

USE OF DIGITAL TECHNOLOGIES FOR PRESERVATION OF LIBRARY RESOURCES IN AKWA IBOM STATE UNIVERSITY.

BY

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Abstract

Purpose: This study examines the influence of digital technologies on the preservation of library resources in the Akwa Ibom State University Library, with a focus on digitization, cloud computing, and institutional repositories. Three research questions and three null hypotheses were formulated to guide the study. Specifically, the study sought to: determine the influence of digitization on the preservation of library resources in the Akwa Ibom State University Library; determine the influence of cloud computing on the preservation of library resources in the Akwa Ibom State University Library; and determine the influence of institutional repositories on the preservation of library resources in the Akwa Ibom State University Library.

Design/Methodology/Approach: The descriptive survey research design was adopted for the study. The population of the study comprised 76 library staff of the Akwa Ibom State University Library. Census sampling technique was adopted and questionnaire was used for data collection. 40 copies were retrieved and used for data analysis. Data were analyzed using mean and standard deviation to answer the research questions, while regression analysis was used to test the hypotheses.

Findings: The findings of the study revealed that digitization influences the preservation of library resources in the Akwa Ibom State University Library. On the other hand, cloud computing and institutional repositories have no significant influence on the preservation of library resources in the Akwa Ibom State University Library. The study also revealed that digitization could be used as a means of enhancing access by making information available to present and future users of the library.

Implication: The adoption of standardized digitization procedures and the prioritization of rare and high-demand materials for long-term preservation and accessibility.

Originality/Value: The study recommends that university libraries should address the shortage of skilled experts, improve internet connectivity for the effective implementation of cloud computing, and create awareness to encourage the use of institutional repositories.

Keywords: Digital Technologies, Libraries, Cloud Computing, Institutional Repositories, Digitization.

Paper type: Empirical research

Introduction

Libraries serve as knowledge hubs, preserving a vast collection of academic, cultural, and historical materials. The advent of digital technologies has revolutionized how libraries manage, store, and disseminate information resources (Atuase & Maluleka, 2022). As

academic institutions strive to maintain scholarly assets, digital technologies facilitate the long-term sustainability of knowledge repositories. Thus, the adoption of digital preservation methods within academic libraries fosters research development, knowledge accessibility, and effective resource management.

Library resources refer to various materials or resources which the library provides to support the information needs of its users. These resources can be physical or traditional print resources like books, journals, magazines, newspapers, maps and atlases. They could also be non-print, electronic or digital resources like E-books, online journals, online databases, digital archives or audio-books. According to Balogun and Adjei (2018), all library resources are organic in nature. This is because library resources come in different formats such as prints, electronic or non-print. Print resources like books, papers can easily deteriorate with time leading to loss of information as well as important documents in the library. Alex-Nmecha and Okoro (2020) maintain that information collections or resources are the priceless heritage of mankind. This is because they preserve facts, ideas, thoughts, accomplishments and evidence of the library. Odutola and Alegbeleye (2019) assert that information resources preserved in various libraries play an important role in the process of intellectual development, learning and research which expands users' perspectives in terms of learning, self-development and evaluation.

The role of digital technologies in preservation of library resources is indispensable, particularly in securing vital records and maintaining knowledge repositories. Preservation of library

resources entails maintaining and safeguarding information resources or data in the library against physical deterioration, environmental hazards, manhandling and obsolescence (Igbo & Imo, 2020). The significance of digital preservation extends beyond documentation; it ensures seamless retrieval, enhances accessibility, and fosters research continuity. Institutions that prioritize digital preservation benefit from enhanced efficiency, reduced storage costs, and improved content management.

With the advancement in digital technologies, Baro *et al* (2019) argue that libraries are able, not only to preserve materials but also to give remote access to preserved resources, ensuring that users can obtain information without damaging the physical state of the original materials. That duality in focus improves preservation and usability. The preservation of library resources is a crucial aspect of sustainability in academic libraries, ensuring that knowledge remains accessible to the future generation. The adoption of digital technologies like digitization, cloud computing and institutional repositories represents a transformative shift in how libraries preserve their resources and ensure its accessibility to users for as long as possible. The primary objective of this research is to discover and assess the impact of digitization, cloud computing

and institutional repositories on effective preservation of library resources.

Statement of the Problem

The Akwa Ibom State University Library, like many other academic libraries, houses a vast array of information resources intended to meet the information needs of students, staff, faculty members, and other researchers. Despite their importance, these resources are often exposed to several challenges that threaten their longevity and usability. Such challenges include improper preservation practices, mishandling, wear and tear, inadequate maintenance, theft, deterioration, defacing, mutilation, and adverse environmental factors.

As the volume of library resources continues to increase rapidly, these problems have become more pronounced, thereby compromising access to and sustainability of information resources. Consequently, there is a growing need for effective and sustainable preservation strategies. The adoption and implementation of digital technologies such as digitization, cloud computing, and institutional repositories have become imperative in order to enhance the preservation, accessibility, and long-term management of library resources in the Akwa Ibom State University Library.

Objectives of the Study

The main purpose of the study is to ascertain the influence of digital technologies on the preservation of library resources in the Akwa Ibom State University Library. Specifically, the study sought to achieve the following;

1. To determine the influence of digitization on the preservation of library resources in the Akwa Ibom State University Library.
2. To determine the influence of cloud computing on the preservation of library resources in the Akwa Ibom State University Library.
3. To determine the influence of institutional repositories on the preservation of library resources in the Akwa Ibom State University Library.

Research Hypotheses

The following null hypothesis will guide the study:

- H₀₁:** There is no significant influence of digitization on the preservation of library resources in the Akwa Ibom State University Library.
- H₀₂:** There is no significant influence of cloud computing on the preservation of library resources in the Akwa Ibom State University Library.
- H₀₃:** There is no significant influence of institutional repositories on the preservation of library resources in

the Akwa Ibom State University Library.

Review of Related Literature.

Digitization and Preservation of Library Resources

Adogbejii and Akporhonor (2021) examined the reasons for digitization and its challenges in Nigerian university libraries. The study adopted a descriptive survey design and involved a population of 240 library staff (librarians and library officers) from five federal university libraries in Northern and Southern Nigeria engaged in digitization activities. Four research questions guided the study, and data were analyzed using frequency counts, percentages, and mean scores at a 0.05 level of significance. The findings revealed that library staff were actively involved in the digitization of information resources. Technologies such as web servers, hard disks, local servers, external drives, blogs, and repositories were used for digital preservation. The study also showed that dissertations, theses, and staff abstracts were the major materials digitized. Desktop computers, laptops, and scanners were the primary hardware facilities used, while D-Space and EndNote were the major software tools utilized. Furthermore, the results indicated that the reasons for digitization—such as digital preservation, improved accessibility, meeting global standards,

Dr Egbe Adewole-Odeshi¹ & Udo Ifioke Edem² saving time and space, improving availability and visibility, preserving historical and cultural values, ease of retrieval, and supporting higher education needs—were accepted to a large extent as all had mean values above 2.5. The study recommended increased budgetary allocation for technological equipment and the provision of solutions to challenges such as copyright issues, inadequate funding, and epileptic power supply that hinder effective digitization in Nigerian university libraries.

Balogun (2018) conducted a study titled *The Nexus between Digitization, Preservation and Access in the Context of Selection of Materials for Archives*. The study adopted document analysis based on a qualitative research approach. Both electronic and print documents relevant to the study were searched and retrieved using specific search terms such as importance of archives, digitization, selection for digitization, digitization and preservation, and digitization and access. A document analysis checklist was used to guide the process. In addition, data were gathered from the National Archives of Nigeria through observation. The search room of the institution was observed to determine the types of records held and the current state of digitization. The observation complemented the document analysis and provided a better understanding of the research setting using

an observation checklist. Data obtained from document analysis were triangulated with those collected through observation. The findings revealed that archival materials are highly valuable and that developing countries need to pay greater attention to their preservation for future generations. The study also showed that digitization has become an important strategy for preserving original archival materials while improving access to them. The study is related to the present research as it highlights digitization as a digital technology that supports preservation and enhances access to information resources.

Cloud Computing and Preservation of Library Resources

Salihu (2025) conducted a study on the impact of cloud computing on information storage and retrieval in selected judicial libraries in Bauchi State. The study adopted a survey research design and was guided by four research objectives and corresponding research questions. A total of forty questionnaires were administered to forty judicial library staff selected through a random sampling technique. Data collected were analyzed using descriptive statistics of mean and standard deviation. The findings revealed that the adoption of cloud computing for information management in the selected judicial libraries was to a high extent. The study also showed that cloud computing had a significant impact on information

resource management and information sharing within the libraries. However, some challenges were identified as factors affecting the effective adoption of cloud computing in the libraries studied. The study recommended that library management should develop strategies to enhance the effective utilization of cloud computing for improved information management and service delivery in judicial libraries.

Mabawonku et al. (2024) conducted a study titled *Adoption of Cloud Computing in Academic Libraries in Lagos and Ogun States*. The study employed a survey research design, and a questionnaire was used as the instrument for data collection. Data collected were analyzed using descriptive statistics, including frequency counts, percentages, mean, and standard deviation. The findings revealed that library personnel in the academic libraries studied were aware of cloud computing technology, which could enhance its effective implementation. The study further showed that cloud computing was adopted for purposes such as collaboration among staff and users, improved accessibility to information resources, and storage of digital resources. However, several challenges affecting its adoption were identified, including lack of financial resources, concerns about data security, absence of in-house experts, and resistance to change among staff. The

study recommended that library management address the shortage of in-house experts and improve internet connectivity to ensure the effective implementation of cloud computing technology in academic libraries.

Institutional Repositories and Preservation of Library Resources

Idiedo et al. (2023) conducted a study titled *A Survey of Open Access Institutional Repositories in Nigerian University Libraries: The Current State*. The study adopted a survey research design. Data were collected from 21 university libraries in Nigeria that had developed institutional repositories (IRs) using online questionnaires, institutional repository investigations, and interviews. The findings revealed that only a few universities had successfully developed open access institutional repositories for preserving and managing their intellectual outputs. The study further showed that journal articles, theses and dissertations, as well as conference and workshop papers were the most common contents hosted in the repositories. It was also revealed that while a few institutions had policy statements relating to access, submission, preservation, content, and copyright, the majority did not have clearly defined policies guiding their institutional repositories. In addition, the interviews identified several challenges affecting the

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development of IRs in Nigeria, including inadequate funding, difficulty in collecting content for repositories, shortage of skilled ICT personnel, and inadequate facilities. The study concluded that the provision of necessary infrastructure and the formulation of clear policies are essential for the effective development of institutional repositories and for enhancing the global visibility of research outputs from Nigerian universities.

Kari and Baro (2016) conducted a study titled *Digital Preservation Practices in University Libraries: A Survey of Institutional Repositories in Nigeria*. The study aimed to investigate digital preservation practices in institutional repositories (IRs) in Nigerian university libraries. Data were collected in three phases: initial phone calls, website investigations, and the administration of questionnaires to institutions with developed IRs. The findings revealed that the majority of institutional repositories in Nigeria used D-Space software to manage their digital content. The study also showed that about half of the repositories engaged in information migration as a digital preservation strategy and that most of the institutions provided long-term digital preservation for their digital resources. However, the results further indicated that many of the responding institutions lacked long-term funding and adequate technical staff with the required

skills to manage and maintain institutional repositories effectively. The study concluded that its findings would be useful to information professionals, particularly librarians in developing countries who intend to establish institutional repositories and ensure long-term digital preservation of electronic resources in their institutions. The reviewed study is related to the present study as both examine the preservation of library resources through institutional repositories as a form of

digital technology. However, while the study by Kari and Baro (2016) covered several university libraries in Nigeria, the present study focuses specifically on the Akwa Ibom State University Library.

Testing of Hypothesis

Hypothesis One

There is no significant influence of digitization on the preservation of library resources in Akwa Ibom State University Library.

Table 1: Simple Regression Analysis of the influence of digitization on preservation of library resources

Source of variation	Sum of Squares	Df	Mean Square	F	Sig.
Regression	0.152	1	0.152	2.284	.039 ^b
Residual	2.537	38	0.067		
Total	2.690	39			

Model Summary									
Model					Change Statistics				
	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.238 ^a	.057	.032	.25840	.057	2.284	1	38	.039

a. Predictors: (Constant), Digitization

a-Dependent variable: Preservation of Library Resources

b- Independent variable: Digitization

To test hypothesis one, simple linear regression analysis was employed. The results presented in Table 1 above shows that ($R = .238$), indicating a positive relationship between digitization and the preservation of library resources. This suggests that an increase in digitization is associated with a corresponding

improvement in the preservation of library resources. Furthermore, the adjusted ($R^2 = .032$) indicates that digitization accounts for only 3.2% of the variance in the preservation of library resources. Although this contribution is relatively small, it remains meaningful within the context of the study.

A further examination of the analysis of variance (ANOVA) table revealed that ($F = 2.284$) with ($p = .039$).

Since the p-value (.039) is less than the significance level of .05, the result is statistically significant. This indicates that digitization has a significant influence on the preservation of library resources. Consequently, the null hypothesis is rejected.

Hypothesis Two

There is no significant influence of cloud computing on the preservation of library resources in Akwa Ibom State University Library.

Table Two: Simple regression analysis of the influence of cloud computing on preservation of library resources

Source of variation	Sum of Squares	Df	Mean Square	F	Sig.
Regression	0.191	1	0.191	2.906	.096 ^b
Residual	2.499	38	0.066		
Total	2.690	39			

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.267 ^a	.071	.047	.25643	.071	2.906	1	38	.096

a. Predictors: (Constant), Cloud computing

a-Dependent variable: Preservation of library resources

b- Independent variable: Cloud computing

To test hypothesis two, simple linear regression analysis was employed. The results presented in Table 6 show that ($R = .238$), indicating a positive relationship between digitization and the preservation of library resources. This suggests that an increase in digitization is associated with a corresponding improvement in the preservation of library resources. Furthermore, the adjusted ($R^2 = .032$) indicates that digitization accounts for only 3.2% of the variance in the

preservation of library resources. Although this contribution is relatively small, it remains meaningful within the context of the study. A further examination of the analysis of variance (ANOVA) table revealed that ($F = 2.284$) with ($p = .039$). Since the p-value (.039) is less than the significance level of .05, the result is statistically significant. This indicates that digitization has a significant influence on the preservation of library resources. Consequently, the null hypothesis is rejected.

Hypothesis Three

There is no significant influence of institutional repositories on the

preservation of library resources in Akwa Ibom State University Library.

Table Three: Simple regression analysis of the influence of institutional repositories on preservation of library resources

Source of variation	Sum of Squares	Df	Mean Square	F	Sig.
Regression	0.191	1	0.191	2.906	.046 ^b
Residual	2.499	38	0.066		
Total	2.690	39			

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.054 ^a	.003	-.023	.26566	.003	.112	1	38	.740

a. Predictors: (Constant), Institutional Repository

R=.054; $R^2 = .003$; Adj $R^2 = .023$; Std Error =.26643

a-Dependent variable: Preservation of Library Resources

b- Independent variable: Institutional Repositories

To test hypothesis three, simple linear regression analysis was employed. The results presented in Table 3 show that ($R = .054$), indicating a very weak positive relationship between institutional repositories and the preservation of library resources. This suggests that increased use of institutional repositories is only minimally associated with improvements in preservation. Furthermore, the adjusted ($R^2 = .023$) indicates that institutional repositories account for just 2.3% of the

variance in the preservation of library resources. Although this contribution is minimal, it reflects a limited explanatory capacity within the model. A further examination of the Analysis of Variance (ANOVA) table revealed that ($F = 2.593$) with ($p = .740$). Since the p-value (.740) is greater than the significance level of .05, the result is not statistically significant. This indicates that institutional repositories do not have a significant influence on the preservation of library resources. Consequently, the null hypothesis is upheld.

Discussion of Findings

The study examined the influence of digitization, cloud computing, and institutional repositories on the preservation of library resources. The

findings revealed distinct patterns across the three digital strategies, highlighting both their potential and limitations in sustaining information resources.

Digitization and Preservation of Library Resources

Hypothesis one, which posited that digitization has no significant influence on the preservation of library resources, was rejected. The findings demonstrate that digitization exerts a significant influence on preservation, underscoring its critical role in sustaining library resources over time. This aligns with Lucky et al. (2015), who studied Nigerian university libraries, including Bayero University, Kano, and Kashim Ibrahim Library, Ahmadu Bello University, Zaria, and found that digitization enhances access by making information resources readily available to present and future users. Empirical evidence indicated that 113 respondents (64.57%) reported improved ease of access, while 147 respondents (84%) affirmed its high relevance in library operations.

Furthermore, the findings are consistent with Adogbeji and Akporhonor (2021), who identified key drivers of digitization, including digital preservation for archival purposes, improved accessibility, meeting global standards, optimization of time and space, enhanced availability and visibility of resources, preservation of historical and cultural

heritage, responsiveness to the evolving nature of libraries, ease of information retrieval, and the influence of technological advancement. Collectively, these results underscore digitization as both a preservation strategy and a transformative tool in modern library management.

Cloud Computing and Preservation of Library Resources

Hypothesis two, which posited that cloud computing does not significantly influence the preservation of library resources, was upheld. The findings indicate that cloud computing, in the study context, does not exert a statistically significant influence on preservation. This is consistent with Mabawonku et al. (2024), who identified barriers to cloud adoption in academic libraries in Lagos and Ogun States, including inadequate funding, data security concerns, lack of in-house expertise, and staff resistance to change. They recommended improving technical capacity and internet connectivity to support effective implementation. The findings suggest that while cloud computing has considerable potential, its impact is moderated by infrastructural readiness and human resource capacity.

Institutional Repositories and Preservation of Library Resources

Hypothesis three, which posited that institutional repositories do not

significantly influence the preservation of library resources, was upheld. The results indicate that institutional repositories, as implemented in the study context, do not exert a significant influence on preservation. This may be due to weak policy frameworks, limited awareness, low submission compliance, and inadequate technological infrastructure. The findings align with Kari and Baro et.al (2016), who reported that most institutional repositories in Nigerian universities lack formal digital preservation policies and suffer from insufficient funding and a shortage of skilled technical staff. Similarly, Idiedo et al. (2023) found that only a few Nigerian universities have successfully developed open-access institutional repositories capable of preserving and managing their intellectual outputs. These observations suggest that, while institutional repositories a veritable tool for preservation in the library their effectiveness is constrained by policy, infrastructural, and human resource limitations.

Conclusion

The study highlights that digitization exerts the most direct and substantial influence on the preservation of library resources. Cloud computing and institutional repositories, although potentially impactful, are constrained by technical infrastructure, policy

frameworks, and human resource capacity.

These findings underscore the importance of comprehensive digital strategies that integrate robust digitization initiatives, supportive technological infrastructure, and skilled personnel to enhance preservation outcomes in modern libraries.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Libraries should strengthen digitization processes to safeguard fragile and vulnerable documents within the library. This can be achieved through the adoption of standardized digitization procedures and the prioritization of rare and high-demand materials for long-term preservation and accessibility.
2. University libraries should intensify awareness creation to improve submission compliance in their institutional repositories. This can be achieved through sensitization programmes, advocacy, and the development of policies that encourage or mandate the submission of scholarly outputs by faculty and researchers.
3. Adequate funding should be provided to support the adoption and effective implementation of cloud computing in libraries. In addition, data security concerns should be addressed through

the deployment of robust security infrastructure.

4. Libraries should organize regular staff training programmes to ensure that personnel are proficient in modern technologies relevant to contemporary library operations. Such training will enhance staff capacity to effectively utilize digital tools for preservation and service delivery.

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