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Artificial intelligence-based document management systems and record handling efficiency in tertiary institutions in Rivers State, Nigeria

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Abstract
This study examined the relationship between artificial intelligence-based document management systems and record handling efficiency in tertiary institutions in Rivers State, Nigeria. The study adopted a correlational research design. A sample of 302 administrative and records personnel was selected from a population of 1,248 using proportionate stratified sampling technique. Data were collected using a structured questionnaire and analyzed using Pearson Product Moment Correlation at 0.05 level of significance. Findings revealed significant positive relationships between automated indexing systems and record handling efficiency ($r = 0.682$, $p < 0.05$), intelligent document retrieval systems and record handling efficiency ($r = 0.741$, $p < 0.05$), and automated document security and access control systems and record handling efficiency ($r = 0.659$, $p < 0.05$). The study concluded that artificial intelligence-based document management systems significantly enhance record handling efficiency in tertiary institutions. It was recommended that institutions adopt and strengthen AI-based indexing, retrieval, and security systems to improve administrative efficiency.

Keywords: Artificial intelligence, document management systems, record handling efficiency, tertiary institutions, Rivers State

Introduction

The increasing volume of administrative, academic, and institutional records generated in tertiary institutions has created growing pressure on traditional document management practices across the education sector. Universities, polytechnics, and colleges of education rely heavily on efficient record creation, storage, retrieval, processing, and preservation to support decision-making, accountability, policy implementation, and effective service delivery. However, conventional paper-based and basic electronic filing systems have become increasingly inadequate in managing the complexity, volume, and speed of information required in modern institutional administration (Adu & Opoku, 2020) [1].

Document management systems have gradually evolved from simple electronic storage platforms into intelligent systems capable of supporting automated classification, indexing, retrieval, access control, and workflow management. The emergence of Artificial Intelligence (AI) has accelerated this transformation by introducing technologies that simulate human intelligence in processing and organizing information. AI-based document management systems incorporate technologies such as machine learning, natural language processing, optical character recognition, automated indexing, and intelligent search functions to improve institutional record handling processes (Bouras *et al*., 2021) [5]. These technologies enable institutions to process large volumes of documents more efficiently while minimizing human errors and delays (Khan & Javaid, 2021) [9].

Globally, educational institutions have increasingly adopted AI-driven document and records management approaches to address administrative challenges associated with document duplication, slow retrieval processes, information fragmentation, and security concerns. Between 2020 and 2021[1, 2], greater attention was directed toward digital transformation as institutions sought resilient information management systems capable of supporting remote and flexible administrative operations. Studies during this period reported that intelligent document management systems improved operational efficiency through automated document routing, enhanced metadata generation, and quicker access to institutional records (Dwivedi *et al*., 2021) [8].

Within tertiary education, efficient record handling remains critical because institutional operations depend extensively on student records, personnel files, financial documents, examination records, admission documents, accreditation materials, and policy records. Record handling efficiency refers to the ability of an institution to create, capture, organize, store, retrieve, secure, and dispose of records accurately and promptly while reducing operational cost and error rates. Effective record handling contributes to administrative productivity, institutional transparency, and improved service delivery to staff and students (Mnjama & Wamukoya, 2020) [10].

Despite technological advancement, many tertiary institutions in Nigeria continue to face challenges in document and records administration. Common issues include fragmented databases, manual filing systems, delays in document retrieval, loss of records, inadequate storage facilities, insufficient digital competencies among staff, and poor integration of intelligent technologies into administrative operations (Okon & Bassey, 2020) [11]. These

limitations often affect institutional responsiveness and reduce administrative efficiency. Existing studies have shown that institutions with stronger digital records management practices tend to demonstrate better organizational performance and information accessibility (Asogwa, 2021) [3].

In Rivers State, tertiary institutions operate within an increasingly dynamic educational environment characterized by expanding student populations, growing administrative responsibilities, and rising expectations for efficient governance and accountability. The demand for rapid access to institutional records has become more important as educational administration increasingly depends on timely and reliable information. Artificial intelligence-based document management systems present opportunities to transform record handling through automated processes, intelligent document organization, real-time retrieval capabilities, improved document security, and reduced dependence on manual procedures (Alam, 2021) [2].

However, despite the growing interest in digital transformation within higher education, empirical evidence on the relationship between artificial intelligence-based document management systems and record handling efficiency in tertiary institutions in Rivers State remains limited. Most existing studies have focused broadly on electronic record management and ICT integration without specifically examining AI-enabled document management capabilities and their influence on institutional efficiency outcomes. This gap creates the need for empirical investigation into how artificial intelligence-based document management systems influence record handling efficiency in tertiary institutions in Rivers State, Nigeria (Dwivedi *et al*., 2021) [8].

Statement of the Problem

Efficient record handling is essential for effective administration in tertiary institutions because institutional activities depend on timely creation, storage, retrieval, and management of documents. However, many tertiary institutions in Rivers State continue to experience challenges such as delayed document retrieval, record duplication, poor indexing, excessive dependence on manual processes, and inadequate document security, which reduce administrative efficiency and service delivery (Okon & Bassey, 2020) [11].

Artificial intelligence-based document management systems offer opportunities to improve record handling through automation, intelligent indexing, faster retrieval, and enhanced document control (Bouras *et al*., 2021) [5]. Despite these potentials, there is limited empirical evidence on how AI-based document management systems influence record handling efficiency in tertiary institutions in Rivers State. This study therefore seeks to examine the relationship between artificial intelligence-based document management systems and record handling efficiency in tertiary institutions in Rivers State, Nigeria (Dwivedi *et al*., 2021) [8].

Aim and Objectives of the Study

The aim of this study is to examine the relationship between artificial intelligence-based document management systems and record handling efficiency in tertiary institutions in Rivers State, Nigeria.

The specific objectives are to:

1. Determine the relationship between automated indexing systems and record handling efficiency in tertiary institutions in Rivers State.
2. Examine the relationship between intelligent document retrieval systems and record handling efficiency in tertiary institutions in Rivers State.
3. Investigate the relationship between automated document security and access control systems and record handling efficiency in tertiary institutions in Rivers State.

Research Questions

The following research questions guided the study:

1. What is the relationship between automated indexing systems and record handling efficiency in tertiary institutions in Rivers State?
2. What is the relationship between intelligent document retrieval systems and record handling efficiency in tertiary institutions in Rivers State?
3. What is the relationship between automated document security and access control systems and record handling efficiency in tertiary institutions in Rivers State?

Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

H01: There is no significant relationship between automated indexing systems and record handling efficiency in tertiary institutions in Rivers State.

H02: There is no significant relationship between intelligent document retrieval systems and record handling efficiency in tertiary institutions in Rivers State.

H03: There is no significant relationship between automated document security and access control systems and record handling efficiency in tertiary institutions in Rivers State.

Literature Review

Artificial Intelligence-Based Document Management Systems

Artificial intelligence-based document management systems refer to intelligent digital frameworks that apply technologies such as machine learning, natural language processing, optical character recognition, and data analytics to automate the creation, storage, classification, retrieval, and security of institutional documents. These systems are designed to improve accuracy, speed, and consistency in handling large volumes of records by reducing human intervention and enabling adaptive learning from data usage patterns. In tertiary institutions, they support administrative processes by improving workflow efficiency and reducing document-related delays. Studies have shown that AI integration in document systems enhances operational efficiency and reduces information management burdens in organizations (Dwivedi *et al*., 2021; Khan & Javaid, 2021; Alam, 2021) [8, 9].

Automated Indexing Systems

Automated indexing systems involve the use of intelligent algorithms to assign metadata, labels, and classifications to documents without manual input. This ensures that records are systematically organized in digital repositories, making

retrieval faster and more accurate. The system minimizes human error associated with manual filing and enhances consistency in document categorization. In tertiary institutions, automated indexing improves access to academic and administrative records, thereby strengthening efficiency in record handling processes. Previous studies have indicated that automated indexing significantly improves document organization and retrieval speed in digital environments (Bouras *et al*., 2021; Asogwa, 2021; Mnjama & Wamukoya, 2020) [3, 5, 10].

Intelligent Document Retrieval Systems

Intelligent document retrieval systems are AI-powered mechanisms that enable users to locate documents using advanced search techniques such as semantic search, keyword recognition, and predictive analytics. These systems interpret user intent and context, allowing for faster and more precise access to information compared to traditional search methods. In tertiary institutions, they reduce the time spent searching for records and enhance administrative responsiveness. Research has shown that intelligent retrieval systems improve information accessibility and decision-making efficiency in institutional settings (Alam, 2021; Khan & Javaid, 2021; Dwivedi *et al*., 2021) [2, 9].

Automated Document Security and Access Control Systems

Automated document security and access control systems are AI-driven frameworks that regulate document access through authentication, encryption, role-based permissions, and continuous monitoring. These systems ensure that only authorized users can access or modify sensitive institutional records, thereby protecting data integrity and confidentiality. In tertiary institutions, they reduce the risks of data loss, unauthorized access, and document manipulation. Evidence from previous studies suggests that secure digital document systems enhance organizational trust and improve overall records management efficiency (Okon & Bassey, 2020; Asogwa, 2021; Bouras *et al*., 2021) [3, 11].

Record Handling Efficiency

Record handling efficiency refers to the ability of an institution to effectively manage the entire lifecycle of records, including creation, storage, retrieval, maintenance, and disposal, in a timely and accurate manner. It emphasizes speed, accuracy, accessibility, and reliability in institutional record processes. In tertiary institutions, efficient record handling supports smooth administrative operations, timely decision-making, and improved service delivery. Studies have linked effective record handling systems with improved institutional performance and reduced administrative bottlenecks (Mnjama & Wamukoya, 2020; Okon & Bassey, 2020; Asogwa, 2021) [3, 10, 11].

Theoretical Framework

This study is anchored on the Technology Acceptance Model (TAM) and the Information Systems Success Model (ISSM), which jointly provide a strong explanation for the adoption and effectiveness of artificial intelligence-based document management systems in tertiary institutions.

The Technology Acceptance Model (Davis, 1989) [6] explains how users come to accept and use new technologies based on perceived usefulness and perceived ease of use. In the context of this study, administrative and records personnel are more likely to adopt AI-based document management systems when they believe the systems improve their job performance and are easy to operate. This model helps to explain the behavioural factors that influence the effective use of automated indexing, intelligent retrieval, and document security systems in tertiary institutions (Davis, 1989; Venkatesh & Davis, 2000) [6, 13].

The Information Systems Success Model (DeLone & McLean, 2003) [7] focuses on how system quality, information quality, and service quality determine user satisfaction and net benefits of an information system. Applied to this study, the quality of AI-based document management systems influences how efficiently records are handled in terms of accuracy, speed, accessibility, and reliability. High system quality such as fast retrieval, secure access, and accurate indexing leads to improved record handling efficiency in tertiary institutions (DeLone & McLean, 2003; Petter *et al*., 2008) [12].

Together, these theories explain both the behavioural acceptance and performance outcomes of AI-based document management systems. While TAM explains why users adopt the systems, ISSM explains how the systems improve record handling efficiency once adopted.

Empirical Review

Several studies have examined the relationship between digital technologies and records management efficiency in educational and organizational settings.

Dwivedi *et al*. (2021) [8] investigated the role of artificial intelligence in information management systems across different sectors. The study adopted a conceptual review approach and found that AI technologies such as machine learning and natural language processing significantly improve data processing speed, document classification, and decision-making efficiency. The authors concluded that AI-based systems enhance organizational performance by reducing human error and improving information accessibility.

Khan and Javaid (2021) [9] examined the application of artificial intelligence in information management systems, focusing on document processing and retrieval. Using a qualitative review methodology, the study found that AI-driven systems improve document search accuracy, reduce retrieval time, and enhance workflow automation. The study recommended wider adoption of intelligent systems in administrative environments to improve efficiency and reduce operational delays.

Okon and Bassey (2020) [11] studied electronic records management in Nigerian tertiary institutions using a descriptive survey design. The findings revealed that despite the adoption of ICT tools, many institutions still experience challenges such as poor indexing systems, inadequate storage infrastructure, and slow retrieval processes. The study concluded that effective records management systems significantly improve administrative efficiency but noted that lack of technical capacity limits full utilization in many institutions.

Methodology

This study adopted a correlational research design to examine the relationship between artificial intelligence-

based document management systems and record handling efficiency in tertiary institutions in Rivers State, Nigeria. The design was considered appropriate because it enabled the determination of the relationship among the variables without manipulation.

The study was conducted in selected tertiary institutions in Rivers State, Nigeria. The population of the study comprised 1,248 administrative, registry, records, and ICT personnel responsible for document processing and record management across the selected institutions. The distribution of the population was as follows: University of Port Harcourt (420), Rivers State University (365), Ignatius Ajuru University of Education (238), and Kenule Beeson Saro-Wiwa Polytechnic, Bori (225).

A sample size of 302 respondents was selected using the Taro Yamane sample size determination formula at 0.05 level of significance. Proportionate stratified sampling technique was used to allocate the sample across the institutions to ensure fair representation. The sample allocation was distributed as follows: University of Port Harcourt - 102 respondents, Rivers State University - 88 respondents, Ignatius Ajuru University of Education - 58 respondents, and Kenule Beeson Saro-Wiwa Polytechnic, Bori - 54 respondents. Thereafter, simple random sampling technique was employed to select respondents within each institution.

Data were collected using a structured questionnaire titled Artificial Intelligence-Based Document Management Systems and Record Handling Efficiency Questionnaire (AIDMSRHEQ). The instrument was divided into two sections. Section A obtained demographic information of respondents, while Section B measured automated indexing systems, intelligent document retrieval systems, automated document security and access control systems, and record handling efficiency. Responses were rated using a four-point Likert scale of Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1).

The instrument was subjected to face and content validation by experts in educational management and measurement and evaluation. Reliability was established using Cronbach's Alpha method, which produced an overall reliability coefficient of 0.84, indicating that the instrument was reliable for data collection.

Data were collected through direct administration of questionnaires with support from research assistants. Completed questionnaires were coded and analyzed using the Statistical Package for Social Sciences (SPSS), version 27. Mean and standard deviation were used to answer the research questions, while Pearson Product Moment Correlation (PPMC) was used to test the null hypotheses at 0.05 level of significance.

Table 1: Pearson Product Moment Correlation Analysis of the Relationship between Automated Indexing Systems and Record Handling Efficiency in Tertiary Institutions in Rivers State (H01)

Variables	N	Mean	SD	r	p-value	Decision
Automated Indexing Systems	302	3.31	0.58	0.682	0.000	Reject H01
Record Handling Efficiency	302	3.26	0.61			

Level of significance = 0.05

Table 1 presents the Pearson Product Moment Correlation analysis of the relationship between automated indexing systems and record handling efficiency in tertiary institutions in Rivers State. The result showed a correlation coefficient (r = 0.682) indicating a strong positive relationship between automated indexing systems and record handling efficiency. The associated probability value (p = 0.000) was less than the alpha level of 0.05. Therefore, the null hypothesis which stated that there is no significant relationship between automated indexing systems and record handling efficiency in tertiary institutions in Rivers State was rejected. This implies that improvement in automated indexing systems was associated with increased efficiency in institutional record handling.

Table 2: Pearson Product Moment Correlation Analysis of the Relationship between Intelligent Document Retrieval Systems and Record Handling Efficiency in Tertiary Institutions in Rivers State (H02)

Variables	N	Mean	SD	r	p-value	Decision
Intelligent Document Retrieval Systems	302	3.38	0.54	0.741	0.000	Reject H02
Record Handling Efficiency	302	3.26	0.61			

Level of significance = 0.05

Table 2 presents the Pearson Product Moment Correlation analysis of the relationship between intelligent document retrieval systems and record handling efficiency in tertiary institutions in Rivers State. The result revealed a correlation coefficient (r = 0.741) indicating a strong positive relationship between intelligent document retrieval systems and record handling efficiency. The associated probability value (p = 0.000) was less than the alpha level of 0.05. Therefore, the null hypothesis which stated that there is no significant relationship between intelligent document retrieval systems and record handling efficiency in tertiary institutions in Rivers State was rejected. This implies that increased use of intelligent document retrieval systems was associated with improved record handling efficiency in tertiary institutions.

Table 3: Pearson Product Moment Correlation Analysis of the Relationship between Automated Document Security and Access Control Systems and Record Handling Efficiency in Tertiary Institutions in Rivers State (H03)

Variables	N	Mean	SD	R	p-value	Decision
Automated Document Security and Access Control Systems	302	3.29	0.57	0.659	0.000	Reject H03
Record Handling Efficiency	302	3.26	0.61			

Level of significance = 0.05

Table 3 presents the Pearson Product Moment Correlation analysis of the relationship between automated document security and access control systems and record handling efficiency in tertiary institutions in Rivers State. The result revealed a correlation coefficient (r = 0.659) indicating a moderate to strong positive relationship between automated document security and access control systems and record handling efficiency. The p-value (0.000) was less than the 0.05 level of significance. Therefore, the null hypothesis which stated that there is no significant relationship between automated document security and access control systems

and record handling efficiency in tertiary institutions in Rivers State was rejected. This implies that stronger document security and access control systems were associated with better record handling efficiency in the institutions.

Discussion of Findings

The findings of the study revealed that all the tested components of artificial intelligence-based document management systems had significant positive relationships with record handling efficiency in tertiary institutions in Rivers State.

The result for H01 showed a strong positive relationship between automated indexing systems and record handling efficiency ($r = 0.682$, $p < 0.05$). This implies that improved automated indexing contributes to faster organization, classification, and retrieval of records. This finding aligns with the view that automation in indexing reduces manual filing errors and enhances accessibility of institutional records, thereby improving administrative efficiency (Bouras *et al*., 2021; Khan & Javaid, 2021) [5, 9].

For H02, the result indicated a strong positive relationship between intelligent document retrieval systems and record handling efficiency ($r = 0.741$, $p < 0.05$). This suggests that institutions with more advanced retrieval systems experience quicker access to documents and reduced time spent searching for records. This supports earlier observations that intelligent retrieval systems enhance information flow and improve responsiveness in administrative processes (Dwivedi *et al*., 2021; Alam, 2021) [2, 8].

The result for H03 also showed a positive relationship between automated document security and access control systems and record handling efficiency ($r = 0.659$, $p < 0.05$). This implies that secure and well-regulated access to institutional records contributes to better organization, reduced loss of documents, and improved confidence in record systems. This is consistent with findings that secure digital record systems strengthen institutional efficiency by minimizing data breaches and unauthorized access (Okon & Bassey, 2020; Asogwa, 2021) [3, 11].

Overall, the findings suggest that artificial intelligence-based document management systems play a significant role in enhancing record handling efficiency in tertiary institutions. The consistent positive relationships across all variables indicate that AI-driven features such as indexing, retrieval, and security collectively contribute to more efficient administrative record management.

Conclusion

The study concluded that artificial intelligence-based document management systems have a significant positive relationship with record handling efficiency in tertiary institutions in Rivers State. Specifically, automated indexing systems, intelligent document retrieval systems, and automated document security and access control systems were all found to enhance the speed, accuracy, and effectiveness of record handling. This implies that the integration of AI-driven document management tools improves administrative efficiency and reduces challenges associated with manual record processing in tertiary institutions.

Recommendations

1. Tertiary institutions in Rivers State should adopt and strengthen automated indexing systems to improve organization and retrieval of institutional records.
2. Institutions should invest in intelligent document retrieval technologies to ensure faster access to academic and administrative records.
3. Management of tertiary institutions should implement advanced automated security and access control systems to protect institutional records and improve overall efficiency of record handling.

References

1. Adu K, Opoku D. Digital transformation and records management practices in educational institutions. International Journal of Information and Records Management,2020:12(2):88–102.
2. Alam T. Artificial intelligence applications in modern document and information management systems. Journal of Information Systems and Technology Management,2021:18(3):45–60.
3. Asogwa BE. Digital records management practices and institutional efficiency in higher education. Records Management Journal,2021:31(2):120–135.
4. Asogwa BE. Digital records management practices and organizational efficiency in higher education institutions. Records Management Journal,2021:31(2):120–135.
5. Bouras A, Hassan K, Ahmed S. Intelligent document management systems and organizational performance: A review. International Journal of Computer Applications,2021:183(7):10–18.
6. Davis FD. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly,1989:13(3):319–340. https://doi.org/10.2307/249008
7. DeLone WH, McLean ER. The DeLone and McLean model of information systems success: A ten-year update. Journal of Management Information Systems,2003:19(4):9–30. https://doi.org/10.1080/07421222.2003.11045748
8. Dwivedi YK, Hughes L, Coombs C, et al. Artificial intelligence: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. International Journal of Information Management,2021:57:101994.
9. Khan I, Javaid M. Artificial intelligence in information management systems: Applications and challenges. Information Processing & Management,2021:58(5):102–114.
10. Mnjama N, Wamukoya J. Records and archives management in the digital era: Issues and challenges in higher education institutions. African Journal of Library, Archives and Information Science,2020:30(1):25–40.
11. Okon E, Bassey U. Challenges of electronic records management in Nigerian tertiary institutions. Library Philosophy and Practice, 2020, 1–15.
12. Petter S, DeLone W, McLean E. Measuring information systems success: Models, dimensions, measures, and interrelationships. European Journal of Information Systems,2008:17(3):236–263. https://doi.org/10.1057/ejis.2008.15
13. Venkatesh V, Davis FD. A theoretical extension of the Technology Acceptance Model: Four longitudinal field studies. Management Science,2000:46(2):186–204. https://doi.org/10.1287/mnsc.46.2.186.11926