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Empirical Paper

From Capability to Adoption: Skills, Perceptions, and Attitudes Driving Lecturers' AI Adoption in Northwest Nigerian Universities

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Abstract

Purpose: This study investigated the factors influencing lecturers' adoption of artificial intelligence (AI) technologies for teaching, research, and academic engagement in federal universities across Northwest Nigeria. It examined digital competence, perceived ease of use, and attitudes toward integrating AI into academic practice.

Methodology: A mixed-methods descriptive survey using a convergent parallel design was employed. Quantitative data were obtained from 759 lecturers through the AI Technology Adoption Questionnaire (AITAQ), while qualitative data came from 21 semi-structured interviews. Analysis involved descriptive statistics and thematic analysis, guided by the Diffusion of Innovation (DOI) and Unified Theory of Acceptance and Use of Technology (UTAUT).

Results: Digital competence was moderate (mean = 3.12), showing that lecturers were comfortable with basic ICT tools but had limited experience with advanced AI applications. Perceived ease of use was positive (mean = 3.08), yet constrained by inadequate technical support and integration challenges. Attitudes toward AI were generally favourable (mean = 3.32), though concerns persisted about ethics, originality, and job security. Qualitative findings indicated reliance on self-learning, peer support, and varying levels of institutional readiness.

Novelty and Contribution: By combining DOI and UTAUT, the study provides a contextualised model explaining how competence, ease of use, and attitudes interact with institutional barriers to influence AI adoption among Nigerian university lecturers.

Practical and Social Implications: The study recommends targeted capacity-building programmes, formation of AI learning communities, and improved technological infrastructure. Strengthening partnerships, offering incentives, and establishing ethical guidelines are essential for enhancing creativity, collaboration, and sustainable AI integration while addressing institutional disparities.

Keywords: AI Adoption; Technological Skills; Perceived Ease of Use; Attitudes; Academic Engagement; Higher Education

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1 Introduction

The successful implementation of advanced technologies in higher education relies not only on the willingness but also on the effective utilisation of these technologies. The ability of users and the user-friendliness of the technology often determine the outcome of adopting new systems. When educators possess the necessary skills, the adoption process becomes smoother and more impactful. Galimullina et al. (2022) emphasise that digital competence is crucial in how educators seamlessly incorporate new tools into their teaching. Without adequate skills, intentions to adopt technology may not materialise, preventing institutions from reaping the benefits of innovations. It is essential to shift the focus from educators' willingness to embrace Artificial Intelligence (AI) to examining the actual factors that influence their ability to implement it effectively.

AI technologies are widely acknowledged for their potential to personalise learning, simplify administrative tasks, and enhance student support. According to Walter (2024), AI has become a focal point in discussions on how universities can equip graduates for the digital economy. However, the successful integration of AI hinges on educators having the necessary skills to utilise it effectively in both teaching and research. Mhlanga (2024) asserts that universities lacking skilled staff often struggle to capitalise on technological opportunities. Thus, it is not just a matter of whether educators accept or reject AI but also whether they have the requisite expertise to apply it meaningfully within their institutional settings.

Technological proficiency remains a critical factor in determining the successful adoption of new tools in higher education. Liesa-Orus et al. (2023) argue that educators with digital competence are more likely to embrace innovations for instructional purposes. Similarly, Dahiru (2025) notes that inadequate ICT skills continue to hinder the integration of technology in African universities. This underscores that the success of AI adoption is closely tied to educators' foundational technological skills. In situations where skills are lacking, positive attitudes alone may not lead to the meaningful implementation of change. Therefore, assessing educators' technological competencies is a crucial step in understanding the practical requirements that drive the adoption of AI in universities in Northwest Nigeria.

The perceived ease of use also significantly influences how individuals respond to new technologies. Davis (1989) suggests that users are more inclined to adopt a system if they find it easy to use. Ibrahim and Shiring (2022) further emphasise that this perception significantly influences educators' decisions to integrate ICT into their teaching. In environments where training and exposure are limited, complex technologies are often met with resistance or used superficially. This is particularly relevant for AI, which is often seen as intricate and demanding. Understanding educators' perceptions of the ease of using AI systems sheds light on potential barriers and facilitators of adoption, especially in settings with varying levels of digital competence.

Attitudes toward technology adoption also determine whether lecturers engage with new tools or avoid them. According to Arora et al. (2023), attitude is a strong predictor of behavioural outcomes, including the willingness to adopt innovations. Bariu and Chun (2022) noted that lecturers with positive attitudes toward ICT are more likely to integrate it successfully into their teaching activities. In the case of AI, attitudes may be shaped by both optimism about its benefits and concerns about its challenges. This paper, therefore, focuses on lecturers' technological skills, perceptions of ease of use, and attitudes as core drivers of their capacity to adopt AI. Addressing these dimensions will help highlight the practical enablers needed to bridge the gap between potential and actual adoption.

Research Questions

The following questions guide the study:

i. What technological skills do university lecturers possess that form the practical foundation for adopting AI in academic engagement?

ii. How do university lecturers perceive the ease of using AI technologies as a factor influencing adoption feasibility?

iii. What attitudes do university lecturers hold toward AI adoption that may enable or constrain its integration into academic activities?

2 Literature Review

The integration of AI into higher education presents new opportunities for enhancing teaching, learning, and research, while supporting inclusive, skill-based pedagogical practices. Yet, adoption depends on more than the availability of tools; it requires enabling conditions that shape how lecturers engage with innovation. Guided by DOI and UTAUT as guiding frameworks, the review focuses on three interrelated enablers: technological skills, perceived ease of use, and attitudes. It discusses how these dimensions shape adoption globally, highlights contradictions in the literature, and then situates the discussion within Northwest Nigerian universities to identify context-specific gaps this study seeks to address.

Conceptual Framing: DOI and UTAUT Perspectives

The integration of new technologies into education is often explained through the Diffusion of Innovation (DOI) theory. Rogers (2003) argued that individuals adopt innovations at different rates depending on how they perceive the innovation's relative advantage, compatibility, complexity, trialability, and observability. When applied to universities, these elements highlight why lecturers either embrace or resist AI technology. For example, AI tools may appear compatible with institutional needs but too complex for lecturers with limited technological experience. According to Feng and Haridas (2025), the DOI offers a useful lens for examining how usability impacts the adoption of innovation in academic settings. Therefore, DOI provides a framework for understanding why skills, perceived ease, and attitudes can accelerate or delay adoption.

The Unified Theory of Acceptance and Use of Technology (UTAUT) extend this discussion by emphasising four constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003). Effort expectancy, which refers to how easy a technology appears to use, directly connects to lecturers' usability of AI. Similarly, performance expectancy reflects how helpful lecturers believe AI will be in improving teaching, research, and student support. According to Wang et al. (2021), these constructs are particularly relevant in education, where users vary significantly in their technological competence. UTAUT thus provides a more detailed way of examining individual and organisational factors that shape the adoption of emerging tools such as AI.

Both DOI and UTAUT agree that adoption is not merely about access to technology but also about the human capacity and mindset to use it. According to Alotaibi (2025), successful adoption often depends on the combination of practical skills, perceived effort, and favourable attitudes. For lecturers, these dimensions determine whether AI becomes an enabler of academic engagement or remains an underused novelty. DOI captures the broader diffusion process within institutions, while UTAUT explains personal behavioural intentions. Together, they highlight that adoption is a multi-layered process shaped by both institutional culture and individual readiness. This dual perspective allows a balanced analysis of lecturers' adoption behaviour in Northwest Nigerian universities.

This study positions technological skills, perceived ease of use, and attitudes as the critical enablers within this conceptual framework. These three elements represent the practical, cognitive, and emotional readiness of lecturers to engage with AI. According to Akintayo et al. (2024), the success of educational technologies in Nigeria depends not only on their availability but also on how well lecturers are prepared to integrate them into practice. Linking these enablers to DOI and UTAUT enables this study to avoid a narrow view of adoption as a technical challenge. Instead, it frames adoption as a holistic process where capability, usability, and attitude collectively shape how AI is embedded in academic work.

Technological Skills as a Capability for AI Adoption

Technological competence is often considered the baseline requirement for adopting innovations in higher education. Lecturers with strong digital literacy are more likely to experiment with new technologies, while those with limited skills may resist integration. Langat (2025) argued that basic ICT proficiency is necessary but not sufficient, as AI demands higher-order skills such as interpreting data, configuring adaptive systems, and managing automation. Isnaeni et al. (2025) added that many lecturers feel unprepared to apply AI effectively, even when they are confident with everyday digital tools. This gap between ICT familiarity and AI expertise raises questions about whether existing professional development programs can adequately prepare academics for meaningful adoption.

However, evidence shows that skills do not always guarantee adoption. Mehdaoui (2024) observed that even in universities with advanced infrastructure, many lecturers underutilise AI despite having adequate technical competence. Studies like Yusuf et al. (2024), which surveyed 1,217 participants across 76 countries, found high levels of awareness and familiarity with generative AI but raised concerns about actual integration into teaching. Participants often used AI for information retrieval rather than pedagogical innovation, suggesting that technical capability alone may not drive meaningful use. These findings highlight a tension in the literature: competence is essential, but without motivation, support, and contextual alignment, it rarely translates into deep adoption.

Empirical studies in Nigeria show that lecturers face significant skill-related barriers to AI adoption. Amadi-Iwai et al. (2024), investigating 149 business education lecturers in South-South Nigeria, found low levels of AI competence and limited utilisation for teaching tasks. Similarly, Madu and Musa (2024) identified a moderate relationship between lecturers' AI awareness and their digital competence in one university, but cautioned that competence levels varied greatly across contexts. Ojo (2024) demonstrated that professional development can enhance pre-service teachers' AI-related skills and confidence. Yet, the benefits were limited to short-term gains in perception rather than deep cognitive readiness. Collectively, these studies suggest that Nigerian educators require structured, discipline-specific training to bridge the gap between basic ICT familiarity and applied AI competence.

Taken together, these findings suggest that technological skills are a necessary but insufficient condition for AI adoption. Global debates show that competence enables experimentation but does not guarantee integration, while Nigerian studies reveal an additional challenge: a systemic lack of exposure to AI-specific training. As Alabi and Mutula (2020) argued, the success of technology adoption in Nigerian universities depends less on generic ICT familiarity and more on targeted skill development linked to real academic tasks. For lecturers in Northwest Nigeria, addressing the capability gap requires deliberate institutional investment in professional development, tailored programs that connect AI tools to teaching and research, and continuous support structures to prevent skills from stagnating or remaining underused.

Perceived Ease of Use as an Enabler

The perceived ease of use of AI tools is a central determinant of whether lecturers integrate them into teaching and research. Drawing on the Technology Acceptance Model (TAM), Davis (1989) argued that technologies are more readily adopted when users find them easy to operate, irrespective of their technical value. Recent scholarship has reinforced this claim, showing that lecturers favour tools that require minimal training and have intuitive interfaces (Gustilo et al., 2024). Yusuf et al. (2024) provided global evidence, reporting that while higher education staff across 76 countries are highly familiar with generative AI, their usage often gravitates toward simple tasks such as paraphrasing and generating content using chatbots rather than more complex academic functions. This suggests ease of use steers adoption patterns significantly.

Yet, ease of use alone does not guarantee meaningful adoption. While lecturers tend to adopt tools they find accessible, these tools are often utilised in a superficial manner that limits their transformative capability. Medina et al. (2020) cautioned that lecturers sometimes underexploit advanced features because they require more effort to master. Koka (2024) confirmed this in the context of older lecturers teaching translation pedagogy: participants acknowledged the usefulness of AI-driven tools but resisted those they considered difficult to navigate. This tension shows that while simplicity encourages initial adoption, the lack of extensive engagement may restrict innovation. Thus, the literature suggests a paradox: AI tools must be simple enough to encourage uptake but sophisticated enough to transform teaching and research meaningfully.

In Nigeria, evidence shows that perceived ease of use is closely tied to educators' readiness to integrate AI. Ayanwale et al. (2022), investigating 368 in-service teachers, found that confidence in teaching AI strongly predicted intention to adopt, while perceptions of relevance drove readiness. However, factors such as anxiety and social good did not significantly shape adoption behaviours. These findings mirror broader TAM assumptions: educators adopt tools they feel capable of using and reject those that appear intimidating or irrelevant. Nevertheless, limited infrastructure, digital divides, and inconsistent institutional support can magnify the difficulty of using AI in Nigerian classrooms, suggesting that ease of use interacts with broader structural and contextual constraints.

Together, the global and Nigerian evidence reveal that ease of use functions as both an enabler and a constraint for AI adoption. While lecturers are more willing to experiment with accessible tools, they often underutilise AI's

advanced capabilities, reducing its transformative capability in higher education. The Nigerian case stresses how ease of use intersects with confidence, relevance, and institutional conditions, showing that adoption depends not just on interface design but also on systemic support. As Koka (2024) argued, user-friendly tools and personalised training are critical for sustaining adoption among educators with varying levels of technological fluency. For lecturers in Northwest Nigeria, ensuring ease of use will require not only intuitive technologies but also comprehensive training and organisational support to overcome contextual barriers.

Attitudes Toward AI Adoption

Attitudes are a powerful enabler of technology adoption because they capture the emotional, cognitive, and cultural orientations of educators toward innovation. Globally, scholars agree that a positive outlook can promote experimentation, while negative perceptions often create barriers even when skills and tools are present (Jensen & Konradsen, 2018). However, attitudes toward AI in higher education remain contradictory. Some lecturers embrace AI for its capability to enhance learning, while others fear it may undermine academic integrity or displace traditional roles. According to Fundi et al. (2024), teacher attitudes did not significantly shape AI readiness in Kenya's Competency-Based Curriculum reform, suggesting that broader systemic factors can sometimes outweigh individual dispositions.

Other investigations highlight a different trend where attitudes play a central role in shaping acceptance. Ofosu-Ampong (2024) found that over two-thirds of university lecturers surveyed were willing to integrate AI into teaching, and that attitude, alongside institutional support and experience, strongly predicted acceptance. This indicates that while positive attitudes alone are not sufficient, they remain an important condition for adoption. Yet the methodological limitations of that study, including its small and convenience-based sample, highlight how findings on attitudes may be context-sensitive rather than universally applicable. These opposing perspectives show that having a positive attitude does not always lead to actual use, while negative or indifferent views can significantly hinder adoption.

In Nigeria, the situation is similarly complex. Ayanwale et al. (2022) demonstrated that while teacher attitudes toward AI were measured alongside other variables, confidence and perceived relevance were stronger predictors of readiness and intention to teach AI than attitudes alone. This points to an important distinction: attitudes interact with other factors, such as confidence and contextual relevance, to shape technology adoption outcomes. If lecturers do not feel confident in their ability to use AI, a positive outlook may not translate into practical integration. This supports the argument that attitudes, while necessary, operate more as mediators than direct drivers of adoption. This supports the argument that attitudes, while necessary, operate more as mediators than direct drivers of adoption (Lau & Hashim, 2020).

These contradictions signal that the role of attitudes in AI adoption is far from settled. In global debates, attitudes are often celebrated as a foundation for technology acceptance; however, empirical findings from Kenya, Ghana, and Nigeria suggest that their influence may be conditional or overshadowed by systemic and contextual variables. For lecturers in Northwest Nigerian universities, this raises critical questions. Deep-seated pedagogical traditions, institutional inertia, and fears about job security may weaken the effect of positive attitudes, while skepticism or anxiety could slow adoption further (Hutson, 2025). Thus, understanding attitudes in this setting requires going beyond surface-level optimism and exploring how confidence, relevance, and institutional support interact with educators' dispositions toward AI.

Synthesis and the Research Gap

The global literature highlights technological skills, perceived ease of use, and attitudes as central enablers of AI adoption in higher education. Skills determine whether lecturers can practically engage with AI (Ojo, 2024), ease of use influences whether tools feel manageable within teaching routines (Koka, 2024), and attitudes shape willingness to experiment with or resist innovation (Ofosu-Ampong, 2024). Collectively, these factors align with the DOI and UTAUT frameworks, which emphasise capability, effort expectancy, and social influence in adoption processes. Yet, empirical findings reveal inconsistencies. While some studies position these enablers as decisive, others suggest their

effects are mediated by institutional support or relevance (Fundi et al., 2024). This shows that adoption is neither linear nor guaranteed, even when enablers appear present.

These contradictions are evident across multiple contexts. For instance, professional development improved lecturers' technical abilities but did not always translate into greater readiness for AI integration (Ojo, 2024). Similarly, tools described as user-friendly were sometimes abandoned because lecturers perceived them as complex in practice (Koka, 2024). Attitudes also revealed inconsistencies: while positive outlooks encouraged interest, they did not consistently predict adoption behaviours (Ayanwale et al., 2022; Fundi et al., 2024). Such findings complicate simplified models of technology uptake by showing that skills, ease, and attitudes can be necessary but insufficient. They also highlight the mediating role of broader realities such as workload, infrastructure, and institutional priorities in shaping whether enablers lead to actual adoption.

In Nigeria, empirical evidence is still limited and uneven. Most studies have examined AI awareness and competence in basic education or specific disciplines such as business education, often reporting low levels of skill and utilisation (Amadi-Iwai et al., 2024; Madu & Musa, 2024). Yet, little has been done to situate the contradictions of skills, ease, and attitudes within the lived experience of university lecturers, especially in under-resourced regions. Structural barriers, such as inadequate infrastructure, a lack of institutional training, and fears of job displacement, may weaken the influence of individual capabilities and attitudes. This creates a critical gap: while global studies stress the importance of enablers, very few capture how these dynamics unfold in Nigerian universities. Addressing this gap is vital for guiding targeted interventions and supporting evidence-based policy.

Taken together, the literature establishes that technological skills, perceived ease of use, and attitudes are critical enablers of AI adoption, yet their effects are far from uniform. While global debates provide important insights, they often overlook the contextual realities of under-resourced higher education systems such as those in Northwest Nigeria. This gap reinforces the need for an empirical investigation that captures the lived experiences of university lecturers in this region. To address this, the following section outlines the methodological approach adopted for this study, explaining the research design, participants, instruments, and procedures used to generate evidence on the enablers of AI adoption in Nigerian universities.

3 Methodology

This study adopts a descriptive survey within a mixed-methods framework, specifically using a convergent parallel design to examine factors shaping lecturers' adoption of AI technologies in Northwest Nigerian universities. Quantitative data were gathered through structured questionnaires, while qualitative insights came from semi-structured interviews with selected lecturers. Both datasets were collected simultaneously, analysed separately, and later merged to allow for comparison and deeper interpretation. The design was guided by DOI and UTAUT perspectives, which stress how individual skills, perceptions, and attitudes interact with institutional contexts to shape adoption. This integration ensured a balanced exploration of both personal and organisational enablers of AI use in academic engagement.

The population for this study consisted of lecturers in federal universities across Northwest Nigeria. These universities host lecturers from diverse disciplines, making them key stakeholders in the adoption of AI. From a population of 6,837 lecturers, a sample size of 610 was recommended, but the researchers increased the sample to 759 to enhance statistical power. This decision aligns with the perspective of Andrade (2020), who argues that a sufficiently large sample size is vital for effectively detecting even the smallest meaningful effects or relationships between variables. A multi-stage sampling procedure was used. First, proportionate sampling ensured each university was represented according to its staff size. Then, simple random sampling selected respondents within each institution, ensuring fairness and representativeness. For the qualitative strand, 21 lecturers (three from each university) were randomly drawn from the survey pool for semi-structured interviews, providing richer insights into skills, ease of use, and attitudes toward AI adoption. This choice reflects the DOI and UTAUT framework, which emphasises the role of individual perceptions and institutional contexts in shaping technology adoption.

The instruments for this study include a survey questionnaire, titled the AI Technology Adoption Questionnaire (AITAQ), for the quantitative aspect, and an AI Technology Interview Guide (AITIG) for the qualitative component. Both instruments were self-developed by the researchers, drawing on the UTAUT and DOI frameworks, and were designed to measure the constructs under investigation. These frameworks provide a robust foundation for

understanding constructs related to technology adoption, including technological skills, ease of use, and attitude, ensuring the questionnaire comprehensively addresses key variables relevant to AI adoption. It was structured into eight sections (A–H), containing a total of 57 items designed to measure key constructs related to AI adoption. To ensure clarity and consistency in responses, a four-point modified Likert scale was used, with options ranging from "strongly disagree" to "strongly agree." This format allowed participants to express their level of agreement in a straightforward and measurable way. For the qualitative strand, the AITIG included open-ended questions that allowed lecturers to share experiences and perspectives on adopting AI in teaching and research. Together, these instruments ensured both broad and in-depth insights into AI readiness.

The validity of the instruments was ensured through expert review. Specialists in educational technology and measurement examined the questionnaire and interview guide to confirm that the items were clear, relevant, and aligned with the study's framework. This process ensured that the tools adequately captured key factors such as technological skills, perceived ease of use, and attitudes toward AI adoption. To establish reliability, a pilot test was conducted with 62 university lecturers. The split-half method was used, and reliability was calculated using the Spearman-Brown formula. The results showed strong internal consistency, with reliability indices exceeding 0.90 across all measured constructs, including technological skills, perceived ease of use, and attitude. The overall reliability score of 0.95 indicates that the instrument is both dependable and suitable for examining AI adoption among lecturers. As noted by Octafia et al. (2020), a reliability coefficient approaching 1.0 reflects high consistency, while values closer to zero suggest poor reliability. For the interview guide, inter-rater checks confirmed clarity and consistency. Together, these steps ensured that both instruments were valid and reliable for data collection.

The data in this study were analysed using both quantitative and qualitative methods. Quantitative data from the survey were analysed using descriptive statistics such as means and standard deviations to answer the research questions. Weighted averages were used to measure technological skills, perceived ease of use, and attitude toward AI adoption among lecturers. Scores below the average indicated weaker levels, while those above showed stronger levels of intention, readiness, or acceptance. For the qualitative part, interview data were transcribed and examined through thematic analysis to identify recurring ideas and patterns. Qualitative software was used to code and organise the data, which helped in developing key themes. Combining both approaches ensured a deeper understanding of the facilitators and barriers to the adoption of AI.

4 Result

Quantitative Analyses and Interpretations Based on Research Questions

This section presents the results of the quantitative analyses conducted to answer the research questions guiding the study. The analyses focus on examining key factors influencing lecturers' readiness to adopt AI technologies for academic engagement in Northwest Nigerian universities. Descriptive statistics and weighted averages are employed to assess patterns and variations across constructs, while interpretations are provided to explain the significance of the findings in relation to the research objectives and the broader study framework.

Research Question One

What technological skills do university lecturers possess that form the practical foundation for adopting AI in academic engagement?

This section presents the analysis of data addressing the first research question, which examines the technological skills university lecturers possess as a foundation for AI adoption. The finding highlights areas where lecturers demonstrate confidence, as well as gaps that may hinder effective use of AI. This provides a clearer picture of their current digital capacity and points to areas where institutional support and training are most critical, as presented in Table 1.

Table 1 Descriptive Analysis of Technological Skills to Adopt AI Technologies (n = 759)

S/N	STATEMENTS	N	Mean	SD	Remark
1	I possess basic digital literacy skills necessary for using technology effectively.	759	3.2042	.66909	High
2	I can easily navigate various software applications related to educational technology.	759	3.1001	.78776	Low
3	I feel comfortable learning new technological tools and platforms independently.	759	3.2543	.65169	High
4	My technical skills allow me to troubleshoot common issues with educational software.	759	3.0777	.58388	Low
5	I can effectively utilise online resources and platforms for academic activities.	759	3.2161	.55152	High
6	My experience with technology enables me to adapt quickly to new tools, such as AI applications.	759	3.1700	.63648	High
7	My colleagues often seek my assistance with technology-related issues or questions.	759	2.9051	.74541	Low
8	My technological skills are sufficient for integrating advanced tools like AI	759	3.0356	.78914	Low
	Weighted Average		**3.12**		

Source Field Survey (2025)

The analysis of university lecturers' technological skills for adopting AI technologies, as shown in Table 1, indicates a moderately strong skills base across universities in Northwest Nigeria. With a weighted mean of 3.12, the results reflect a fair level of digital competence. Respondents reported high confidence in basic digital literacy (M = 3.20), independent learning of new tools (M = 3.25), and effective use of online platforms (M = 3.22). They also demonstrated adaptability to new technologies, including AI (M = 3.17). However, lower mean scores were observed for peer support roles (M = 2.91), troubleshooting capabilities (M = 3.08), and advanced AI integration (M = 3.04). These findings suggest that while many lecturers are equipped with foundational skills, there are gaps in advanced competencies and peer leadership in the adoption of technology.

Research Question Two

How do university lecturers perceive the ease of using AI technologies as a factor influencing adoption feasibility?

This section presents the analysis addressing the second research question, which explores how lecturers perceive the ease of using AI technologies as a factor influencing adoption. The focus is on their comfort with AI tools, particularly in terms of usability, learning support, and technical assistance, as presented in Table 2.

Table 2 Descriptive Analysis of Perceived Ease of Use in AI Technology Adoption (n = 759)

S/N	STATEMENTS	N	Mean	SD	Remark
1	The interfaces of available AI tools are user-friendly and intuitive for me.	759	3.1937	.53939	High
2	Learning how to use new educational technology does not seem daunting at all.	759	3.0909	.62356	High
3	Technical support is readily available when needed to utilise educational tools, such as AI applications.	759	2.8169	.75802	Low
4	The process of integrating new technologies into my teaching is straightforward and manageable.	759	3.0013	.65681	Low
5	Tutorials and guides provided for using educational technology are helpful and easy to understand.	759	3.1304	.57209	High
6	It is easy for me to find information on how to use specific features of educational software.	759	3.1752	.52597	High
7	The time required to learn and implement new technologies is reasonable for me as an educator.	759	3.1318	.57294	High

8	I can quickly learn how different features within an educational application work without extensive training.	759	3.1186	.63675	High
	Weighted Average		**3.08**		

Source Field Survey (2025)

The analysis of lecturers' perceived ease of adopting AI technologies, as shown in Table 2, reflects a generally positive outlook among university lecturers in Northwest Nigeria. With a weighted mean of 3.08, the responses indicate that most lecturers find AI tools relatively easy to use. High mean scores were recorded for statements related to user-friendly interfaces (M = 3.19), accessible tutorials (M = 3.13), and the ability to learn new tools quickly (M = 3.12). However, some challenges were noted in areas such as the availability of technical support (M = 2.82) and the ease of integration into teaching activities (M = 3.00). These findings suggest that while lecturers are generally comfortable exploring and using AI tools, their overall ease of use could be enhanced by improving technical support systems and simplifying integration processes within institutional settings.

Research Question Three

What attitudes do university lecturers hold toward AI adoption that may enable or constrain its integration into academic activities?

This section presents the analysis addressing the third research question, which examines lecturers' attitudes toward adopting AI for academic engagement. Using descriptive statistics (mean and standard deviation), the analysis captures both enabling and constraining perspectives, as presented in Table 3.

Table 3 Descriptive Analysis of Attitudes Toward AI Technology Adoption (n = 759)

S/N	**STATEMENTS**	N	Mean	SD	Remark
1	AI technologies can significantly improve my academic productivity.	759	3.3729	.57370	High
2	Adopting AI technologies aligns with the future of higher education practices.	759	3.3136	.58721	Low
3	I am willing to adjust my teaching methods to integrate AI technologies.	759	3.3215	.56218	High
4	AI technologies are vital for addressing contemporary educational challenges.	759	3.2372	.59827	Low
5	I value the role of AI technologies in promoting collaboration with students and colleagues.	759	3.2503	.60608	Low
6	Adopting AI technologies will make academic tasks more efficient and less time-consuming.	759	3.3676	.60826	High
7	I am optimistic about the long-term benefits of using AI technologies in academia.	759	3.3676	.58617	High
	Weighted Average		**3.32**		

Source Field Survey (2025)

The analysis of lecturers' attitudes toward adopting AI technologies, as shown in Table 3, reveals a generally positive orientation among university lecturers in Northwest Nigeria. With a weighted mean score of 3.32, respondents showed strong agreement with statements highlighting the efficiency, productivity, and future potential of AI in higher education. High mean scores were observed in areas related to optimism about long-term benefits (M = 3.37), willingness to adjust teaching methods (M = 3.32), and improved academic productivity (M = 3.37). However, slightly lower scores were recorded for items emphasising AI's role in addressing educational challenges (M = 3.24) and promoting collaboration (M = 3.25), suggesting these areas may require more awareness or experience-based engagement. Overall, the findings suggest that while attitudes are mainly favourable, more targeted exposure to AI's collaborative and problem-solving capacities could further strengthen positive perceptions.

Based on the analyses, the quantitative results indicate that university lecturers possess a moderate foundation of technological skills and generally perceive AI tools as usable, though challenges remain in advanced competencies, technical support, and seamless integration. Attitudes toward AI adoption are predominantly positive, particularly in relation to efficiency and productivity, albeit with weaker emphasis on collaborative and problem-solving dimensions. These results provide a baseline for the qualitative inquiry, which further interrogates the contextual, experiential, and institutional factors that shape lecturers' engagement with AI in academic settings.

Qualitative Thematic Analyses and Interpretations Based on Themes

This section presents the qualitative findings derived from semi-structured interviews with university lecturers. Using thematic analysis, the study explores lecturers' lived experiences, perceptions, and contextual realities influencing AI adoption. The results are organised into three themes: Capability and Digital Readiness for AI Adoption, Perceptions of Ease of AI Use and Adoption Feasibility, and Attitudes and Values Shaping AI Adoption. Each theme is explained through sub-themes aligned with the research questions, supported by interpretations and illustrative quotes. This approach highlights both the enabling and constraining factors shaping AI integration in universities.

Table 4 THEME ONE; Capability and Digital Readiness for AI Adoption

Sub-Theme (RQ)	Sub-Sub-Themes (Codes)	Interpretation	Illustrative Quotes
RQ1: Technological skills for AI adoption	General digital competence - use of common ICT tools (MS Office, email, LMS)	Most lecturers possess basic digital skills that enable them to use ICT in teaching and research. These competencies form a baseline for potential AI adoption.	" I can use MS Word, PowerPoint, and online learning platforms comfortably." - P2
	Experience with AI-related tools - Grammarly, Quillbot, ChatGPT	Many lecturers have interacted with AI applications, though mostly for writing support and research tasks rather than structured teaching.	" Grammarly helps me correct my writing, but I only recently realised it's AI." - P4
	Skill gaps and training needs - limited technical depth, lack of formal training	Despite exposure, many lecturers lack advanced skills to fully exploit AI tools. They highlight the need for specialised training and institutional support.	" I can use some digital tools, but when it comes to AI, I feel I need proper guidance." - P6
	Self-learning and informal exploration - trial and error, peer learning	Most skills were developed informally, with limited institutional support. Peer networks and personal curiosity drive digital learning.	" I usually learn by trying things on my own or asking colleagues." - P5

Source Field Survey (2025)

The findings suggest that university lecturers demonstrate a baseline level of digital readiness, with most able to utilise basic ICT tools, including MS Office, email, and LMS platforms. This competence provides a foundation for AI adoption. Yet, actual engagement with AI tools remains limited to applications like Grammarly, Quillbot, and ChatGPT, which are often used for writing or content generation rather than teaching innovation. Importantly, these skills are largely self-taught through trial-and-error or peer support, reflecting a lack of structured institutional training. While lecturers show curiosity and adaptability, they acknowledge significant gaps in technical depth that constrain advanced use of AI. Thus, while digital capability is present, its full potential for AI adoption is undermined by inadequate formal training and insufficient institutional support, leaving adoption dependent on individual initiative rather than systemic preparedness.

Table 5 THEME TWO; Perceptions of Ease of AI Use and Adoption Feasibility

Sub-Theme (RQ)	Sub-Sub-Themes (Codes)	Interpretation	Illustrative Quotes
RQ2: Perceived ease of AI use	Ease of learning and use - intuitive tools, user-friendliness	Some lecturers describe AI tools as relatively simple once introduced, reducing barriers to entry.	"Using ChatGPT was not difficult after my first trial." - P7
	Challenges and barriers - technical complexity, limited support	Others find AI tools intimidating or complex, particularly without institutional training or technical assistance.	"AI feels too technical; I wouldn't know where to start without help." - P6
	Access to support and resources - peer assistance, online resources	Lecturers often rely on informal support networks or online guides to learn AI tools in the absence of structured institutional support.	"I usually go to YouTube or colleagues when I get stuck with a new tool." - P9
	Need for improvements - training, localised adaptation, institutional facilitation	Many lecturers believe ease of use could be improved with dedicated training, policy frameworks, and better integration into university systems.	"If the university organises hands-on workshops, adoption will be much easier." - P12

Source Field Survey (2025)

The findings suggest that university lecturers view AI tools as potentially easy to use, with some describing applications like ChatGPT as intuitive and accessible after initial exposure. This perception reduces the entry barrier for adoption. However, for many, AI remains intimidating and overly technical, particularly in the absence of structured training or institutional guidance. As a result, lecturers rely heavily on peer support and online tutorials to navigate these tools, reflecting a dependence on informal learning rather than systematic support. While this demonstrates adaptability and resourcefulness, it also highlights uneven experiences that limit consistent uptake. Thus, although perceptions of usability exist, the feasibility of adoption is undermined by inadequate institutional facilitation, insufficient formal training, and the lack of integrated frameworks, leaving adoption mainly reliant on individual initiative rather than coordinated university support.

Table 6 THEME THREE; Attitudes and Values Shaping AI Adoption

Sub-Theme (RQ)	Sub-Sub-Themes (Codes)	Interpretation	Illustrative Quotes
RQ3: Attitudes toward AI adoption	Positive orientation - enthusiasm, optimism, recognition of benefits	A significant proportion of lecturers expressed positive and supportive attitudes toward AI adoption. They see AI as a valuable innovation that can reduce workload, personalise teaching, and enhance efficiency. Their positivity often stems from prior exposure and tangible benefits experienced in research or teaching.	"Enthusiastic. AI can transform administrative and instructional routines for the better." - P19
	Conditional acceptance - cautious optimism, emphasis on ethics, policies, and training	Some lecturers are open to AI adoption but stress that clear ethical guidelines, adequate training, and institutional support must accompany it. Their attitude is supportive, but with conditions to safeguard against misuse and ensure alignment with academic values.	"I see AI as a valuable tool if used ethically. I'm willing to engage further." - P17
	Skepticism and resistance - fear of redundancy, concern for originality, rejection	A minority of lecturers expressed skepticism or outright resistance to AI adoption. Their concerns include fears of undermining originality, eroding human creativity, and weakening the lecturer – student relationship. For these participants, AI represents a threat rather than an opportunity.	"It's fascinating, but also scary. What if it replaces lecturers altogether?" - P8

Willingness to adjust teaching methods - openness to adaptation, learning, and experimentation	Many lecturers indicated a readiness to adjust their teaching strategies to incorporate AI. This willingness reflects adaptive attitudes and a recognition that technological change is inevitable in academia.	"Yes, I'm already adjusting my teaching to incorporate AI. It's helping improve engagement." - P1
Unwillingness to adjust - reluctance to compromise established methods	A few lecturers stated they were unwilling to change their established teaching practices for AI. Their resistance reflects deep-rooted pedagogical values and a strong preference for traditional methods.	"I am not willing. My style is student-focused, and AI distorts that connection." - P20

Source Field Survey (2025)

The findings suggest that lecturers' attitudes toward AI adoption are mixed, ranging from strong enthusiasm to outright skepticism. A majority hold positive orientations, recognising AI's potential to reduce workload, enhance efficiency, and enrich teaching practices, particularly where prior exposure has demonstrated tangible benefits. Others adopt a position of conditional acceptance, emphasising the importance of ethical safeguards, institutional policies, and adequate training as prerequisites for meaningful adoption. In contrast, a minority express skepticism or resistance, voicing concerns about redundancy, threats to originality, and erosion of human creativity and relationships in teaching. Notably, many lecturers also demonstrate a willingness to adapt their teaching methods to integrate AI, reflecting resilience and openness to innovation.

5 Discussion of Findings

This section presents the study's findings by integrating quantitative and qualitative results, interpreting them through DOI and UTAUT, and situating them within the existing literature to explain the factors shaping lecturers' adoption of AI in Northwest Nigerian universities.

The quantitative findings indicate that lecturers in Northwest Nigeria have a moderate level of technological skills, with a weighted mean of 3.12, indicating basic competence in digital literacy. High mean scores in fundamental ICT use, independent learning, and adaptability suggest that lecturers can navigate digital environments, aligning with the knowledge and trialability stages in DOI theory. Similarly, under the UTAUT, these skills relate to facilitating conditions that support the adoption of new technologies. However, low scores were observed in advanced AI integration, troubleshooting, and peer support. The qualitative evidence supports this pattern, indicating that while lecturers can handle routine ICT tasks, they are less prepared for higher-order skills needed for AI adoption. This imbalance highlights the difference between possessing basic digital skills and having the depth required for transformative AI adoption.

When examined alongside qualitative findings, convergence is observed in lecturers' self-reported confidence with basic ICT tools and their limited exposure to AI applications, such as Grammarly, Quillbot, and Chatbots. Quantitative evidence of competence on online platforms and adaptability reflects qualitative accounts of self-learning and informal exploration, indicating exploratory drive readiness. Divergence, however, emerges in the area of advanced integration: while quantitative results suggest modest confidence, qualitative narratives reveal intense anxieties about insufficient training and technical depth. Complementarity is evident in how quantitative gaps in troubleshooting and peer leadership are reinforced by qualitative testimonies stressing reliance on personal initiative and trial-and-error learning. Collectively, both strands highlight that while lecturers display enthusiasm and baseline capacity, the absence of structured institutional training limits their ability to turn these capabilities into sustainable AI adoption practices.

These findings reflect global debates that competence, though essential, rarely guarantees meaningful adoption. Mehdaoui (2024) and Yusuf et al. (2024) observed that lecturers with solid digital skills often stop at a surface-level utilisation of AI, typically confined to information retrieval or writing support rather than pedagogical transformation. Nigerian studies, such as Amadi-Iwai et al. (2024) and Madu and Musa (2024), further confirm uneven competence levels across contexts, reflect the very gaps identified in this study. Yet, a critical issue is self-report bias: survey scores suggest comfort with digital tools, but qualitative evidence reveals reliance on trial-and-error learning and

limited engagement with advanced AI tools. The mismatch raises a key question: Does reporting digital literacy equate to real AI readiness? The evidence suggests not, pointing to a significant disjunction between perceived competence and actual practice.

In light of this evidence, the study challenges the assumption that digital competence naturally evolves into AI adoption. Most lecturers remain on the margin of AI utilisation, leaning on general ICT familiarity while failing to advance toward structured, pedagogical integration. This reinforces Langat's (2025) claim that adoption requires higher-order capabilities such as interpreting data, configuring adaptive systems, and managing automation, skills largely absent in the present context. Just as important, lecturers may be misperceiving AI itself. By seeing it primarily as a tool for grammar correction or writing assistance, they overlook its potential in curriculum design, assessment, or personalised learning. That blind spot does more than limit experimentation; it slows adoption outright. The bottom line is clear: capability is shallow, readiness is overstated, and without discipline-specific training, AI will remain underused in Nigerian universities. This gap between general digital familiarity and in-depth pedagogical integration makes it critical to examine how ease of use influences lecturers' actual engagement with AI tools.

The quantitative findings show that lecturers in Northwest Nigeria generally find AI tools easy to use, with a weighted mean of 3.08. High scores on user-friendly interfaces, accessible tutorials, and quick learning indicate confidence in handling AI applications. However, there are weaknesses in the availability of technical support and the ease of integrating AI into teaching. Qualitative evidence backs this mixed view: some lecturers find tools like ChatGPT intuitive after minimal exposure, while others describe them as overly technical and intimidating without guidance. Within DOI, this highlights the role of perceived complexity in shaping adoption, where lower complexity encourages quicker uptake. Under UTAUT, effort expectancy is a key factor, showing that ease of use not only reduces entry barriers but also influences whether lecturers can maintain meaningful adoption beyond initial trials.

The integration of findings highlights convergence, divergence, and complementarity. Quantitatively, most lecturers expressed comfort with user-friendly interfaces, and qualitatively, participants support this by reporting ease once familiar with AI tools. Divergence arises around integration and support: survey responses identified weak technical support and difficulties embedding AI into teaching, while interviews further emphasised these concerns with stories of reliance on informal learning. Complementarity is evident in the alignment between quantitative reports of limited institutional facilitation and qualitative accounts of seeking help from colleagues or online resources. Together, these findings show that while lecturers are willing to explore AI independently, their reliance on informal support channels highlights structural gaps. This suggests that perceived ease of use functions less as a straightforward enabler and more as a conditional factor shaped by institutional support and systemic barriers.

The literature clearly indicates that ease of use alone does not guarantee meaningful adoption. While lecturers often gravitate toward simple and intuitive AI tools, this accessibility can promote shallow utilisation rather than pedagogical transformation. Medina et al. (2020) warned that educators frequently underexploit advanced features because these require additional effort to master. Koka (2024) observed a similar dynamic among older lecturers in translation pedagogy, who acknowledged AI's usefulness but resisted tools perceived as complex. This paradox highlights a critical tension: simplicity can drive initial adoption, but the absence of stronger engagement restricts innovation. The present findings reflect this dynamic, as lecturers in Northwest Nigeria embrace intuitive features yet struggle to integrate advanced AI capacities, suggesting that ease of use must be balanced with sufficient challenge to unlock meaningful educational impact.

Evidence from Nigeria further complicates the picture. Ayanwale et al. (2022) found that teachers' confidence in using AI predicted their intention to adopt, while perceptions of relevance determined readiness. These patterns reflect TAM's assumption that users embrace tools they feel capable of using while avoiding those that appear intimidating. Yet in the Nigerian context, adoption is shaped not only by ease of use but also by broader systemic factors: limited infrastructure, digital divides, and weak institutional support often magnify the difficulty of sustaining AI integration. This study reinforces this point. Lecturers' reliance on informal learning shows resilience, but without structured training and policy frameworks, adoption remains uneven. Ensuring ease of use in Northwest Nigeria will therefore require not only intuitive tools but also comprehensive institutional support to bridge contextual barriers. These challenges highlight the need to explore how lecturers' attitudes toward AI interact with their broader experiences and expectations within the academic environment.

The quantitative data show that lecturers in Northwest Nigeria generally hold positive attitudes toward AI adoption, with a weighted mean score of 3.32. High agreement was recorded for statements about AI improving productivity, reducing workload, and offering long-term benefits. However, lower scores were seen in areas like collaboration and solving educational challenges. These patterns suggest that while lecturers are optimistic about AI's efficiency, they are less convinced about its broader impact. The qualitative findings support this view. Many lecturers expressed enthusiasm about AI's usefulness, but also raised concerns about ethics and institutional readiness. According to the DOI theory, this reflects the persuasion stage, where perceived advantages encourage interest but doubts slow full adoption. UTAUT also explains this by showing that attitudes alone are not enough; support and confidence are needed to move forward.

The integration of findings reveals convergence, divergence, and complementarity in lecturers' attitudes toward AI adoption. Quantitatively, most lecturers expressed optimism about AI's potential to improve productivity and reduce workload, and qualitatively, this was echoed by participants who described AI as a helpful tool for teaching and administration. Divergence appears in perceptions of AI's broader role: while survey responses showed weaker agreement on AI's ability to foster collaboration or solve educational challenges, interviews revealed mixed feelings, some lecturers were hopeful, while others remained skeptical or resistant. Complementarity is evident in the relationship between quantitative reports of willingness to adjust teaching methods and qualitative accounts of conditional acceptance, where lecturers emphasised the need for ethics, training, and policy support. Together, these findings suggest that positive attitudes exist, but their strength and impact depend on institutional readiness and personal confidence. This supports the idea that attitudes act as a gateway, but not a guarantee, for adoption.

These findings align with studies like Ofosu-Ampong (2024), which showed that positive attitudes, combined with institutional support, can predict AI acceptance. The current study also supports Ayanwale et al. (2022), who found that confidence and perceived relevance were stronger predictors than attitude alone. However, the results differ from Fundi et al. (2024), who reported that teacher attitudes had little impact on AI readiness in Kenya. This suggests that the role of attitudes may vary across contexts. In Northwest Nigeria, attitudes appear to matter, but only when supported by other factors. The present study fills this gap by showing that attitudes are necessary but not decisive. They work best when combined with competence, exposure, and institutional support. This adds depth to the global debate on how attitudes influence technology adoption in education.

The contradictions in the findings show that attitudes toward AI adoption are complex and context-dependent. While many lecturers are optimistic, concerns about ethics, creativity, and job security still exist. These concerns reflect deep-rooted academic values that shape how technology is accepted. The study contributes to the ongoing debate by showing that attitudes are not just emotional responses, they are shaped by institutional realities and personal readiness. For lecturers in Northwest Nigeria, positive attitudes open the door to adoption, but practical support is needed to walk through it. This reinforces the idea that attitudes act more as mediators than direct drivers. Institutions must build on existing optimism by providing training, clear policies, and ethical frameworks. Only then can attitudes translate into meaningful and sustainable AI integration in higher education.

The findings of this study show that lecturers in Northwest Nigeria have basic digital skills, positive attitudes, and some confidence in using AI, but these strengths are not enough for meaningful adoption. Both the quantitative and qualitative results reveal gaps in advanced skills, institutional support, and structured training, which limit lecturers to surface-level use of AI. While ease of use and optimism encourage exploration, these alone cannot drive deep integration into teaching and research. Instead, adoption depends on a robust blend of competence, confidence, relevance, and institutional support. In simple terms, lecturers are willing and able at a basic level, but not yet fully ready for the revolutionary application of AI. Addressing these gaps is key to successful and sustainable AI adoption in Nigerian universities.

6 Conclusion

This study investigated lecturers' readiness for AI adoption in Northwest Nigerian universities by examining how technological skills, perceived ease of use, and attitudes shape behavioural intention and readiness. Anchored on the DOI theory and the UTAUT, the research employed a mixed-methods design that combined survey and interview data. Quantitative results revealed moderate levels of behavioural intention and readiness, while qualitative insights showed that lecturers' use of AI remains surface-level, mostly limited to grammar checks, paraphrasing, and content

generation. Despite optimism about AI's potential, weak institutional structures, limited advanced digital skills, and inadequate training constrained meaningful integration. The discussion highlighted that while ease of use encourages experimentation, it often leads to shallow utilisation; and though attitudes are generally positive, they cannot independently guarantee adoption without structured institutional and technical support.

Social and Practical Implications

The findings show that lecturers' willingness to use AI reflects a growing social acceptance of digital innovation in higher education. However, enthusiasm does not translate into effective utilisation without collective support. Universities must develop AI learning communities and peer mentoring structures to sustain engagement. Practical outcomes include promoting inclusive professional development that builds AI competence across age groups, disciplines, and experience levels, ensuring equitable access to digital transformation and opportunities.

Implications for Managerial Practice and Policy

Institutional managers and policymakers should recognise that readiness for AI adoption depends on consistent infrastructure, training, and leadership encouragement rather than on individual initiative alone. Integrating AI into university strategic plans, establishing centres for digital innovation, and incentivising early adopters will enhance motivation and diffusion. Policymakers should also align funding and accreditation frameworks with emerging AI competencies, making the adoption of AI a structured element of academic quality assurance.

Implications for Theory Development

Combining DOI and UTAUT, this study reinforces the notion that technology adoption in education is a process that involves both individual and organisational aspects. It extends these models by showing that attitudes and ease of use function more as mediators than as direct determinants when institutional support and contextual realities intervene. This contributes to refining adoption theories for resource-constrained contexts such as African higher education systems.

Limitations and Future Research Direction

This study was limited to lecturers in federal universities in Northwest Nigeria, which may constrain the generalisability of findings to private or polytechnic institutions. Future research should employ longitudinal and comparative designs to explore how adoption evolves over time across different institutional contexts. Investigations linking AI adoption to student learning outcomes, disciplinary variations, and the effectiveness of policy implementation would further enrich the evidence base and strengthen theoretical applications in educational innovation research.

Recommendations

Based on the findings of this study, it is clear that while lecturers in Northwest Nigeria demonstrate baseline digital competence and generally positive attitudes toward AI, the sustainable adoption of AI remains constrained by infrastructural, institutional, and pedagogical gaps. To bridge these challenges and unlock AI's disruptive capability, the following recommendations are proposed.

The study recommends structured, discipline-specific training programs to strengthen lecturers' higher-order skills in AI adoption. Such training should go beyond basic ICT literacy to cover advanced competencies like data interpretation, adaptive systems, and pedagogical integration. A potential challenge is lecturers' resistance due to workload and lack of incentives, which may hinder participation. To overcome this, institutions should embed AI training within professional development frameworks, link participation to career progression, and provide incentives such as recognition or research grants to motivate uptake.

AI adoption requires clear institutional policies, including guidelines for ethical use, infrastructure provision, and integration into teaching and research. Without policy direction, efforts risk being fragmented or unsustainable. The

main challenge lies in bureaucratic delays and limited institutional commitment, which can slow implementation. To address this, leadership must prioritise AI adoption in strategic plans, allocate dedicated budgets, and establish AI taskforces to coordinate initiatives. Regular policy reviews, informed by lecturers' feedback, can ensure policies remain relevant and adaptive.

Adequate infrastructure, including reliable internet, functional learning platforms, and dedicated technical support teams, is essential for meaningful AI adoption. However, infrastructural deficits and funding constraints are common in Nigerian universities, making sustainability a major challenge. To overcome this, institutions should adopt phased investment strategies, prioritising high-impact tools, and pursue appropriate partnerships with the Tertiary Education Trust Fund (TETFund) for peculiar ICT interventions. Strengthening technical support teams at the faculty or departmental level will also reduce lecturers' reliance on informal learning and trial-and-error practices.

The findings also show that lecturers often perceive AI narrowly, viewing it mainly as a writing support tool. Therefore, awareness campaigns and workshops are needed to broaden understanding of AI's potential in curriculum design, personalised learning, and research innovation. The key challenge is overcoming misconceptions and anxieties about AI replacing lecturers or undermining creativity. To counter this, sensitisation programs should highlight AI as a complement rather than a substitute for teaching, supported by case studies of successful educational applications. Encouraging peer champions who model effective use can also reduce fear and promote collective confidence.

AI adoption can be accelerated by creating peer-learning communities where lecturers share best practices, experiment with tools, and mentor one another. The challenge is sustaining active participation, as academic culture in many universities is characterised by individualistic practices and heavy workloads. To overcome this, institutions should formalise these communities by integrating them into departmental activities, assigning coordinators, and offering incentives such as teaching reliefs or recognition awards for active contributors. Embedding peer learning into institutional structures ensures sustainability and collective growth in AI adoption.

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Data Availability

The data supporting the findings of this study were obtained under restricted access from the participating federal universities in Northwest Nigeria. The authors do not have permission to share these data publicly due to institutional confidentiality agreements and ethical restrictions. Data may, however, be made available to qualified researchers upon formal request and with written approval from the relevant university authorities.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the research, authorship, or publication of this article. All procedures and reporting were conducted with complete academic independence and integrity, free from any financial, institutional, or personal influence that could affect the study's outcomes.

Declaration of Use of Generative AI

Generative AI tools were used exclusively for layout formatting, paraphrasing, and grammar correction.

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