICT-dependent facilities. Consequently, manual procedures remain necessary for several library activities. Rather than viewing the manual system as evidence of failure, this study considers it part of a transitional institutional environment in which manual and digital services coexist. The central issue is therefore how an emerging academic library can support research and learning while progressively preparing its systems, staff and users for fuller digital transformation.

Library staff have adopted practical measures to maintain academic support during this transition. These include lecture-room sensitisation, user orientation, promotion of available resources, encouraging academic departments to submit relevant lecture notes and past examination question papers, and directing students to library resources for assignments and reference work. These practices connect the library to classroom activities and provide a service bridge between the existing manual environment and the library's emerging digital capacity.

It is against backdrop, this study seeks to examine the role of Federal Polytechnic Kaltungo Library in supporting research and learning during the transition from predominantly manual operations towards digital transformation. Therefore, this study examines the Federal Polytechnic Kaltungo Library's digital transformation by assessing its role in supporting research, evaluating the implementation and accessibility of electronic services, analysing user engagement strategies, and identifying challenges to determine its readiness for sustainable digital services.

2. Literature Review

Digital transformation in academic libraries involves more than converting print materials into electronic formats. It can include automation of library operations, electronic-resource provision, digital information services, online discovery, digital literacy and the reorganisation of services around changing user expectations. Borgman (2025) describes digital libraries in terms that encompass automation, online catalogues, information retrieval systems, multimedia databases and other digital information infrastructures. In this sense, a library can possess electronic resources while still remaining partly manual if its core workflows, access mechanisms and service environment have not been adequately transformed.

Emerging technologies can improve the efficiency and reach of academic library services, but their adoption requires organisational readiness. Agboke and Oladokun (2025) identified some of the emerging technologies, such as automated systems and other emerging technologies, as having potential to transform Nigerian academic library services while noting implementation challenges. For a developing institution, therefore, technology adoption should be phased and matched to available infrastructure, staff capacity and institutional priorities.

Human capacity is central to digital transformation. Nakaziba and Ngulube (2025) found that mentorship, collaboration, networking and short courses support continuing professional development for academic librarians in Africa, while formal training policies and dedicated funding remain gaps. Adewojo and Adewojo (2026) similarly show that electronic-resource management requires technical, interpersonal and digital competencies and that continuous investment in staff skills is necessary to prevent skills obsolescence. Bentil and Liew (2024) further emphasise the importance of staffing competencies and collaboration in managing electronic resources and supporting electronic-resource workflows in academic libraries.

Okwu et al. (2023) emphasised awareness and perceptions in maximising electronic-resource use among Nigerian university students, while Salah et al. (2024) recommended regular awareness programmes and training to improve e-resource utilisation in North-East Nigeria. User education therefore provides an important bridge between resource availability and meaningful academic use.

Adewojo and Adewojo (2026) found that staff competencies are an important form of infrastructure for effective electronic-resource management in Nigerian university libraries and emphasised continuous investment in adaptable skills. Nakaziba and Ngulube (2025) also identified mentorship, collaboration and short courses as important continuing professional development strategies for digital transformation in African academic libraries.

Electronic resources can widen access to scholarly information and support literature searching, assignments, independent learning and research. Recent research in federal university libraries in North-East Nigeria found that users accessed electronic resources for research, coursework and assignments and recommended continued user education and infrastructural investment (Salah et al., 2024). However, the availability of electronic resources does not by itself mean that a library has achieved digital transformation. Digital transformation also requires reliable access mechanisms, appropriate equipment, competent staff, user engagement and changes in workflow and service delivery.

3. Methodology

The study adopts a qualitative institutional case-study approach. The design is appropriate because the study examines digital library support within its actual institutional context rather than seeking statistical generalisation to all academic libraries.

The principal sources of evidence are the authors' firsthand professional observations and experience as library staff involved in the development and operation of the library from 2021 to date, complemented by relevant library and institutional documentation. The analysis focuses on research and learning support, the transition from manual to digitally supported operations, electronic-resource implementation and accessibility, user-awareness strategies, implementation challenges and future readiness.

The evidence is organised thematically around the four objectives. Particular attention is given to manual cataloguing and circulation practices, user registration and records, electricity, ICT equipment, staffing, staff development, user education, institutional support, electronic-resource accessibility, departmental collaboration and prospects for phased automation.

Because the present study does not include a completed questionnaire or interview dataset, Objective 3 is deliberately framed around the library's user-awareness and engagement strategies rather than making unsupported numerical claims about users' actual awareness, interest or utilisation. This approach avoids inventing user statistics and keeps the conclusions within the evidence available to the study.

4. Findings and Discussion

4.1 Library Support for Research and Learning During the Manual-to-Digital Transition

Federal Polytechnic Kaltungo Library supports research and learning through a combination of conventional library services and emerging digital-resource support. Since the establishment of the Polytechnic in 2021, the library has developed collection, reference, circulation, user-education and academic-support activities while retaining manual procedures for important operations. This transitional arrangement is significant because the library is not moving from an already automated system to a more advanced digital environment; rather, it is progressively building digital capacity from a predominantly manual foundation.

The manual-to-digital transition is visible in the coexistence of physical collections, manual workflows and electronic information resources. Manual cataloguing, circulation and user records remain relevant where power and ICT access are inconsistent, while electronic resources provide opportunities for broader scholarly information access. This hybrid environment enables the library to continue supporting users even when digital services cannot operate continuously.

The library has also connected its services with academic activities through lecture-room sensitisation, orientation, assignment support and collaboration with academic departments. Encouraging departments to submit students' final-year projects, lecture notes and past examination question papers and directing students to library resources for assignments strengthens the library's contribution to teaching and learning. These practices demonstrate that digital transformation does not remove the need for human guidance and physical library services; instead, digital and conventional services can complement each other during institutional transition.

4.2 Implementation and Accessibility of Electronic-Resource Services

The library has electronic information resources, providing a foundation for digital transformation. However, implementation is constrained by the conditions under which the resources are accessed. Unreliable electricity affects computers and other ICT-dependent facilities and can interrupt continuity of access. Thus, the presence of electronic materials should not be interpreted as evidence that the library has completed digital transformation.

Recent Nigerian evidence supports this finding. Mesagan and Hossana (2025) reported erratic power supply, inadequate funding and insufficient ICT skills as constraints on ICT deployment in a Nigerian academic library. Idhalama et al. (2025) likewise emphasised infrastructure, digital resources, user training and awareness as important components of effective digital-resource access. The Kaltungo experience therefore reflects a broader Nigerian challenge in which digital-resource availability can outpace the infrastructure required for dependable service delivery.

Accessibility also depends on equipment, connectivity and staff support. Although the library has computers, projectors and other electronic equipment, their effective and sustained utilisation is constrained by unreliable electricity supply and the absence of Internet connectivity within the library. Staff must also assist users in discovering relevant resources, resolving basic access problems and understanding scholarly information sources. Consequently, electronic-resource implementation should be planned as a service system involving resources, electricity, equipment, connectivity, staff support and user education.

4.3 User-Awareness and Engagement Strategies

The library uses sensitisation and orientation to introduce users to library resources and services. Lecture-room visits provide an opportunity to explain available resources, demonstrate appropriate library use and connect library services with students' academic activities. These activities are particularly important in a developing library because the availability of resources does not guarantee that students will know how or where to access them.

The library also promotes engagement through assignment-related guidance and by encouraging lecturers and Heads of Departments to direct students to relevant library resources. The collection of lecture notes and past examination question papers further increases the practical relevance of the library to students' immediate academic needs. These strategies represent low-cost service innovations that can be maintained even while ICT infrastructure is still developing. The findings are consistent with Okwu et al. (2023), who highlighted awareness as an important factor in e-resource use, while Salah et al. (2024) recommended awareness programmes and training in North-East Nigeria.

4.4 Implementation Challenges and Future Readiness

The major implementation challenge identified is unreliable electricity. Power interruptions affect digital equipment and make continuous electronic-resource access difficult. Constraints in the effective utilisation of available ICT equipment, staffing pressures, staff development needs and institutional support requirements compound the electricity problem. Staff may have to maintain manual operations while also attempting to introduce and support digital services, increasing operational pressure.

Human capacity is particularly important. The implication for Federal Polytechnic Kaltungo Library is that investment in digital transformation should include continuous staff development rather than one-time technology acquisition. This factor aligns with the observation of Nakaziba and Ngulube (2025) that stressed that continuing professional development supports digital transformation in African academic libraries. Similarly, Adewojo and Adewojo (2026) echoed that substantial emphasis is placed on technical, interpersonal and digital competencies for electronic-resource management in Nigerian universities.

Future readiness should therefore be understood as the capacity to sustain and expand digital information services as the Polytechnic grows. The present foundation includes a dedicated building, electronic resources, library staff, user-education activities and established manual workflows. The next stage requires dependable power, adequate and functional ICT infrastructure, Internet connectivity, staff development, structured user education, sustainable e-resource planning and phased automation.

Manual records and workflows should be standardised so that they can support eventual migration to an integrated library management environment. Staff can be trained progressively rather than waiting for complete automation. Similarly, user education can be embedded in orientation and academic activities so that awareness of e-resources grows alongside digital infrastructure. Future planning should also account for the library's limited physical space because digital services reduce some pressure on physical collections but do not eliminate the need for appropriate study, service and staff areas.

Overall, the Kaltungo experience suggests that digital transformation is a gradual institutional process. The library has initiated important elements of digital support, but the transition remains incomplete because the infrastructure and operational conditions necessary for sustained digital service delivery are still developing. The most appropriate strategy is therefore a phased transition in which manual and digital services complement one another until the infrastructure, workflows and human capacity required for broader automation are in place.

5. Conclusion

Federal Polytechnic Kaltungo Library has developed an emerging foundation for supporting research and learning while transitioning from predominantly manual operations towards digital information services. Since the establishment of the Polytechnic in 2021, the library has developed its physical environment, collections, electronic resources, staff capacity and user-oriented activities. The experience demonstrates that a newly established academic library can strengthen research and learning support while maintaining manual services and gradually developing the conditions required for broader digital transformation and automation.

The study also shows that electronic-resource availability should not be equated with complete digital transformation. Unreliable electricity, lack of Internet connectivity within the library, constraints in the effective utilisation of available ICT equipment, staffing pressures, staff development needs and institutional-support requirements constrain the consistency and scale of digital service delivery. These challenges are interconnected and require coordinated institutional responses.

Sensitisation, orientation, assignment support and collaboration with academic departments demonstrate that service innovation can continue despite infrastructural constraints. The long-term goal should be an integrated library environment in which existing manual services and emerging digital services are progressively coordinated, standardised and supported by appropriate automation as the necessary infrastructure and human capacity become available. With sustained institutional commitment and phased investment, Federal Polytechnic Kaltungo Library can strengthen its capacity to support research and learning in an increasingly digital academic environment.

6. Recommendations

Based on the findings of this study, this study recommends the following:

1) Strengthen Digital and Physical Infrastructure: Prioritise continuous power supply, stable internet connectivity, and physical space expansion alongside a phased digital-transformation roadmap.
2) Enhance Digital Services and Capacity Building: Develop a structured electronic-resource framework backed by continuous information literacy programs for users and specialised ICT training for staff.
3) Foster Academic Collaboration and Quality Assurance: Partner with faculty departments for institutional repository collection and implement systematic user-feedback loops to measure service utilisation.

7. Limitations of the Study

The study is based principally on the authors' firsthand professional observations and experiences as library staff involved in the development and operation of the library from 2021 to date, complemented by relevant library and institutional documentation. Although this insider perspective provides detailed contextual knowledge of the library's development and operations, it may introduce potential observer or insider bias. The study should therefore be understood as an institutional account rather than an independent external evaluation. The study also does not include

a structured questionnaire or interview dataset involving students and academic staff. Consequently, it does not make numerical claims about users' awareness, frequency of electronic-resource use or actual utilisation patterns. The findings relating to user awareness and engagement are therefore limited to the library's strategies and observed support activities. Future research should incorporate structured user data and usage statistics to complement the institutional evidence presented in this study. Finally, the study focuses on Federal Polytechnic Kaltungo Library and reflects its particular institutional, infrastructural and operational circumstances. The findings should therefore be interpreted within this context and should not be generalised automatically to other academic libraries without considering differences in infrastructure, funding, staffing, connectivity and institutional support.

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