© IIJP 2026 | Volume 2, Issue 3, pp. 1300- 1313| ISSN: 2636-4484

CHALLENGES OF CLOUD COMPUTING ADOPTION IN ELECTRONIC RECORDS MANAGEMENT IN SELECTED TERTIARY INSTITUTIONS IN BENUE STATE

IOREMBER, Emmanuel Doosuun
Department of Office Technology and management, Fidei Polytechnic, Gboko, Benue State
*ioreberdemma@gmail.com/**ORCID:** https://orcid.org/0009-0004-2622-2928*

ARTICLE INFO
Article No.: 0513
Accepted Date: 02/08/2026
Published Date: 25/08/2026
Type: Research

ABSTRACT

The increasing digitisation of tertiary institutions has made electronic records management an important aspect of effective administration. Cloud computing offers opportunities to improve the storage, accessibility, security, and management of institutional records; however, its adoption is hindered by technological, organisational, and security-related challenges. This study examined electronic records management practices, cloud computing adoption, data security measures, and challenges affecting cloud computing adoption in selected tertiary institutions in Benue State, Nigeria. The descriptive survey design was used, and structured questionnaires were administered to the staff involved in records management, information and communication technology, administration, and related functions at Fidei Polytechnic Gboko, Federal Polytechnic Wannune, and Benue State Polytechnic Ugbokolo. Of the questionnaires administered, the majority were correctly completed and returned for analysis. Descriptive statistics were used to analyse the data. The results revealed that the general use of electronic records management practice was in place in the selected institutions and cloud computing was applied to a moderate level in the institutions. The institutions had also implemented basic data security measures, including password authentication, restricted access, data backup, antivirus, and firewall protection. But poor Internet connectivity, lack of ICT infrastructure, lack of resources, and staff training were noted as potential obstacles to effective cloud adoption. The study concludes that sustainable cloud-based electronic records management requires stronger ICT infrastructure, adequate funding, continuous staff training, and effective information security practices.

Keywords: Electronic Records Management, Cloud Computing Adoption, Data Security, Tertiary Institutions, Benue State.

Introduction

Rapid developments in information and communication technology (ICT) have transformed the way organisations create, manage, store and retrieve information. This transformation is crucial in tertiary institutions where massive amounts of academic, administrative, financial and personnel records are generated and accessed on an ongoing basis. Electronic records management (ERM) is a systematic method of handling those records throughout their entire lifecycle and is used to facilitate their usability, accountability, decision-making, and regulatory compliance.

Cloud computing has further expanded the possibilities for electronic records management by providing internet-based access to computing resources such as storage, software, and databases. Cloud-based records management can help tertiary institutions achieve remote access and enable collaboration, scalability, and business continuity, even if they do not have to maintain all computing resources on campus (Subashini & Kavitha, 201).. However, the effectiveness of such systems depends on the availability of reliable ICT infrastructure, internet connectivity, adequate funding, competent personnel, and appropriate information security measures.

Tertiary institutions in Nigeria are increasingly going digital in managing their administrative processes, but the move to digitised records management in the cloud with secure connectivity is not uniform. Institutions may continue to combine manual and electronic systems because of infrastructure limitations, funding constraints, inadequate technical capacity, and concerns about the security and privacy of institutional information (Hashizume et al., 2013). Where records include sensitive information related to students, staff, financial and administrative issues, these challenges are crucial.

Despite growing research on electronic records management and cloud computing, there is limited empirical evidence on how these issues interact within tertiary institutions in Benue State, particularly across institutions with different ownership structures. While some studies have been performed, there is limited comparative evidence from private, federal, and state-owned polytechnics in the state concerning the factors impacting cloud adoption.

Against this background, this study examines electronic records management practices, cloud computing adoption, data security measures, and the challenges affecting cloud adoption in Fidei Polytechnic, Gboko; Federal Polytechnic, Wannune; and Benue State Polytechnic, Ugbokolo. The study also examines the problems faced by each of the three ownership types to offer evidence to support secure and effective cloud-based e-records management practices.

Statement of the Problem

Although tertiary institutions in Nigeria are increasingly adopting the technology of electronic records management via digitising their administrative records, the evidence of the extent to which this technology is being adopted and the level of security measures that are being put in place to support this adoption is limited in the tertiary institutions in Benue State. In particular, limited evidence exists on the technological, organisational and environmental challenges affecting cloud adoption across private, federal and state-owned institutions. This disconnect hampers institutional decision-makers and policymakers from having the necessary context-specific evidence and information to make improvements to secure and sustainable eRecords management in the cloud.

Aim and Objectives of the Study

This study aims to evaluate the current state of electronic records management and data security in the selected tertiary institutions of Benue State, Nigeria. The specific objectives of the study are to:

1. Examine the existing electronic records management practices in selected tertiary institutions in Benue State.
2. Analyze the level of adaptation of electronic records management to cloud computing in the chosen institutions.
3. Assess the levels of data security and the security provided to electronic records in the selected institutions.
4. Identify the technological, organisational and environmental challenges affecting cloud computing adoption in the selected institutions.
5. Compare cloud adoption challenges among the selected private, federal, and state-owned tertiary institutions.

Research Questions

The study seeks to answer the following research questions:

1. What are the practices of electronic records management in the selected tertiary institutions?
2. To what extent have the selected institutions adopted cloud computing for electronic records management?
3. What are the data security systems that are used in the chosen institutions to safeguard electronic records?
4. What technological, organisational and environmental challenges are faced by the chosen institutions in respect of the adoption of cloud computing?
5. How do cloud computing adoption challenges differ among the private, federal and state-owned tertiary institutions?

Literature Review

Conceptual Review

Electronic Records Management

Electronic records management (ERM) is the systematic management of electronic records throughout their lifecycle, including creation, capture, storage, retrieval, maintenance and disposal. ERM differs from conventional paper-based record-keeping by ensuring that digital records remain authentic, reliable, accessible, and secure for administrative, legal, and historical purposes (ISO, 2016; Franks, 2018). In tertiary institutions, electronic records support activities such as student administration, examination management, personnel administration, financial transactions and research management. Effective electronic records management can improve access to information, administrative efficiency, and accountability. However, the success of the implementation should also be based on the proper infrastructure of ICTs, institutional policies, competence of people, and commitment of people/organization. Institutions might continue using mixed systems of manual and electronic records management (Clemence et al., 2023; Mukred et al., 2019) where these conditions are not met.

Cloud Computing

Cloud computing allows users to use computing resources like storage, software, processing etc through internet-based systems instead of exclusively using local systems. Cloud services are commonly provided through Infrastructure as a Service (IaaS), Platform as a Service

(PaaS) and Software as a Service (SaaS), with deployment options including public, private, hybrid and community clouds.

Cloud Computing helps Tertiary institutions with remote access, information sharing, collaboration, scalability, and business continuity. Cloud-based services could therefore be a valuable source of assistance in electronic records management, as they enable institutional staff to store and retrieve records from various locations. However, adoption may be constrained by poor internet connectivity, inadequate infrastructure, limited financial resources, insufficient technical skills, and resistance to technological change (Behrend et al., 2011; Gangwar et al., 2015; Qasem et al., 2019).

Data Security

The security of data is a critical part of e-records management, as institutional records can include confidential and sensitive information. Good data security aims to ensure that the security of data is safeguarded in terms of its confidentiality, integrity, and availability and to prevent unauthorised access, alteration, disclosure, or loss.

Some of the security measures associated with electronic and cloud records management are: password authentication, access controls, encryption, antivirus protection, and firewalls, as well as regular data backup. There are concerns about privacy, cybersecurity, and regulatory compliance, as well as reliance on third-party service providers, when records are moved to the cloud. Security, however, must be technical in its approach, and also involve the proper institutional policies, training and information-governance practices (Hashizume et al., 2013; Subashini & Kavitha, 2011; Takabi et al., 2010).

Adoption barriers of Cloud Computing

Cloud computing adoption in tertiary institutions is influenced by technological, organisational and environmental conditions. The technological issues might be due to weak internet connectivity, lack of proper ICT infrastructure, system compatibility, cyber-security issues etc. Organisational challenges may include limited financial resources, inadequate technical competence, weak management support and limited organisational readiness. Environmental conditions may include regulatory requirements, availability of service providers and the wider ICT environment. Addressing these challenges requires investment in ICT infrastructure, staff capacity development, supportive institutional policies and effective information-governance mechanisms (Alshamaila et al., 2013; Gutierrez et al., 2015; Hassan, 2017).

Empirical Review

Empirical research on the implementation of electronic records management in higher education reveals that technological readiness, institutional policies, organizational support, and staff competence are important factors in the success of its implementation. Mukred et al. (2019) identified technological readiness, management support, user competence, and organisational policies as important factors influencing the implementation of electronic records management systems in higher professional education. In the same way, Clemence et al. (2023) found that the lack of facilities, poor funding and limited staff capacity were related to lower use of electronic records systems, whereas ICT infrastructure and supportive institutional management were related to higher use. These results suggest that any discussion about e-records management is not purely a technological one. Efforts to put the sustainable strategy into practice will need to be supported by the right infrastructure, with the right people and organisation in place.

The challenges of infrastructure, internet connectivity, and financial capacity are always cited as key points for cloud computing adoption. Behrend et al. (2011) reported benefits of

cloud computing in areas such as accessibility, collaboration, and operational flexibility in community colleges, while Pardeshi (2014) highlighted the scalability and cost advantages of cloud computing for higher education institutions. The importance of institutional commitment and ICT competence was also highlighted by Okai-Ugbaje et al. (2014) for successful cloud adoption. The same issues are evident in Nigeria. Inadequate infrastructure, insufficient funding, and poor internet connectivity were identified as the challenges of cloud computing implementation in university administration by Adeleke et al. (2020). Akin et al. (2014) also reported that unreliable electricity power, inadequate ICT infrastructure, and poor network services were impediments to implementation in public universities in Southwest Nigeria. At the broader national level, Dahunsi and Owoseni (2015) and Dogo et al. (2013) identified issues including broadband costs, internet reliability, organisational preparedness and implementation costs as barriers to cloud computing adoption. The findings indicate that those advantages of cloud computing will not be realized unless there is a reliable connection, proper infrastructure, and adequate financial resources for implementation.

The adoption of cloud computing is also driven by factors within the organisation. Okai-Ugbaje et al. (2014) identified institutional commitment, ICT competence and stakeholder acceptance as important elements of cloud adoption in universities. Ibrahim (2022) similarly identified perceived usefulness, organisational readiness, management support and trust in cloud service providers as important considerations in cloud adoption in Nigerian universities.

Institutional readiness and policies are also noted as important in research in Nigerian government institutions. Jibrin Oyoyo and Baguma (2019) reported that inadequate ICT infrastructure, weak institutional policies, cybersecurity concerns, and resistance to organisational change constrained cloud computing adoption. The results show that in addition to technological resources, management commitment, suitable policies, and the competence and readiness of staff are necessary for successful adoption.

Security is also a top priority in cloud computing and e-records management. Hashizume et al. (2013) identified data confidentiality, privacy protection, identity management, and service availability as important security concerns in cloud environments. Subashini and Kavitha (2011) emphasised authentication mechanisms, encryption, access controls and regular system monitoring as important safeguards. Alsmadi and Prybutok (2018) also highlighted privacy, trust and information security as factors that influence users' willingness to use cloud services.

These findings show that protecting cloud-based electronic records requires both technological and organisational measures. Institutions require effective security procedures, user awareness, frequent training and suitable governance procedures, in addition to technical safeguards.

The empirical evidence reviewed indicates that electronic records management and cloud computing can improve information accessibility, collaboration and administrative efficiency. Concurrently, persistence of challenges is associated with poor ICT infrastructure, weak internet connectivity, low budget, low staff capacity, cybersecurity issues, and low organisational readiness. Although previous studies have examined electronic records management and cloud computing in higher education and Nigerian organisations, relatively limited evidence is available on the combined issues of electronic records management, data security, and cloud adoption challenges across private, federal, and state-owned tertiary institutions in Benue State. The current study fills this gap by exploring the Fidei Polytechnic, Gboko; Federal Polytechnic, Wannune; and Benue State Polytechnic, Ugbokolo, and evaluating the challenges in cloud adoption within the three different institutions of ownership.

Theoretical Framework

This study is anchored on the Technology–Organisation–Environment (TOE) Framework developed by Tornatzky and Fleischer (1990), while the Technology Acceptance Model (TAM) developed by Davis (1989) serves as a supporting theory. Both frameworks offer different lenses for studying the use of cloud computing for EHM in tertiary institutions.

Technology–Organisation–Environment (TOE) Framework

The TOE Framework was developed by Tornatzky and Fleischer (1990) to explain how organisations adopt and implement technological innovations. It suggests that the technological, organisational, and environmental contexts are three interrelated contexts that affect the adoption of organisational technology.

The technological context refers to the technologies available to the organisation and the characteristics of those technologies. The technological factors in this research are the ICT infrastructure, internet connectivity, system compatibility, technological complexity, perceived benefits, and the information security mechanism. An institution with proper infrastructure and security could be better suited for cloud computing whereas a lack of infrastructure and connectivity could limit adoption (Gangwar et. al., 2015; Hsu et. al., 2014).

Organisational context refers to factors within the organisation that affect technological adoption. These include the organizational structure, financial capability, management support, HR competency, organizational culture, and technological change readiness. To achieve good outcomes in a cloud-based e-records management framework, the institution must be committed to investing in infrastructure, staff training, and policy development and information governance (Gutierrez et al., 2015; Hassan, 2017).

The environmental context is the outside conditions that can affect an organisation's technological choices. These include government policies, regulatory requirements, competition, vendor support, and the wider technological environment. Regulatory requirements, availability of cloud service providers, and expectations about digital transformation could affect the adoption decision in tertiary institutions (Alshamaila et al., 2013; Gangwar et al., 2015).

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989), explains how users form intentions towards new technologies. Perceived usefulness and perceived ease of use are identified as important factors in technology acceptance by the model. In the context of electronic records management, staff may be more willing to use cloud-based systems when they believe that such systems will improve their work, facilitate information retrieval, support collaboration, and enhance productivity. On the other hand, systems that are not easy to use, safe, and/or cumbersome can be institutionalized despite institutional investment in the technology. Ease of use is particularly relevant to electronic records management because systems with intuitive interfaces, user-friendly navigation, and adequate technical support may encourage greater acceptance. Further training and technical support from staff can help users increase their confidence with the use of cloud-based systems.

The TOE Framework and TAM were considered and chosen because they cover complementary aspects of cloud computing adoption that are relevant to this study. TOE provides an institutional perspective by explaining how technological conditions, organisational characteristics and environmental factors influence technology adoption. This directly corresponds with the study's focus on infrastructure, funding, organisational readiness, policies and other conditions affecting cloud adoption in institutions with different ownership structures. TAM aims to complement TOE, which focuses on the perceived usefulness and ease of use in

relation to staff uptake and acceptance of electronic records management technologies. Although other technology-adoption models provide useful explanations of technology acceptance, the present study focuses primarily on institutional adoption and the technological, organisational and environmental conditions surrounding that adoption. TOE is, therefore, the principal institutional framework and TAM is the supporting perspective of user acceptance.

Methodology

The study adopted a descriptive survey research design. The design was considered appropriate because it enabled the researcher to collect quantitative information from respondents concerning electronic records management practices, cloud computing adoption, data security measures, and challenges associated with cloud computing in the selected tertiary institutions. The design also allowed the researcher to describe respondents' views without manipulating the study variables.

The target population comprised staff whose duties involved the creation, management, storage, and protection of institutional records in the selected tertiary institutions. The population included personnel from the Registry Department, Information and Communication Technology (ICT) Unit, Academic Affairs Division, Administrative Department, Library Services and Management. The categories were chosen because there was a need to include those functions where institutional records are handled and, if applicable, electronic records management and cloud computing systems are implemented and used.

A total of 60 respondents were selected for the study, with 20 respondents drawn from each of the three selected institutions: Fidei Polytechnic, Gboko; Federal Polytechnic, Wannune; and Benue State Polytechnic, Ugbokolo. The respondents who could be selected in purposive sampling were those who have relevant knowledge and experience in records management, operating ICT, and administration of the institutions. This approach enabled the researcher to obtain information from personnel directly involved in the creation, management, storage, use, or protection of institutional records.

The instrument used in this research to collect the data is a questionnaire. Data were collected using a structured questionnaire developed by the researcher following a review of relevant literature on electronic records management, cloud computing adoption, and data security (Gangwar et al., 2015; Mukred et al., 2019; Qasem et al., 2019). This questionnaire was split into two sections. The information gathered in section A was basic demographic data about the respondents such as gender, years of service, and institution. Section B contained items measuring electronic records management practices, extent of cloud computing adoption, data security measures, cloud computing adoption challenges, and best practices for cloud-based electronic records management. The questionnaire employed a five-point Likert scale ranging from Strongly Agree (SA) = 5, Agree (A) = 4, Undecided (U) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1.

The questionnaire was subjected to face and content validity through expert review by specialists in records management, information systems, and research methodology. Their observations were used to improve the clarity, relevance, and adequacy of the questionnaire items before administration. The reliability of the instrument was assessed through a pilot study involving respondents from a tertiary institution outside the study area but with characteristics similar to those of the selected institutions. The responses from the pilot study were examined to assess the internal consistency of the questionnaire. The questionnaires were personally administered by the researcher with support from designated contact persons in the selected institutions. Respondents were informed about the purpose of the study and participation was

voluntary. Completed questionnaires were collected immediately where possible or at an agreed time. Data collected from the completed questionnaires were coded and analysed using the Statistical Package for the Social Sciences (SPSS), Version 26. Descriptive statistics, including frequency counts, percentages, means and standard deviations, were used to summarise the data and answer the research questions. The mean score decision benchmark of 3.00 was selected for interpreting mean scores. Scores of 3.00 or higher were scored as agreement and scores below 3.00 were deemed as disagreement.

Ethical principles were observed throughout the study. The respondents were left voluntarily and given an introduction to the study before filling the questionnaire. Confidentiality and anonymity were respected and the information gathered was intended solely for educational purposes. Respondents were also informed that they could withdraw from the study without adverse consequences.

Data Presentation, Analysis, & Discussion of Findings

The data were obtained through questionnaires administered to staff involved in records management, information and communication technology (ICT), administration, and other relevant units in the selected institutions. A total of 60 questionnaires were administered to them. The correct completed and returned questionnaires was 56 (93.3%) and the questionnaires that were not returned were 4 (6.7%). The response rate was deemed satisfactory for the analysis and objectives of the study.

Table 1: Questionnaire Response Rate

Questionnaire Status	Frequency	Percentage (%)
Questionnaires Administered	60	100.0
Questionnaires Returned	56	93.3
Questionnaires Not Returned	4	6.7
Total	**60**	**100.0**

The high response rate of 93.3% indicates a strong level of participation by the respondents and provides sufficient data for meaningful analysis.

Demographic Characteristics of Respondents

Table 2: Distribution of Respondents by Gender

Gender	Frequency	Percentage (%)
Male	34	60.7
Female	22	39.3
Total	**56**	**100.0**

The results in Table 2 show that 34 respondents (60.7%) were male, while 22 respondents (39.3%) were female. This indicates that respondents from both genders participated in the study, although males constituted the larger proportion.

Table 3: Distribution of Respondents by Institution

Institution	Frequency	Percentage (%)
Fidei Polytechnic, Gboko	19	33.9
Federal Polytechnic, Wannune	19	33.9
Benue State Polytechnic, Ugbokolo	18	32.2
Total	**56**	**100.0**

Table 3 indicates that the respondents were fairly distributed across the three selected institutions. Fidei Polytechnic, Gboko and Federal Polytechnic, Wannune each accounted for 19 respondents (33.9%), while Benue State Polytechnic, Ugbokolo accounted for 18 respondents

(32.2%). This balanced distribution ensured that the views obtained reflected the experiences of staff across the three ownership categories.

Table 4: Distribution of Respondents by Years of Service

Years of Service	Frequency	Percentage (%)
Below 5 years	16	28.6
5–10 years	25	44.6
Above 10 years	15	26.8
Total	**56**	**100.0**

Table 4 shows that the majority of the respondents, 25 (44.6%), had worked in their institutions for 5–10 years. Respondents with less than five years of service accounted for 16 (28.6%), while 15 respondents (26.8%) had served for more than ten years. The distribution suggests that most respondents possessed adequate experience and familiarity with the records management and ICT practices of their respective institutions.

Analysis of Research Questions

Research Question One

What electronic records management practices exist in the selected tertiary institutions?

Table 5: Electronic Records Management Practices (N = 56)

Statement	Mean	SD	Decision
Institutional records are managed electronically.	4.12	0.68	Agree
Electronic records are easily retrieved when needed.	3.95	0.74	Agree
Records are regularly backed up.	3.88	0.81	Agree
Electronic records management has improved administrative efficiency.	4.06	0.70	Agree
There is a policy guiding electronic records management.	3.79	0.86	Agree

Grand Mean = 3.96

The findings indicate that electronic records management practices are generally established in the selected institutions, although there is room for improvement in policy implementation and records backup procedures.

Research Question Two

To what extent have the selected tertiary institutions adopted cloud computing for electronic records management?

Table 4.6 Cloud Computing Adoption (N = 56)

Statement	Mean	SD	Decision
Cloud services are used for storing institutional records.	3.71	0.84	Agree
Cloud platforms improve access to records.	3.83	0.78	Agree
Staff make regular use of cloud-based systems.	3.64	0.87	Agree
Management supports cloud computing initiatives.	3.76	0.82	Agree
Cloud services have improved records management.	3.89	0.73	Agree

Grand Mean = 3.77

The results reveal a moderate level of cloud computing adoption for electronic records management across the selected institutions.

Research Question Three

What data security measures are in place for protecting electronic records?

Table 4.7 Data Security Measures (N = 56)

Statement	Mean	SD	Decision
Password authentication is enforced.	4.24	0.62	Agree
User access to records is restricted.	4.09	0.70	Agree
Data are backed up regularly.	3.93	0.79	Agree
Antivirus and firewall systems are deployed.	3.98	0.76	Agree
Staff receive periodic data security training.	3.58	0.91	Agree

Grand Mean = 3.96

The findings indicate that the selected institutions have implemented basic data security measures to safeguard electronic records, although staff training requires further improvement.

Research Question Four

What are the challenges affecting cloud computing adoption in the selected tertiary institutions?

Table 4.8 Cloud Adoption Challenges (N = 56)

Statement	Mean	SD	Decision
Poor internet connectivity affects cloud adoption.	4.36	0.63	Agree
Inadequate ICT infrastructure is a challenge.	4.21	0.69	Agree
Limited funding affects cloud implementation.	4.29	0.67	Agree
Data security concerns hinder adoption.	4.15	0.74	Agree
Lack of adequate staff training affects adoption.	4.03	0.81	Agree

Grand Mean = 4.21

The results show that poor internet connectivity, inadequate ICT infrastructure, limited funding, data security concerns and insufficient staff training are the major challenges affecting cloud computing adoption in the selected tertiary institutions.

Discussion of Findings

The study revealed that electronic records management practices are generally established in the selected tertiary institutions. Respondents agreed that electronic records are managed and retrieved effectively, that records are regularly backed up, and that electronic records management has contributed to administrative efficiency. The grand mean of 3.96 indicates an overall positive assessment of electronic records management practices. This finding is consistent with the literature reviewed, which identifies electronic records management as an important mechanism for improving information accessibility, accountability and organisational efficiency (Franks, 2018; Mukred et al., 2019).

The findings also showed a moderate level of cloud computing adoption, with a grand mean of 3.77. Respondents agreed that cloud services are used for storing institutional records, that cloud platforms improve access to records, and that management supports cloud computing initiatives. However, the findings suggest that cloud adoption has not yet reached a level where it is fully integrated into institutional records management. This finding is consistent with previous studies which identify the potential benefits of cloud computing while also noting infrastructure, financial and organisational barriers to wider implementation (Behrend et al., 2011; Gupta et al., 2013; Qasem et al., 2019).

Regarding data security, the study found that basic measures are in place in the selected institutions. Password authentication, restricted access, regular data backup, antivirus and firewall systems all received positive responses, producing a grand mean of 3.96. However, staff training recorded the lowest mean among the security measures assessed. This finding supports

previous research emphasising that effective cloud security requires not only technical controls but also user awareness, training and appropriate organisational security policies (Hashizume et al., 2013; Subashini & Kavitha, 2011).

The major challenges affecting cloud computing adoption were poor internet connectivity, limited funding, inadequate ICT infrastructure, data security concerns, and insufficient staff training. The overall grand mean of 4.21 indicates that respondents strongly regarded these issues as significant barriers to cloud adoption. These findings correspond with previous studies which identify technological readiness, organisational capacity, inadequate infrastructure, financial limitations and security concerns as important determinants of successful cloud computing implementation (Gangwar et al., 2015; Gutierrez et al., 2015; Hassan, 2017).

The findings therefore suggest that improving cloud-based electronic records management in the selected institutions requires attention to both technological and organisational conditions. Investment in ICT infrastructure and connectivity should be accompanied by adequate funding, staff development, effective information-security practices and institutional support.

Conclusion

This study assessed electronic records management practices, cloud computing adoption, data security measures, and cloud computing adoption challenges in three selected tertiary institutions in Benue State: Fidei Polytechnic, Gboko; Federal Polytechnic, Wannune; and Benue State Polytechnic, Ugbokolo. The results show that the practices of electronic records management are generally in place in the selected institutions with a grand mean of 3.96. The grand mean over all items for the adoption of cloud computing was 3.77, which reveals that the level of cloud computing adoption was moderate, and for data security measures, the grand mean was 3.96, which also shows a moderate level of data security measures adoption. These findings suggest that the institutions have made progress in moving towards electronic and cloud-supported records management. But, there are many obstacles yet to be overcome. Poor internet connectivity, limited funding, inadequate ICT infrastructure, data security concerns, and insufficient staff training were identified as major challenges, with cloud adoption challenges recording an overall grand mean of 4.21. These constraints may limit the extent to which the institutions can achieve fully integrated and sustainable cloud-based records management. The study shows that simply having cloud technology available is not enough for effective cloud-based electronic records management. Reliable ICT infrastructure, adequate funding, continuous staff training, and effective information-security measures are necessary to strengthen the security, accessibility, and sustainability of institutional electronic records.

Recommendations

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

1. The tertiary institutions' management should provide a modern ICT infrastructure with good internet connectivity and sufficient cloud computing facilities to enable effective electronic records management.
2. Information security policies should be implemented and reviewed on regular basis to protect institutional records from being misused by cyber threats and unauthorised access.
3. Regular training programmes should be organised for ICT personnel, records officers and administrative staff to improve their knowledge and skills in cloud computing and electronic records management.
4. Governments and institutions should provide more resources for ICT development and digital transformation in tertiary institutions.

5. Adopting cloud services should be based on well-documented standards and best practices to guarantee data confidentiality, data integrity, data availability and adherence to regulatory obligations.
6. Periodic monitoring and evaluation of electronic records management systems should be conducted to identify implementation gaps and improve overall system performance.
7. Further studies are recommended in other tertiary and higher education institutions in Nigeria with larger sample sizes and mixed research methods to generate wider evidence of the adoption of cloud computing and the management of electronic records.

References

Adeleke, I. A., Muraina, I. O., & Adegbuyi, K. K. (2020). Adoption of cloud computing technology for effective university administration in Nigeria. Current Journal of Applied Science and Technology, 39(40), 1–8. https://doi.org/10.9734/cjast/2020/v39i4031106

Akin, O. C., Matthew, F., & Comfort, D. (2014). The impact and challenges of cloud computing adoption on public universities in Southwestern Nigeria. International Journal of Advanced Computer Science and Applications, 5(8), 13–19.

Alshamaila, Y., Papagiannidis, S., & Li, F. (2013). Cloud computing adoption by SMEs in the North East of England: A multi-perspective framework. Journal of Enterprise Information Management, 26(3), 250–275. https://doi.org/10.1108/17410391311325225

Alsmadi, D., & Prybutok, V. R. (2018). Sharing and storage behavior via cloud computing: Security and privacy in research and practice. Computers in Human Behavior, 85, 218–226. https://doi.org/10.1016/j.chb.2018.04.003

Behrend, T. S., Wiebe, E. N., London, J. E., & Johnson, E. C. (2011). Cloud computing adoption and usage in community colleges. Behaviour & Information Technology, 30(2), 231–240. https://doi.org/10.1080/0144929X.2010.489118

Clemence, O., Luambano, I., & Mwantimwa, K. (2023). Adoption and application of electronic records systems in higher learning institutions. Information Development, 41(2), 333–352. https://doi.org/10.1177/02666669231158336

Dahunsi, F. M., & Owoseni, T. M. (2015). Cloud computing in Nigeria: The cloud ecosystem perspective. Nigerian Journal of Technology, 34(1), 209–216. https://doi.org/10.4314/njt.v34i1.26

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319–340. https://doi.org/10.2307/249008

Dogo, E. M., Salami, A., & Salman, S. I. (2013). Feasibility analysis of critical factors affecting cloud computing in Nigeria. International Journal of Cloud Computing and Services Science, 2(4), 276–287. https://doi.org/10.11591/closer.v2i4.4162

Franks, P. C. (2018). Records and information management (2nd ed.). ALA Neal-Schuman.

Gangwar, H., Date, H., & Ramaswamy, R. (2015). Understanding determinants of cloud computing adoption using an integrated TAM-TOE model. Journal of Enterprise Information Management, 28(1), 107–130. https://doi.org/10.1108/JEIM-08-2013-0065

Gupta, P., Seetharaman, A., & Raj, J. R. (2013). The usage and adoption of cloud computing by small and medium businesses. International Journal of Information Management, 33(5), 861–874. https://doi.org/10.1016/j.ijinfomgt.2013.07.001

Gutierrez, A., Boukrami, E., & Lumsden, R. (2015). Technological, organisational and environmental factors influencing managers' decision to adopt cloud computing in the UK. Journal of Enterprise Information Management, 28(6), 788–807. https://doi.org/10.1108/JEIM-01-2015-0001

Hashizume, K., Rosado, D. G., Fernández-Medina, E., & Fernandez, E. B. (2013). An analysis of security issues for cloud computing. Journal of Internet Services and Applications, 4(1), 1–13. https://doi.org/10.1186/1869-0238-4-5

Hassan, H. (2017). Organisational factors affecting cloud computing adoption in small and medium enterprises (SMEs) in service sector. Procedia Computer Science, 121, 976–981. https://doi.org/10.1016/j.procs.2017.11.126

Hsu, P. F., Ray, S., & Li-Hsieh, Y. Y. (2014). Examining cloud computing adoption intention, pricing mechanism, and deployment model. International Journal of Information Management, 34(4), 474–488. https://doi.org/10.1016/j.ijinfomgt.2014.04.006

Ibrahim, H. U. (2022). Cloud computing adoption in Nigerian universities: A conceptualized model based on stakeholder perceptions [Master's thesis, African University of Science and Technology]. African University of Science and Technology Repository.

International Organization for Standardization. (2016). ISO 15489-1:2016: Information and documentation—Records management—Part 1: Concepts and principles. ISO.

Jibrin Oyoyo, Y., & Baguma, R. (2019). Adoption of cloud computing in government institutions in Nigeria. International Journal of Scientific and Research Publications, 9(8). https://doi.org/10.29322/IJSRP.9.08.2019.p92102

Mukred, M., Yusof, Z. M., Mokhtar, U. A., & Fauzi, F. (2019). Taxonomic framework for factors influencing ERMS adoption in organisations of higher professional education. Journal of Information Science, 45(2), 139–155. https://doi.org/10.1177/0165551518783133

Okai-Ugbaje, S., Uddin, M., Arshad, A., Alsaqour, R., & Shah, A. (2014). Cloud computing adoption model for universities to increase ICT proficiency. SAGE Open, 4(3), 1–10. https://doi.org/10.1177/2158244014546461

Pardeshi, V. H. (2014). Cloud computing for higher education institutes: Architecture, strategy and recommendations for effective adaptation. Procedia Economics and Finance, 11, 589–599. https://doi.org/10.1016/S2212-5671(14)00224-X

Qasem, Y. A. M., Abdullah, R., Jusoh, Y. Y., Atan, R., & Asadi, S. (2019). Cloud computing adoption in higher education institutions: A systematic review. IEEE Access, 7, 63722–63744. https://doi.org/10.1109/ACCESS.2019.2916234

Subashini, S., & Kavitha, V. (2011). A survey on security issues in service delivery models of cloud computing. Journal of Network and Computer Applications, 34(1), 1–11. https://doi.org/10.1016/j.jnca.2010.07.006

Takabi, H., Joshi, J. B. D., & Ahn, G. J. (2010). Security and privacy challenges in cloud computing environments. IEEE Security & Privacy, 8(6), 24–31. https://doi.org/10.1109/MSP.2010.186

Tornatzky, L. G., & Fleischer, M. (1990). The processes of technological innovation. Lexington Books.