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DIGITAL RECORD MANAGEMENT AND ADMINISTRATIVE EFFICIENCY IN PUBLIC TERTIARY INSTITUTIONS

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ABSTRACT

This study investigates the role of digital record management systems in enhancing administrative efficiency within public tertiary institutions in Sokoto State, Nigeria. Despite growing investments in information and communication technologies, many institutions continue to struggle with delays in record retrieval, duplication of files, weak accountability, and vulnerability to data loss. To address these challenges, a quantitative research design was adopted, with structured questionnaires administered to administrative staff across selected institutions, and the data analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results revealed that digital record management practices significantly predict administrative efficiency outcomes, with system accessibility, staff competency, and infrastructure adequacy showing strong positive effects on processing speed, accuracy, accountability, and service responsiveness. Specifically, SmartPLS analysis confirmed that institutions with higher levels of digital adoption achieved improved documentation accuracy and faster workflow integration, while inadequate ICT infrastructure and limited staff training remained significant barriers to optimal performance. These findings provide empirical evidence that digital record management enhances transparency, strengthens institutional governance, and supports evidence-based decision-making in Nigerian higher education. The study contributes to public sector modernization debates and offers policy recommendations emphasizing infrastructure upgrades, staff capacity development, and standardized frameworks to improve productivity, accountability, and service delivery in Sokoto State's tertiary institutions.

KEYWORDS: *Digital Record Management, Administrative Efficiency, Public Tertiary Institutions, ICT Infrastructure, Sokoto State*

1.INTRODUCTION

Public tertiary institutions in Nigeria are increasingly pressured to modernize administrative processes and improve efficiency through digital technologies. Traditionally, record management has relied on manual, paper-based systems, which are prone to delays, duplication, and data loss. Recent evidence shows that digital transformation is reshaping higher education administration globally, with automation and electronic records significantly reducing turnaround time and improving accuracy (Adiele & Bestman, 2025). In Nigeria, studies demonstrate that electronic records management systems enhance staff productivity, workflow coordination, and service responsiveness, though transparency remains uneven (Bakare-Fatungase & Oseni, 2024).

National assessments further indicate that more than half of public universities still operate hybrid systems, combining manual and digital records, due to infrastructural deficits, limited digital literacy, and weak policy enforcement (Oladokun et al., 2022). These inefficiencies undermine institutional responsiveness, particularly in transcript processing, personnel documentation, and regulatory compliance. Evidence from registry departments confirms that effective records management practices are significantly associated with organizational effectiveness and accountability (Dada & Ogunwemimo, 2024). Similarly, electronic record management has been shown to improve office managers' job effectiveness in Nigerian state universities, particularly in timeliness, accuracy, and information accessibility (Mosunmola, 2025).

In Sokoto State, where tertiary institutions are gradually transitioning to digital systems, empirical evidence on the extent of adoption and its measurable impact on administrative efficiency remains scarce. This gap is critical, given that Nigeria's higher education sector serves over 2.1 million students annually, and inefficiencies in record management directly affect service delivery, accountability, and institutional competitiveness (National Bureau of Statistics, 2023). Without localized evidence, policymakers and institutional leaders lack the basis for designing targeted reforms that strengthen digital governance frameworks.

The objectives of this study are therefore fourfold: to assess the level of adoption and utilization of digital record management systems in public tertiary institutions in Sokoto State; to examine the relationship between digital record management practices and administrative efficiency; to identify institutional, technological, and human capacity factors influencing effective implementation; and to determine the extent to which digital systems improve processing speed, accuracy, accountability, and service delivery. By addressing these objectives, the study contributes to public sector modernization debates and provides evidence-based recommendations for enhancing transparency, productivity, and governance in Nigerian higher education.

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2. LITERATURE REVIEW

2.1 Digital Record Management and Public Sector Modernization

Digital record management has become a cornerstone of public sector modernization, particularly within higher education institutions where efficiency, accountability, and data integrity are critical. Electronic Records Management Systems (ERMS) replace fragmented manual documentation with structured digital platforms that facilitate storage, retrieval, security, and workflow automation. In Nigeria, adoption remains uneven, with many institutions operating hybrid systems that limit efficiency gains (Oladokun, Aina, & Adeyemi, 2022). Recent studies confirm that effective ERMS implementation enhances staff productivity, workflow coordination, and service responsiveness (Bakare-Fatungase & Oseni, 2024). Globally, digital governance reforms are recognized as strategic drivers of transparency and institutional performance (United Nations, 2022; World Bank, 2016).

2.2 Administrative Efficiency in Higher Education Institutions

Administrative efficiency refers to the ability of institutions to process records accurately, promptly, and cost-effectively while maintaining accountability. Inefficiencies in record management often result in delays in transcript processing, duplication of files, and weakened audit trails. Empirical evidence from Nigerian universities shows that digital record initiatives improve workflow coordination and document retrieval speed, directly enhancing staff productivity and institutional responsiveness (Adiele & Bestman, 2025). Similarly, effective records management practices are significantly associated with organizational effectiveness in registry departments (Dada & Ogunwemimo, 2024). However, efficiency gains are conditional on implementation quality, staff competence, and institutional commitment (Mosunmola, 2025).

2.3 Theoretical Perspectives on Digital Adoption

Understanding the impact of digital record management requires theoretical grounding. The Technology Acceptance Model (Davis, 1989) explains adoption as driven by perceived usefulness and ease of use. In tertiary institutions, staff are more likely to adopt digital systems if they perceive improvements in job performance and reduced workload complexity. The Technology-Organization-Environment (TOE) framework (Tornatzky & Fleischer, 1990) extends this by highlighting technological infrastructure, organizational support, and environmental pressures as determinants of adoption. Institutional Theory (DiMaggio & Powell, 1983) further suggests that universities adopt innovations due to coercive, normative, and mimetic pressures, such as accreditation standards or peer emulation, even when internal readiness is insufficient.

2.4 Determinants of Effective Digital Record Management

Several factors determine whether digital record systems improve efficiency. ICT infrastructure adequacy is fundamental, as poor connectivity and unreliable power supply undermine digital transformation (Oladokun et al., 2022). Human capacity is equally critical; without structured training, staff may lack the digital literacy needed to optimize systems (Ajibade, 2019). Leadership commitment and governance frameworks also shape outcomes, with reforms succeeding when supported by clear policies, monitoring mechanisms, and sustained funding (Bwalya & Mutula, 2014). International standards such as ISO 15489 emphasize structured policies and standardized documentation as essential for strengthening data integrity and institutional credibility (International Organization for Standardization, 2016).

2.5 Synthesis and Research Gap

The reviewed literature demonstrates that digital record management has the potential to enhance administrative efficiency through improved speed, accuracy, transparency, and accountability. Nigerian studies confirm growing awareness and partial adoption, yet infrastructural, institutional, and human capacity constraints persist. Most empirical work has focused on southwestern institutions, leaving limited localized evidence on Sokoto State. This study therefore seeks to bridge the gap by empirically assessing digital record management practices, identifying determinants of implementation, and evaluating their influence on administrative efficiency in public tertiary institutions in Sokoto State.

2.6 Hypotheses Development

2.6.1 Digital Record Management and Administrative Efficiency

Digital record management systems are designed to streamline documentation, reduce duplication, and improve retrieval speed. Recent studies in Nigerian universities show that automation significantly enhances timeliness and accuracy of administrative processes, thereby improving institutional responsiveness (Omowunmi & Salako, 2025). Evidence from public sector reforms also indicates that digital workflows reduce bureaucratic bottlenecks and strengthen accountability (Adeyemi & Yusuf, 2021).

H1: *Adoption of digital record management systems has a positive and significant effect on administrative efficiency in public tertiary institutions*.

2.6.2 ICT Infrastructure and System Effectiveness

The effectiveness of digital record systems depends heavily on ICT infrastructure, including internet connectivity, hardware availability, and reliable power supply. A 2023 national survey reported that inadequate ICT infrastructure remains a major barrier to digital transformation in Nigerian higher education (National Bureau of Statistics, 2023). Studies further confirm that institutions with stronger ICT infrastructure achieve higher efficiency gains from digital adoption (Ogundipe, 2024).

H2: *ICT infrastructure adequacy positively influences the effectiveness of digital record management systems in enhancing administrative efficiency*.

2.6.3 Staff Competency and Digital Literacy

Human capacity is a critical determinant of digital system success. Without adequate training, staff may resist adoption or fail to utilize systems effectively. Research on digital

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literacy in Nigerian universities shows that staff competency significantly moderates the relationship between technology adoption and performance outcomes (Onah, Obeka, & Ada, 2025). Institutions that invest in continuous training report higher efficiency in record management and service delivery.

H3: *Staff competency and digital literacy significantly moderate the relationship between digital record management practices and administrative efficiency.*

2.6.4 Governance Frameworks and Leadership Support

Institutional governance and leadership commitment are essential for sustaining digital reforms. Strong policy frameworks, monitoring mechanisms, and leadership support ensure that digital systems are not only adopted but effectively integrated into workflows. Evidence from Nigerian public sector reforms highlights that leadership-driven digital initiatives achieve greater accountability and transparency (Omowunmi & Salako, 2025).

H4: *Institutional governance frameworks and leadership support positively predict the successful implementation of digital record management systems.*

3.METHODOLOGY

3.1 Study Area and Population

The study was conducted in selected public tertiary institutions in Sokoto State, Nigeria. Sokoto State, located in northwestern Nigeria, hosts several federal and state-owned universities and polytechnics that perform critical administrative, academic, and regulatory functions. The study population comprised administrative staff working in key units responsible for record management and documentation processes, including registry departments, academic affairs divisions, personnel units, ICT departments, examination and records offices, and finance departments. These categories of staff were purposively selected because they are directly involved in the creation, processing, storage, and retrieval of institutional records.

3.2 Research Design

A quantitative, cross-sectional survey design was adopted to allow for systematic collection of standardized data from administrative staff. This design was appropriate for examining relationships between digital record management practices and administrative efficiency, while ensuring objectivity and replicability. Stratified sampling was employed to ensure representation across administrative units, and the final sample size was determined using statistical sampling techniques to achieve adequacy for inferential analysis.

3.3 Data Collection

Primary data were collected through structured questionnaires designed based on validated constructs from existing literature on electronic records management and administrative performance. The instrument was divided into sections covering demographic characteristics, level of digital record management adoption, availability of ICT infrastructure, staff competency and training, and indicators of administrative efficiency such as processing speed, accuracy, accountability, and service responsiveness. Responses were measured using a Likert scale format to facilitate quantitative analysis. A pilot study was conducted to test reliability, with Cronbach's alpha coefficients exceeding the recommended threshold of 0.70, confirming internal consistency. Secondary data, including institutional ICT policies and administrative procedure manuals, were also reviewed to complement primary data.

3.4 Data Analysis

Data were coded and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software. PLS-SEM was chosen because it is particularly suitable for complex models involving latent constructs and small-to-medium sample sizes, and it allows simultaneous assessment of measurement and structural models. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize demographic characteristics and assess the level of digital record management adoption. The measurement model was evaluated for reliability and validity using composite reliability, average variance extracted (AVE), and discriminant validity tests. The structural model was assessed through path coefficients, R^2 values, and predictive relevance (Q^2). Bootstrapping procedures were employed to test the significance of hypothesized relationships.

4. RESULTS

The results are presented in four stages: descriptive statistics, measurement model evaluation, structural model analysis, and hypothesis testing. Each stage is supported by tables, which are introduced and interpreted to provide clarity and coherence.

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4.1 Descriptive Statistics

Table 1 Demographic profile of Respondents.

Variable	Category	Frequency	Percentage (%)
Gender	Male	203	58.0
	Female	147	42.0
Age	21–30 years	56	16.0
	31–45 years	217	62.0
	46+ years	77	22.0
Education Level	Bachelor's degree	248	71.0
	Master's degree	78	22.0
	PhD	24	7.0
Administrative Unit	Registry	112	32.0
	ICT	63	18.0
	Personnel	88	25.0
	Exams & Records	87	25.0

The majority of respondents were male, aged 31–45, and held at least a bachelor's degree. Registry staff formed the largest group, reflecting their central role in record management. This demographic distribution confirms that the sample adequately represents the administrative workforce engaged in digital record practices.

4.2 Measurement Model Evaluation

Table 2. Measurement Model Evaluation

Construct	Composite Reliability	AVE	Cronbach's Alpha
DRA	0.89	0.62	0.84
ICT	0.87	0.59	0.82
SC	0.91	0.65	0.86
GF	0.85	0.57	0.80
AE	0.90	0.64	0.85

All constructs achieved composite reliability above 0.80 and AVE above 0.50, confirming convergent validity. Cronbach's alpha values exceeded 0.70, indicating strong internal consistency.

4.3 Structural Model Results (PLS-SEM)

Table 3. Structural Model Results (PLS-SEM)

Hypothesis	Path Relationship	β	t-value	p-value	Decision
H1	DRA → AE	0.41	6.72	<0.001	Supported
H2	ICT → AE	0.36	5.84	<0.01	Supported
H3	SC → AE	0.29	3.12	<0.05	Supported
H4	GF → AE	0.33	4.95	<0.01	Supported

All four hypotheses were supported. Digital record adoption had the strongest effect (β = 0.41), followed by ICT infrastructure (β = 0.36). Staff competency and governance frameworks also contributed significantly, confirming their moderating and predictive roles.

4.4 Model Summary

Table 4. Model Summary

Statistic	Value
R^2	0.62
Q^2	0.41
Effect Size (f^2)	Moderate to Large

The model explained 62% of the variance in administrative efficiency, demonstrating substantial explanatory power. Positive Q^2 values confirmed predictive relevance, while effect sizes indicated moderate-to-large impacts of the predictors.

4.5 Summary of Findings

The results demonstrate that digital record management systems significantly enhance administrative efficiency in Sokoto State's public tertiary institutions. Improvements were observed in processing speed, accuracy, accountability, and service responsiveness. However, infrastructural deficits and limited staff training remain critical barriers. Leadership

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commitment and policy frameworks emerged as essential enablers of successful digital transformation.

4.6 Discussion

The findings of this study confirm that digital record management systems (DRA) significantly enhance administrative efficiency (AE) in public tertiary institutions in Sokoto State. This aligns with earlier evidence that automation reduces bureaucratic bottlenecks and improves timeliness in Nigerian public institutions (Omowunmi & Salako, 2025). The strong path coefficient (β = 0.41) indicates that adoption of digital systems directly improves processing speed, accuracy, and accountability, consistent with global studies on e-governance reforms (United Nations, 2022).

ICT infrastructure (ICT) was found to be a critical determinant of efficiency outcomes (β = 0.36). This result corroborates national surveys showing that inadequate ICT infrastructure remains a major barrier to digital transformation in Nigerian higher education (National Bureau of Statistics, 2023). Institutions with reliable internet connectivity and adequate hardware achieved higher efficiency gains, underscoring the importance of sustained investment in infrastructure.

Staff competency (SC) emerged as a significant moderator (β = 0.29), confirming that digital literacy and training are essential for maximizing the benefits of digital systems. This finding supports Onah, Obeka, and Ada (2025), who demonstrated that staff competency enhances the effectiveness of digital adoption in public administration. Without adequate training, staff may resist adoption or fail to utilize systems optimally, limiting efficiency gains.

Governance frameworks (GF) and leadership support also significantly predicted successful implementation (β = 0.33). This result highlights the role of institutional policies, monitoring mechanisms, and leadership commitment in sustaining digital reforms. It resonates with Adeyemi and Yusuf (2021), who found that leadership-driven digital initiatives achieve greater accountability and transparency in Nigerian public institutions.

From a theoretical perspective, the results validate the Technology Acceptance Model (Davis, 1989), as perceived usefulness of digital systems translated into measurable efficiency gains. The Technology-Organization-Environment (TOE) framework (Tornatzky & Fleischer, 1990) is also supported, with ICT infrastructure (technology), staff competency (organization), and governance frameworks (environment) jointly influencing adoption outcomes. Institutional Theory (DiMaggio & Powell, 1983) is reflected in the role of governance frameworks, as institutions adopt digital systems under coercive and normative pressures from regulatory bodies and accreditation standards.

4.6.1 Practical Implications

The findings suggest that policymakers and institutional leaders in Sokoto State must prioritize ICT infrastructure upgrades, continuous staff training, and strong governance frameworks to fully realize the benefits of digital record management. Investments in these areas will not only improve administrative efficiency but also enhance transparency, accountability, and service delivery.

4.6.2 Theoretical Implications

This study contributes to the literature by empirically validating the combined influence of technological, organizational, and governance factors on administrative efficiency in Nigerian tertiary institutions. It extends prior research by demonstrating the moderating role of staff competency and the predictive power of governance frameworks in digital adoption outcomes.

4.7 Conclusion

This study investigated how digital record management systems (DRA) influence administrative efficiency (AE) in public tertiary institutions in Sokoto State. Results from PLS-SEM analysis confirmed that adoption of digital systems significantly improves efficiency, with ICT infrastructure (ICT), staff competency (SC), and governance frameworks (GF) serving as critical determinants.

Theoretically, the findings validate established models such as TAM (Davis, 1989), TOE (Tornatzky & Fleischer, 1990), and Institutional Theory (DiMaggio & Powell, 1983), showing that technological, organizational, and environmental factors jointly shape adoption outcomes. Practically, the study highlights the need for investment in ICT infrastructure, continuous staff training, and strong governance frameworks to sustain efficiency gains.

Future research should employ longitudinal designs and comparative analyses across states to deepen understanding of digital governance in Nigerian higher education.

4.8 Recommendations

The study confirms that digital record adoption (DRA) has a strong positive effect on administrative efficiency. Institutions should therefore prioritize the full digitization of core administrative processes such as transcript issuance, personnel records, and examination documentation. By replacing fragmented manual systems with standardized electronic platforms, universities can reduce duplication, minimize delays, and improve accuracy. This recommendation directly reflects the finding that adoption of digital systems significantly enhances speed and accountability in administrative workflows.

The role of ICT infrastructure (ICT) was also found to be critical in determining the effectiveness of digital record systems. To sustain efficiency gains, institutions must invest in reliable internet connectivity, adequate hardware, and secure servers. Policies should be introduced to ensure regular maintenance and upgrades, preventing system downtime and obsolescence. This recommendation aligns with the finding that infrastructural deficits remain a major barrier to digital transformation in Sokoto State's tertiary institutions.

The study further highlights the importance of staff competency (SC) as a moderating factor. Continuous training programs should be implemented to build digital literacy and technical skills among administrative staff. Workshops and

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capacity-building initiatives must focus on practical applications of electronic record systems, ensuring that staff are confident and capable of using the technology effectively. This recommendation corresponds directly to the finding that staff competency significantly strengthens the relationship between digital adoption and efficiency outcomes.

Finally, governance frameworks (GF) and leadership support emerged as essential predictors of successful implementation. Institutions should develop clear policies on digital record management, aligned with national data protection regulations, and establish monitoring mechanisms to ensure compliance. Leadership commitment must be reinforced by assigning accountability structures and providing sustained funding for digital reforms. This recommendation reflects the finding that governance frameworks and leadership support are indispensable for sustaining efficiency gains and institutional credibility.

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