

ARTIFICIAL INTELLIGENCE AND ADMINISTRATIVE EFFECTIVENESS IN HIGHER EDUCATION: REPOSITIONING INSTITUTIONAL GOVERNANCE FOR THE DIGITAL AGE

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Abstract

This paper examined how artificial intelligence (AI) is reshaping administrative effectiveness in higher education, using Nigerian universities as its primary context. As a conceptual paper drawing on secondary data, it applies the Technology Acceptance Model (TAM) to argue that AI's contribution to university administration depends less on technical sophistication and more on whether administrators perceive such tools as useful and easy to use. The paper reviewed literature on AI-driven administration and identified a persistent gap where existing knowledge concentrates on students and teaching staff, leaving administrators understudied despite their central role in institutional governance. Drawing on recent empirical and conceptual studies, this paper examined global trends in AI-driven University Administration, AI as a Catalyst for Administrative effectiveness, challenges of AI adoption in Nigerian Universities, repositioning Institutional governance for the AI era, and implications for educational policy and practice. The paper concluded that repositioning Nigerian universities for the AI era requires simultaneous attention to administrators' competence and institutional policy, rather than treating technology procurement as sufficient in itself. It closed with recommendations for policymakers and university management.

Keywords: Artificial Intelligence, Administrative Effectiveness and Institutional Governance

Introduction

Higher education institutions worldwide are undergoing a period of administrative transformation driven by the rapid diffusion of Artificial Intelligence (AI) technologies. What began as isolated experiments with automation in student records and admissions has evolved into a broader restructuring of how universities plan, decide, and govern themselves, with AI-enabled systems now supporting functions ranging from predictive analytics for enrolment management to chatbots handling routine enquiries and machine learning models informing resource allocation and quality assurance. This shift shows the recognition that administrative effectiveness is increasingly tied to an institution's capacity to process data, anticipate outcomes, and respond swiftly to a changing environment.

For universities in Nigeria, this global movement presents both an opportunity and a challenge. Nigerian universities operate within a context marked by rising students' enrolment, chronic underfunding, and administrative structures still largely reliant on manual or semi-digitized processes, producing bureaucratic bottlenecks in admissions, records management, staff appraisal, and financial administration. These bottlenecks are often linked to inadequate infrastructure and limited institutional capacity rather than a lack of awareness of digital alternatives.

Khairullah et al. (2025) argued that the successful integration of AI into academic and administrative processes depends less on the technology itself than on the quality of leadership guiding its adoption. This is directly relevant to Nigerian universities, where administrators trained

within traditional bureaucratic systems are now expected to interpret dashboards, oversee algorithmic tools, and manage the ethical implications of automated processes affecting staff and students. Without deliberate leadership attention to this transition, institutions risk acquiring AI tools that remain underused or misapplied.

This paper approaches AI adoption in university administration as a management phenomenon rather than a purely technical one, using the Technology Acceptance Model to examine how perceived usefulness and perceived ease of use shape administrator engagement with AI. It builds a conceptual argument for how Nigerian universities might reposition their administrative structures for the digital age, drawing on secondary data and existing scholarship given the conceptual nature of the study.

Statement of the Problem

Despite growing global adoption of artificial intelligence in university administration, Nigerian higher education institutions continue to grapple with administrative inefficiencies that AI is well positioned to address. Admissions processing, records management, staff appraisal, and financial administration in many Nigerian universities remain slow, duplicative, and vulnerable to human error, often resulting in delayed decision-making and diminished institutional governance responsiveness. Where AI tools do exist, they are frequently underutilized. This gap is compounded by a scholarly imbalance. Existing literature on AI in higher education is centered on teaching and students' learning, with limited attention to administrative and managerial functions, particularly in Nigerian and broader African contexts. Where such studies exist, they tend to focus on infrastructural and financial constraints, giving less consideration to how administrators themselves perceive and respond to these technologies. This paper therefore addressed that gap by examining AI adoption in Nigerian university administration through the Technology Acceptance Model, treating perceived usefulness and ease of use as central to understanding why administrative effectiveness has not kept pace with technological availability.

Objectives of the Study

This paper sets out to achieve the following objectives, to:

examine the conceptual relationship between artificial intelligence adoption and administrative effectiveness in higher education institutions.

identify the key areas of university administration where AI can serve as a catalyst for improved effectiveness.

interrogate the challenges confronting AI adoption in Nigerian universities.

propose a framework for repositioning institutional governance to meet the demands of AI-driven administration.

These objectives guided the paper towards a conceptual synthesis of existing scholarship, aimed at informing both institutional practice and policy direction in the Nigerian higher education sector.

This paper contributes to a growing but still underdeveloped body of knowledge on AI in university administration within the Nigerian and broader African context. By focusing specifically on administrative effectiveness, this paper addressed a gap that has direct implications for how universities are governed and managed. For university governance, the discussion provides a framework for understanding why AI investments may fail to yield expected improvements, and what institutional conditions are needed to translate technological capacity into administrative effectiveness. The study clarifies the competencies required to function effectively within an increasingly AI-mediated administrative environment.

Conceptual Clarification

Artificial Intelligence

For this paper, AI is understood as computational systems capable of performing tasks that typically require human intelligence, including learning from data, recognizing patterns, making predictions, and supporting decision-making, while adapting their behaviour based on new information rather than relying solely on static, pre-programmed rules.

Artificial Intelligence are simulations of human intelligence processes by machines especially computer systems. AI is used to transform different areas of endeavours and educational administration is no exception. It has especially made its way into educational administration. This working definition, informed by Jiang et al. (2022) and Wang (2019) underpins the paper's treatment of AI not as a single technology but as a family of tools and techniques whose administrative relevance lies precisely in their capacity to process data and support decisions at a scale and speed beyond conventional manual methods.

Administrative Effectiveness

Administrative effectiveness can be described as the measure of the ability of school heads, administrators, and heads of departments to perform their administrative duties using methods, principles, and practices to establish and execute policies, plans, and procedures to achieve predetermined goals (Ogieva in Ogieva & Eimuihi, 2025).

Administrative effectiveness in higher education refers to the extent to which an institution's administrative processes and structures succeed in achieving their intended outcomes efficiently, accurately, and in a manner that supports the institution's broader mission. For this paper, administrative effectiveness is the degree to which university administrative systems, spanning admissions, records, human resources, finance, and quality assurance; achieve accurate, timely, and stakeholder-responsive outcomes, supported by both efficient processes and capable leadership. This definition, drawn from Alvarez-Sández et al. (2023), established administrative effectiveness as the outcome of central concern in this paper, the measure against which AI's contribution to university administration and governance in the Nigerian context was assessed.

Theoretical Framework

This paper is hinged on the Technology Acceptance Model (TAM) as its guiding theoretical framework for understanding how educational administrators engage with AI-based tools in Nigerian universities. It was developed by Davis (1989) and designed to explain and predict user acceptance of information technology through two core constructs: perceived usefulness, defined as the degree to which a person believes that using a particular system would enhance their job performance, and perceived ease of use, defined as the degree to which a person believes that using the system would be free of effort. According to the model, these two constructs shape an individual's attitude towards a technology, which in turn influences behavioural intention and, ultimately, actual system use.

TAM is particularly well suited to this paper's focus on administrative effectiveness because it shifts attention away from the technical specifications of AI systems and towards the perceptions of the people expected to use them. An AI-powered admissions system or predictive analytics dashboard may be technically sophisticated, but its contribution to administrative effectiveness depends on whether administrators perceive it as useful for their work and manageable to operate. The recent applications of TAM within Nigerian higher education reinforce its relevance to this discussion. Ezeonwumelu (2026) in a TAM-based study of AI adoption among engineering education stakeholders in Nigeria, found that perceived usefulness and ease of use were significant predictors of willingness to engage with AI tools, while also identifying infrastructural and attitudinal barriers that complicated adoption regardless of how useful the technology was perceived

to be. This finding is instructive for this study as it focused on administrators rather than students or lecturers, since it demonstrates that even where usefulness is recognized, adoption can stall when ease of use is undermined by poor infrastructure, limited training, or unsupportive institutional conditions, precisely the conditions that characterize many Nigerian university administrative environments.

An administrator who views an AI-based student records system as capable of reducing errors and saving time, and who finds the system straightforward to operate, is more likely to adopt it meaningfully into daily practice than one who views it as either irrelevant to their work or too complex to manage.

Global Trends in AI-Driven University Administration

Research on AI in higher education has grown rapidly over the past decade, with publication output rising sharply after 2020 as generative AI tools and predictive analytics systems became more accessible to institutions. Ocen et al. (2025) in a review of AI innovations, opportunities, and challenges in higher education institutions, noted that AI tools are increasingly used to streamline administrative tasks alongside teaching and research functions, with universities adopting intelligent systems for functions ranging from students' enrolment verification to automated academic advising. Their review cautions, however, that these opportunities are accompanied by real risks, including data governance concerns and the potential for AI tools to be poorly integrated into existing institutional workflows if adopted without adequate planning, a caution directly relevant to this paper's concern with administrative effectiveness rather than mere technological presence.

This expansion in practice is reflected in industry data as well as academic literature. A 2024 global survey of higher education administrators by Ellucian found that AI usage in the sector had more than doubled over the preceding year, with the large majority of institutional leaders citing efficiency and productivity gains as the primary driver of adoption and expecting further increases in AI use over the following two years (Ellucian, 2024). Taken together with the findings of Ocen et al. (2025) and Crompton and Burke (2023) suggested a global trajectory in which AI adoption in university administration is accelerating in both scholarly attention and institutional practice, driven substantially by expectations of improved efficiency.

What remains less examined in this global literature, however, is the human dimension of this adoption process, specifically, how administrators themselves perceive and respond to these tools once introduced. Much of the existing research documents what AI can technically do within university administration rather than whether and why administrators choose to use it, a gap that this paper addressed directly through its application of the Technology Acceptance Model. Khairullah et al. (2025) gestured towards this gap in noting that responsible strategic leadership, not the technology itself, determines whether AI adoption translates into genuine administrative improvement, but their focus remains on leadership rather than the broader population of administrators whose day-to-day perceptions of usefulness and ease of use ultimately shape whether AI tools are meaningfully embedded into institutional practice.

In Nigerian context, Ohamobi et al. (2026) noted that low digital literacy and resistance to change are presented not as infrastructural deficits but as barriers rooted in how administrators relate to the technology itself, a framing that aligns closely with this paper's use of perceived ease of use and usefulness as explanatory constructs, rather than treating adoption as a purely resource-driven outcome.

AI as a Catalyst for Administrative Effectiveness

Strategic planning and data-driven decision-making are increasingly treated as two sides of the same administrative function, since effective planning depends on the quality and timeliness of the data available to institutional leaders. Abulibdeh et al. (2025) in a scoping review of AI's strategic integration in higher education, found that AI enables institutions to move beyond reactive administration towards more anticipatory planning, using large-scale data analysis to inform resource allocation, enrolment forecasting, and the setting of institutional priorities.

Human Resource Management: AI's contribution to university administration is especially visible in two functions that directly involve managing people: staffing and student records. On the human resource side, Etomes (2024) examined AI's role in human resource management within Cameroonian higher education institutions, finding that AI can streamline recruitment and onboarding, support decision-making around staffing, and contribute to quality assurance by ensuring personnel possess the skills institutions need. This African case study is instructive for Nigerian universities because it identifies human resource functions- recruitment, staff development, and performance tracking- that mirror the administrative pressures Nigerian institutions face as they expand student populations without a corresponding expansion of administrative capacity.

Student Information Management: AI is reshaping what were once purely record-keeping systems into predictive tools. Wang (2025) developed a hybrid machine learning model integrating decision trees, random forests, support vector machines, and neural networks to monitor academic performance and flag at-risk students, achieving accuracy above 96% across three distinct educational datasets. For Nigerian universities managing large, growing student populations with limited administrative staff, this shift from reactive record-keeping to proactive monitoring represents a meaningful efficiency gain, provided administrators view such systems as both useful and manageable to operate within their existing workflows.

Quality Assurance: Quality assurance is an administrative domain where AI's contribution is increasingly tied to accountability rather than mere efficiency. Isaifan and Hasna (2025) examined Qatar's national quality assurance and accreditation framework, described how AI-driven tools can strengthen institutional accountability by automating the review of curriculum documents, assessment materials, and learning objective statements against accreditation standards, allowing quality assurance teams to examine every course offering rather than relying on sampling methods that risk missing compliance gaps. Their policy-to-practice model demonstrates that AI's value in quality assurance lies in extending institutional oversight to a scale and consistency that manual review cannot match, a capability directly relevant to Nigerian universities where quality assurance units are often understaffed relative to the number of programmes and courses they must monitor.

Financial Management: Financial management presents a parallel case, and one where the perception-based argument central to this paper finds direct empirical support. Berrachid and Berrachid (2025) in a qualitative study involving deans, financial administrators, and professors across Moroccan public universities found that AI adoption in financial management, covering budgeting, forecasting, and resource optimization, depended heavily on how financial administrators and academic staff perceived the technology, rather than on its technical capability alone. Their study, situated in a public university system facing funding constraints comparable to Nigeria's, found that administrators who perceived AI tools as genuinely useful for easing budgeting and forecasting burdens were considerably more willing to engage with them, while skepticism about reliability and unfamiliarity with the tools slowed adoption regardless of the tools' demonstrated efficiency gains elsewhere.

Stakeholder Communication and Engagement: AI-driven communication tools represent a narrower but still meaningful contribution to administrative effectiveness, primarily through chatbots and automated support systems that mediate routine interactions between universities and

their stakeholders. Okonkwo and Ade-Ibijola (2021) in a systematic review of educational chatbot applications found that such systems increasingly serve institutional employees as well as students, offering instant responses to routine enquiries and reducing the burden on administrative staff who would otherwise handle these interactions manually. Their review also identified user attitude as a persistent challenge to effective chatbot adoption. For Nigerian universities, where administrative staff often manages high volumes of routine stakeholder enquiries with limited support infrastructure, these tools offer a genuine efficiency gain, provided administrators view them as a manageable addition to existing workflows rather than an added technical burden.

Challenges of AI Adoption in Nigerian Universities

Funding constraints: This affects the adequate use of AI. Without adequate funding, institutions cannot build the infrastructure AI systems require, and without that infrastructure, whatever funding is available cannot translate into functional AI capability.

Inadequate Infrastructure: Mahuta and Abubakar (2025) identified inadequate digital infrastructure, including unreliable internet connectivity, outdated computing equipment, and inconsistent power supply, as the most critical impediment to AI adoption in Nigerian universities.

Skills gaps and ethical concerns: Skills gaps and ethical concerns in Nigerian universities are interconnected barriers. Nnaji et al. (2026) noted that administrators who have not been trained to use AI tools competently are simultaneously less equipped to safeguard the sensitive student and staff data these tools process. Most administrators who lack digital literacy are often the same administrators least equipped to recognize or manage the ethical risks that AI systems introduce.

Repositioning Institutional Governance for the AI Era

Leadership competence: This demands and begins with recognizing that leadership itself must adapt, since administrators are no longer expected only to oversee people and processes but to interpret AI-generated data, communicate through digital channels, and manage staff anxieties about automation.

Capacity building: Competence in AI tools cannot be assumed but must be deliberately developed. Hence there should be capacity building for management and institutional leaders.

AI-Driven Staff Training: Nnaji et al. (2026) proposed AI-Driven Staff Training Modules and a Performance Appraisal framework for Nigerian universities, designed specifically to strengthen staff digital skills while linking that training to transparent performance evaluation.

Change management: This brings about change management, which is the process through which leadership competencies and capacity building are translated into actual institutional practice. Nnaji et al. (2026) pointed to resistance and anxiety, whether framed as emotional discomfort with new communication modes or as broader unease about job security and institutional change, as a persistent obstacle that competent, emotionally intelligent leadership must actively manage rather than assume will resolve on its own.

Institutional AI structure: Administrators cannot be expected to sustain responsible AI adoption without the institutional structures to support them. Nwosu et al. (2024) in their study argued that AI holds significant potential to improve efficiency, transparency, and responsiveness in public governance, but only where supportive regulatory frameworks are put in place deliberately rather than assumed to emerge on their own.

Digital Governance: Leadership competencies, capacity building, and change management address the human side of repositioning Nigerian universities for the AI era. Repositioning Nigerian universities for the AI era therefore, requires institutional policy and governance structures to be built alongside, not after, the leadership development and change management processes discussed above.

Implications for Educational Management

Administrative effectiveness in the AI era depends on whether administrators perceive technology as useful and manageable within their actual working conditions, and whether institutions provide the resources, training, and governance structures that make such perceptions realistic, less dependent on the sophistication of available technology. This has implications for both policy and practice in Nigerian higher education.

The implication for universities is that AI adoption strategies built solely around procurement and infrastructure investment will underperform unless matched by comparable investment in the people expected to use these tools. These implications carry a broader lesson for educational management as a field. The Nigerian evidence reviewed throughout this paper suggests that administrative effectiveness in the AI era is not simply a matter of closing an infrastructure or funding gap, real as those gaps are, but of recognizing that technology adoption in public institutions is fundamentally a human and organizational process.

Conclusion and Suggestions

This paper examined how artificial intelligence is reshaping administrative effectiveness in higher education, with Nigerian universities as its primary lens. Hence, repositioning educational management for the digital age is not a question of whether Nigerian universities can access AI technology, but of whether the people responsible for administering these institutions are given genuine reason and genuine capacity to use it well. Repositioning Nigerian universities for the AI era requires simultaneous attention to administrator competence and institutional policy, rather than treating technology procurement as sufficient on its own.

Based on evidence and discussion, the following suggestions were made:

Government funding mechanisms, including the Tertiary Education Trust Fund, should establish dedicated funding streams for AI-related infrastructure and administrators' training.

Institutions should treat AI-related capacity building as an ongoing function tied to staff development and performance evaluation, rather than a one-off training exercise delivered at the point of system rollout.

The National Universities Commission, in collaboration with the National Information Technology Development Agency and the Nigeria Data Protection Commission, should develop sector-specific AI governance guidelines for universities.

Administrators should be given structured opportunities to engage directly with AI tools before full implementation, allowing perceived ease of use to develop through guided practice rather than forming under conditions of unfamiliarity and pressure.

Leadership development programmes for educational managers should explicitly incorporate the emotional and interpersonal competencies as necessary for managing staff resistance and anxiety during AI-driven organizational change.

Empirical studies applying the Technology Acceptance Model or related frameworks directly to Nigerian university administrators, rather than students or academic staff, are needed to test the conceptual arguments advanced in this paper.

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