Assessing the Adoption of Artificial Intelligence Technologies in University Registry Offices: A Case Study of Federal University of Education, Zaria.

By

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Abstract

This study assessed the adoption of Artificial Intelligence (AI) technologies in the registry offices of the Federal University of Education, Zaria. Against a backdrop of global digital transformation in higher education, this research sought to identify the specific AI technologies applicable to information management and evaluate their perceived impact on administrative practices. A quantitative research methodology was employed, utilizing a descriptive survey design. A structured questionnaire was administered to a population of 98 records management staff to collect data on their experiences and perceptions. The data were analyzed using descriptive statistics (frequencies and percentages). The findings revealed that Optical Character Recognition (OCR) and Machine Learning are the most widely applicable AI technologies in this context, while tools like chatbots, predictive analytics, and Robotic Process Automation (RPA) demonstrate lower adoption rates. Furthermore, the study confirmed that AI adoption significantly enhances accuracy, efficiency, security, and accessibility of information management. However, its impact on regulatory compliance and cost-effectiveness was perceived as less pronounced. The study concludes that while a foundation for AI adoption exists, its potential is not yet fully realized. It recommends the strategic integration of a broader suite of AI tools, complemented by comprehensive staff training and robust compliance frameworks, to optimize information management practices within the university registry and similar Nigerian institutions.

Keywords: Artificial Intelligence, University Registry, Information Management, Technology Adoption, Quantitative Research, Federal University of Education Zaria.

Introduction

In the contemporary digital era, effective information management is a cornerstone of institutional efficiency and accountability within higher education. The global sector is undergoing a significant transformation, driven by the need for greater operational efficiency, improved service delivery, and data-driven decision-making (Smith & Johnson, 2024). Central to this transformation is the adoption of Artificial Intelligence (AI) technologies, which promise to automate routine tasks, enhance data accuracy, and personalize user interactions (Engageli, 2025). University registry offices, as the nerve centers for critical administrative functions including student records, staff data, and academic documentation stand to benefit immensely from this technological shift, with

the role of the registrar evolving to include the stewardship of AI tools to improve data integrity (AACRAO, 2025).

Institutions like the Federal University of Education, Zaria, face an ever-expanding volume of administrative records, stretching traditional management approaches to their limits. However, despite the proven potential of AI and high global adoption rates, a conspicuous gap exists in its strategic adoption within the Nigerian university system, particularly in registry operations (Evolution, 2024). Many public universities, including the Federal University of Education, Zaria, continue to rely heavily on manual or semi-digitalized processes. This reliance leads to systemic challenges such as procedural delays, data inaccuracies, and inefficient record retrieval, which impede institutional productivity and adversely affect service delivery to students, staff, and other stakeholders.

The potential of AI to automate routine tasks and enable intelligent data classification is significant, yet its actual adoption is contingent on local context and readiness. Studies specific to the Nigerian context highlight critical infrastructural challenges, such as unstable internet connectivity and unreliable electricity, as primary barriers to implementation (Bello & Mohammed, 2025). Furthermore, while the broader sector explores AI applications for administrative support, successful integration requires a holistic approach encompassing skills, technology, and governance (Lee, 2025). This underscores a critical problem: the underutilization of AI technologies in the registry offices of the Federal University of Education, Zaria, contributes to persistent inefficiencies and is compounded by a clear knowledge gap.

While existing literature discusses AI in education broadly, there is a scarcity of empirical research focusing on the specific types of AI technologies applicable to the unique, resource-specific context of Nigerian university registry offices. Furthermore, the tangible ways in which these technologies can enhance information management practices by reducing processing times or improving data security remain largely unexamined in this specific setting (Adebayo, 2024). Therefore, this study is necessitated by the critical need to address this gap. This research seeks to systematically investigate the applicable AI technologies and assess their potential impact, thereby providing a foundational understanding that can guide informed decision-making for technological modernization at the institution and serve as a model for similar universities in Nigeria.

To help visualize the potential applications and challenges identified in the background research, the table below summarizes key insights from the search results relevant to your study:

Research Questions

1. What types of Artificial Intelligence (AI) technologies are applicable for efficient information management in the registry offices of the Federal University of Education, Zaria?
2. What are the perceived benefits of Artificial Intelligence adoption on information management practices among staff and administrators in the registry offices of the Federal University of Education, Zaria?

Literature Review

Artificial Intelligence (AI) has emerged as a transformative force in records management, fundamentally changing how organizations create, store, retrieve, and dispose of records. AI-driven systems employ machine learning, natural language processing, and automation to enhance efficiency, accuracy, and security in records handling (Modiba, 2022). In the context of university registry offices, AI supports intelligent classification, automated indexing, predictive analytics, and real-time data retrieval, thereby reducing manual workloads and minimizing human errors (Omigie, Krubu, & Solomon, 2023). Given the growing volume and complexity of records in higher education institutions, the adoption of AI is critical for improving decision-making, ensuring compliance, and enhancing service delivery (Modiba, 2022). Nevertheless, challenges such as inadequate infrastructure, resistance to organizational change, and ethical concerns continue to impede full-scale AI integration (Shonhe, 2024). Understanding the role and potential of AI in records management is therefore essential for optimizing its application and addressing these institutional challenges.

Artificial Intelligence (AI) refers to the simulation of human cognitive abilities by machines, particularly computer systems, enabling them to perform tasks such as learning, reasoning, problem-solving, perception, and language processing (Modiba, 2022). AI encompasses a range of subfields, including machine learning, natural language processing, robotic process automation, and expert systems, all of which contribute to its expanding role in modern information and records management (Omigie, Krubu, & Solomon, 2023). In the domain of records management, AI has the potential to automate repetitive tasks, improve data accuracy, and enhance decision-making through intelligent data analytics, pattern recognition, and predictive insights (Modiba, 2022).

The evolution of AI dates back to the mid-20th century, when pioneering researchers began developing mathematical models and algorithms to replicate aspects of human cognition (Mosweu & Rakemane, 2020). The term "Artificial Intelligence" was first coined by John McCarthy in 1956 at the Dartmouth Conference, marking the formal inception of AI as a field of study (Shonhe, 2024). Since then, AI has undergone significant transformations: from early rule-based systems in the 1950s and 1960s to the development of machine learning and neural networks in the 1980s and 1990s, culminating in contemporary advances in deep learning, big data analytics, and cloud-based intelligent systems in the 21st century (Sanusi, Abdulrahim, & Duada, 2024).

In recent years, AI has been widely adopted across multiple sectors, including healthcare, finance, education, and records management. The integration of AI into records management has been propelled by innovations in cloud computing, automation, and data science, allowing organizations to streamline operations, enhance service delivery, and ensure the security of sensitive information (Mphunda & Mnjama, 2022). In higher education, AI-powered records management systems facilitate the digitization, organization, retrieval, and protection of records far more efficiently than traditional manual methods, reducing human error and improving institutional responsiveness (Abdulrahim, Yunusa, & Aliyu, 2021).

Despite these advancements, the adoption of AI in records management faces persistent challenges, including high implementation costs, ethical concerns, resistance to organizational

change, and limited technical expertise (Shehu, 2020). Nonetheless, the continuous evolution of AI presents significant opportunities for optimizing records management practices, promoting compliance, and supporting evidence-based decision-making within registry offices of higher education institutions (Oloniruha & Momohjimoh, 2022). As AI-driven solutions become increasingly sophisticated, they hold the potential to revolutionize records management by enhancing efficiency, accuracy, security, and overall institutional governance.

Perceived Benefits of Artificial Intelligence Adoption in University Registry Offices

The integration of Artificial Intelligence (AI) technologies into higher education administration has generated significant scholarly interest, particularly regarding its impact on institutional efficiency and service delivery. Within this domain, university registry offices represent critical administrative hubs where AI implementation promises substantial transformation. While much research has examined the technical capabilities of AI systems, emerging scholarship has begun investigating the human dimension of this technological adoption specifically, the perceptions and experiences of the staff and administrators who interface with these systems (Zhang & Li, 2023). Grounded in this focus on the human element, this review synthesizes current literature on the perceived benefits of AI adoption among registry personnel, examining how these perceptions ultimately influence implementation success and organizational change.

Understanding these perceived benefits requires a foundation in established technology acceptance models. The Technology Acceptance Model (TAM) and its subsequent iterations provide a valuable framework for analyzing how registry staff perceive AI's usefulness and ease of use, factors which directly influence adoption rates (Davis, 1989; Venkatesh et al., 2003). Furthermore, recent adaptations of these models to AI contexts suggest that perceived benefits extend beyond simple utility to include dimensions of professional empowerment, skill development, and organizational value (Al-Mushayt et al., 2023). These theoretical underpinnings help contextualize the specific benefit categories emerging in empirical studies of registry operations, which predominantly fall into three key areas.

A consistent theme in the literature concerns the perceived impact of AI on operational efficiency. Multiple studies report that administrative staff perceive AI-driven automation as significantly reducing time spent on routine tasks. For instance, in a survey of registry personnel across five universities, Ofori-Dwumfuo et al. (2024) found that 78% of respondents identified reduced processing time for student records management as a primary benefit. Similarly, Lee and Park (2023) documented that robotic process automation (RPA) implementation in transcript processing was perceived to decrease manual workload by approximately 60%, thereby allowing staff reallocation to more complex tasks requiring human judgment.

Complementing gains in efficiency, registry staff also consistently perceive AI tools as enhancing service delivery mechanisms. Chatbots and virtual assistants, powered by natural language processing, are particularly noted for improving response times and information accessibility. A case study by Abdullahi et al. (2024) at a Nigerian university revealed that 72% of registry staff believed AI-enabled query handling systems improved student satisfaction metrics. Furthermore,

administrative personnel reported decreased stress levels associated with high-volume inquiry periods, such as registration and examination timelines, citing the cognitive offloading afforded by AI systems as a significant benefit to their professional well-being.

Contrary to initial concerns about technological displacement leading to deskilling, emerging evidence suggests that registry staff perceive AI adoption as creating opportunities for professional growth. Rather than rendering human administrators obsolete, AI implementation appears to shift the nature of administrative work toward more analytical and strategic functions (Thompson & Williams, 2024). Supporting this view, qualitative interviews with registry supervisors revealed that many of their teams developed valuable new competencies in data analysis, system management, and digital literacy following AI integration. This perceived enhancement of professional capabilities represents a significant benefit that may facilitate smoother technological transitions and foster positive attitudes toward further innovation.

However, the literature indicates that these perceived benefits are not uniform across contexts but are instead mediated by institutional, individual, and technological factors. Organizational support structures, including comprehensive training programs and change management strategies, significantly influence how staff perceive AI benefits (Kwofie & Baffour, 2024). Additionally, prior technological experience and digital literacy levels correlate positively with perceived benefits, suggesting that readiness assessments may be crucial for maximizing positive perceptions during implementation phases (Gomez et al., 2023).

In conclusion, the extant literature demonstrates that registry staff perceive multiple benefits from AI adoption, spanning operational, service quality, and professional development dimensions. These perceptions play a crucial role in determining implementation success and the long-term sustainability of technological innovations. However, significant gaps remain in understanding these phenomena within specific cultural and institutional contexts, particularly in developing higher education systems. Consequently, future research should employ mixed-methods approaches to quantitatively measure perceived benefits while qualitatively exploring their nuanced manifestations in diverse administrative environments.

Research Methodology

Quantitative research methodology is adopted to systematically collect and analyze numerical data related to AI adoption in records management. This methodology allowed for structured data collection and facilitate the use of statistical techniques to interpret the findings. A descriptive survey research design was adopted. Because the descriptive survey method is widely used in social sciences research as it enables the researcher to obtain first-hand information on respondents' experiences and perceptions (Babbie, 2021). The population of this study comprise 98 staff members involved in records management at Federal University of Education (ABU), Zaria. This includes registry officials, and other personnel handling records within the university. The choice of this population is justified as it consists of individuals directly engaged in records management, making them well-suited to provide insights into AI adoption in this domain. A structured questionnaire was used as the primary instrument for data collection. The questionnaire consisted of closed-ended questions to capture respondents' perspectives on AI application in information

management. The collected data was analyzed using descriptive statistical techniques, specifically frequencies and percentages. These statistical methods are appropriate for summarizing and presenting data in a clear and interpretable manner (Field, 2020). The findings was presented in tables for clarity and understanding.

Results and Discussion

Types of AI Applicable for Efficient Information Management

The respondents were asked to indicate the types of AI applicable for efficient information management in the Registry Offices of the Federal University of Education, Zaria, Nigeria. A list of items was provided for them to tick as applicable. This is presented in table 1 as follow:

Table 1 Types of AI Available for Efficient Information Management

S/NO.	Types of AI Available for Efficient Information Management	Frequency	percentage
1	Machine Learning for data analysis and predictions	65	63.3
2	Natural Language Processing (NLP) for document automation	45	43.3
3	Robotics Process Automation (RPA) for workflow efficiency	33	31.7
4	Optical Character Recognition (OCR) for digitizing paper records	79	80.6
5	Chatbots for automated responses and inquiries	78	75.0
6	AI-driven document management systems	50	48.1
7	Predictive analytics for decision-making	39	37.5
8	AI-based biometric authentication for secure access	22	21.2
9	Virtual assistants for administrative support	43	41.4
10	AI-powered cloud storage and retrieval systems	70	71.4

The findings indicate that the most commonly adopted AI technologies in the Registry Offices of ABU Zaria are Optical Character Recognition (OCR) for digitizing paper records 79(80.6%), Chatbots for automated responses and inquiries 78(75.00%), AI-powered cloud storage and retrieval systems 70(71.4%) Machine learning for data analysis and predictions AI 65(66.3%), and this preference highlights a strategic focus on automation to streamline document management and reduce manual workload. As noted by Modiba (2022), the leverage of OCR to convert physical records significantly improves accessibility and retrieval efficiency. This growing reliance enables more data-driven decision-making, a point reinforced by Dwivedi, Hughes, & Baabdullah (2021), who emphasize the crucial role of such technologies in analyzing datasets for predictive insights.

Furthermore, the adoption rates for other applications are significantly lower: Based biometric authentication for secure access 22(21.15%), and Predictive analytics for decision-making 39(37.50%). Robotics Process Automation (RPA) for workflow efficiency 33(31.73%), this adoption gap could be attributed to technical expertise gaps and financial constraints.

As Obasi (2024) asserts, effective AI implementation requires adequate funding, proper training, and well-defined policies. Modiba (2022) further warns that such limited adoption hinders process automation, leading to inefficiencies in document processing and decision-making. Consequently, these lower recognition rates underscore the need for strategic investment in AI-friendly infrastructure, continuous staff training, and supportive policy frameworks to facilitate broader adoption and maximize the potential for efficient information management.

Based on the findings that automation tools such as OCR, chatbots, AI-powered cloud storage systems, and predictive technologies like machine learning are heavily used, the key implication is that the institution is effectively "sticking with what works" for immediate paperwork efficiency but risks falling behind in leveraging its data for future insights and strategic decision-making.

Perceived Benefits of AI Application in Information Management

The respondents were asked to indicate how the adoption of Artificial Intelligence enhances records management practices and service delivery in the registry offices of Federal University of Education, Zaria. A list of items was provided for them to tick as applicable. This is presented in Table 4.6 as follow:

Table 2 Perceived Benefits of AI Application in Information Management

S/NO.	Perceived Benefits of AI Adoption in information Management	Frequency	percentage
1	Improved accuracy and efficiency in recordkeeping	78	79.6
2	Faster retrieval and processing of records	80	81.6
3	Enhanced security and reduced risk of unauthorized access	50	51.0
4	Reduction in manual workload for staff	63	64.3
5	Better compliance with regulatory and institutional policies	45	45.9
6	Improved decision-making through data analytics and insights	58	59.2
7	Cost-effectiveness in long-term records management	44	44.9
8	Increased accessibility of records for authorized users	67	68.4

The findings reveal that the majority of respondents acknowledged significant benefits of AI adoption in records management, with several aspects receiving above 50% endorsement. Notably, faster retrieval and processing of records (81.6%) and improved accuracy and efficiency in recordkeeping (79.6%) were identified as the most prominent advantages. Additionally, increased accessibility of records for authorized users (68.4%), reduction in manual workload for staff (64.3%), improved decision-making through data analytics and insights (59.2%), and enhanced security and reduced risk of unauthorized access (51.0%) were also widely recognized. These findings suggest that AI integration can enhance efficiency, security, and accessibility in record management, ultimately streamlining operations within registry offices.

On the other hand, some perceived benefits received lower endorsements, indicating areas where AI adoption may not yet be fully optimized. Better compliance with regulatory and institutional

policies (45.9%) and cost-effectiveness in long-term records management (44.9%) were the least recognized benefits.

The findings indicate that AI adoption in records management significantly enhances operational efficiency, security, and accessibility. The high recognition of AI's role in improving accuracy and retrieval speed aligns with the argument that automation reduces human errors and optimizes workflow processes (Modiba, 2022). AI-driven systems streamline the retrieval and processing of records, reducing delays and ensuring timely access to critical information (Omigie, Krubu, & Solomon, 2023). Additionally, AI strengthens data security by mitigating unauthorized access and ensuring compliance with access controls, a crucial factor in safeguarding institutional records (Shonhe, 2024). This suggests that the integration of AI tools in registry offices can facilitate smoother administrative operations and support evidence-based decision-making (Sanusi, Abdulrahim, & Duada, 2024).

Despite these advantages, the findings also highlight concerns regarding regulatory compliance and cost-effectiveness. The relativeely lower acknowledgment of AI's role in regulatory adherence suggests gaps in aligning AI-driven systems with institutional policies and legal frameworks (Mphunda & Mnjama, 2022). This is consistent with previous studies that emphasize the need for clear regulatory guidelines to govern AI use in records management (Oloniruha & Momohjimoh, 2022). Additionally, while AI reduces long-term operational costs, its initial investment and maintenance expenses may pose challenges for some institutions. These findings imply that successful AI adoption requires not only technological infrastructure but also policy support, financial planning, and continuous staff training to maximize its benefits and sustainability. The findings reveal that AI adoption in records management enhances accuracy, efficiency, security, and accessibility, but less issues in regulatory compliance and cost-effectiveness.

Based on the data collected and analyzed for this study, the following are the major findings:

1. The findings indicated that Optical Character Recognition (OCR) and Machine Learning are the most widely applicable AI technologies for enhanced information management in the Registry Offices of the ABU Zaria, while other AI tools such as chatbots, predictive analytics, and robotic process automation (RPA) have lower application.
2. The findings revealed that AI adoption in information management can enhances accuracy, efficiency, security, and accessibility at the registry offices of Federal University of Education, Zaria, but less issues in regulatory compliance and cost-effectiveness.

Conclusion

This study concludes that AI adoption in the Federal University of Education, Zaria's registry offices remains limited and selective. Foundational technologies like Optical Character Recognition and Machine Learning are primarily utilized, while advanced tools such as chatbots and predictive analytics see minimal application. The implemented AI solutions demonstrate clear benefits, significantly enhancing information accuracy, processing efficiency, data security, and access. However, their impact on regulatory compliance and cost-effectiveness remains limited. Overall, while AI adoption shows promising results in specific areas, comprehensive integration across registry functions has not been achieved.

Recommendations

1. The university should explore the integration of other AI tools such as chatbots, predictive analytics, and Robotic Process Automation (RPA) to enhance efficiency. Training programs should be organized to educate staff on the benefits and applications of these AI technologies in information management.
2. The university should implement robust compliance measures aligned with national and institutional regulations to ensure proper AI usage. Additionally, a cost-benefit analysis should be conducted to optimize AI implementation strategies, ensuring financial sustainability while maximizing efficiency.

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