

ARTIFICIAL INTELLIGENCE ADOPTION AND TEACHING EFFECTIVENESS AMONG UNIVERSITY AND COLLEGES OF EDUCATION LECTURERS IN NIGERIA: A REVIEW OF CHALLENGES, OPPORTUNITIES, AND INSTITUTIONAL DETERMINANTS

Sani Abdullahi¹ & Elizabeth Lohbyen Wazhi²

¹University of Jos

²Federal College of Education Ididep Ibiono Ibom LGA, Akwa Ibom State

abdullahisaniyau@gmail.com¹ & elizabethwazhi@gmail.com²

ORCID: <https://orcid.org/0009-0005-1642-4662>¹

ARTICLE INFO

Article No.: 0645

Accepted Date: 19/09/2026

Published Date: 16/10/2026

Type: Research

ABSTRACT

The integration of Artificial Intelligence (AI) into higher education has emerged as a transformative force with significant potential to enhance teaching effectiveness, research productivity, and student engagement. However, in developing contexts such as Nigeria, AI adoption among lecturers remains uneven and constrained by multiple systemic barriers. This paper presents a systematic review of eight empirical studies published between 2024 and 2026 on AI adoption among lecturers in Nigerian universities and colleges of education, identified through searches of open-access indexes and publisher platforms on 11 October 2026. Drawing on the COM-B model, the review examines how individual capability, institutional opportunity, and motivation shape behavioural engagement with AI technologies. Findings reveal that lecturers demonstrate awareness and favourable perceptions of AI, yet actual adoption for instruction remains low and is largely limited to basic tasks. Poor internet and power supply, inadequate technological skills, and weak institutional strategy emerge as recurring barriers, while administrative support is the strongest predictor of adoption, followed by growth mindset and perceived curriculum relevance. The paper contributes a contextualised model for understanding AI adoption in resource-constrained institutions and offers evidence-linked recommendations for sustainable AI integration in Nigerian higher education.

Keywords: Artificial Intelligence, Teaching Effectiveness, Nigerian Universities, Colleges of Education, AI Adoption, COM-B Model, Digital Competence, Institutional Support

Introduction

Artificial Intelligence (AI) has emerged as a strategic innovation with the capacity to reshape teaching, learning, and institutional management in higher education globally. In Nigeria, however, the more sophisticated applications, such as intelligent tutoring systems and advanced learning management systems, are still infrequently applied (Bali et al., 2024). Adoption among lecturers remains uneven, constrained by poor internet and power supply, inadequate technological skills, and lecturers' limited readiness to adapt to change (Sulyman et al., 2026), as well as by weak institutional strategy, organisational maturity, data governance, and IT infrastructure (Kayode & Odumabo, 2024).

Much of the Nigerian evidence comes from single-institution surveys that measure lecturers' perceptions, such as a survey of 64 lecturers in one faculty (Eleje et al., 2025) and a study of 128 business education lecturers (Akudolu et al., 2026). Perception-based models such as the Technology Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) dominate this literature, but they say little about the institutional conditions that determine whether favourable perceptions become sustained practice. Behavioural frameworks such as the COM-B model (Michie et al., 2011) are rarely applied to AI adoption in Nigerian higher education. Understanding the behavioural and institutional determinants of AI adoption is therefore essential. This systematic review synthesises existing evidence on AI adoption among lecturers in Nigerian universities and colleges of education, identifies key challenges and opportunities, and proposes a contextualised framework to guide future research and policy. It asks three questions: (1) what levels of AI awareness, competence, and use have been reported; (2) which individual and institutional factors are associated with adoption; and (3) what challenges and opportunities shape sustained integration of AI into teaching?

Methodology

This review followed the PRISMA 2020 reporting guidance (Page et al., 2021). Searches were run on 11 October 2026 across the Directory of Open Access Journals, SpringerLink, Nigerian university journal platforms, IAFOR conference proceedings, and institutional repositories, using combinations of the terms "artificial intelligence", "lecturers", "Nigeria", "universities", "colleges of education", "adoption", "awareness", and "challenges". Studies were included if they reported empirical data on AI awareness, use, or adoption among lecturers in Nigerian universities or colleges of education, were published between 2024 and 2026, and had verifiable authorship and publication details. Studies of students or school teachers, conceptual papers, reviews, and records without verifiable publication details were excluded.

Stage	Records
Records identified	20
Duplicates removed	0
Records screened (title, abstract, full text)	20
Excluded: student or school-teacher samples	2
Excluded: conceptual or review papers	3
Excluded: not about lecturers' AI adoption	1
Excluded: insufficient verifiable detail	6
Studies included in the synthesis	8

Setting, sample, design, and key findings were extracted from each study (Table 1). All eight are cross-sectional surveys based on self-reported data, and five reported instrument reliability between .82 and .87 (Akudolu et al., 2026; Eleje et al., 2025; Ezeonwumelu et al.,

2026; Sulyman et al., 2026; Thomas et al., 2024). Findings were combined through thematic synthesis (Thomas & Harden, 2008): findings were coded, grouped into themes, and mapped onto the COM-B components (Michie et al., 2011), as described under Conceptualising a Contextualised Model.

Table 1. Summary of included studies

Study	Sample and design	Key finding
Eleje et al. (2025)	64 lecturers, one faculty of education; survey	Moderate concern (M = 3.62) and effectiveness rating (M = 3.05); gender-related attitudes differed ($p = .041$)
Ezeonwumelu et al. (2026)	210 lecturers, one university; correlational survey	Administrative support was the strongest predictor; 37% of variance explained
Thomas et al. (2024)	271 lecturers, one university; descriptive survey	Lecturers aware of AI (grand mean = 2.57); no gender difference
Akudolu et al. (2026)	128 business education lecturers, South-East universities; survey	Positive perception but low adoption
Sulyman et al. (2026)	300 lecturers, South-West colleges of education; survey	Benefits for lecture preparation and assessment; poor internet and power, skills gaps
Kayode & Odumabo (2024)	120 lecturers per university, South-West universities; survey	Barriers: strategy, organisational maturity, data governance, IT infrastructure
Fasola (2024)	Library and Information Science lecturers; questionnaire survey	High awareness and positive perception, limited use
Ibrahim (2024)	Lecturers in arts faculties; quantitative survey	Moderate awareness; technical barriers; interest in training

Theoretical framework

The COM-B model of behaviour change

This review adopts the COM-B model, which posits that behaviour (B) is a function of Capability (C), Opportunity (O), and Motivation (M) (Michie et al., 2011). COM-B forms the core of the Behaviour Change Wheel, a method for characterising and designing behaviour change interventions (Michie et al., 2011). Applied to AI adoption, the model offers a holistic explanation of how lecturers' competencies, institutional environments, and motivational drivers interact to shape behavioural engagement with AI technologies. This perspective extends beyond perception-based models by incorporating structural and contextual realities within higher education systems.

Capability: Refers to lecturers' psychological and physical capacity to engage with AI, encompassing digital literacy, awareness of AI tools, and the technological skills needed to use them. Studies indicate that many Nigerian lecturers are aware of AI but report inadequate technological skills (Ibrahim, 2024; Sulyman et al., 2026).

Opportunity: Encompasses the environmental factors that enable AI adoption, including reliable internet and power supply, institutional strategy, data governance, and access to training. Poor internet and power supply (Sulyman et al., 2026), lack of infrastructure (Fasola, 2024), and weak strategy and data governance (Kayode & Odumabo, 2024) have all been reported as constraints.

Motivation: Refers to the beliefs and dispositions that drive AI adoption, including perceived benefits, readiness to adapt to change, growth mindset, and perceived curriculum relevance (Ezeonwumelu et al., 2026; Sulyman et al., 2026).

Limitations of existing perception-based models

Much of the existing literature relies on perception-based frameworks such as TAM and UTAUT, which focus on perceived usefulness and ease of use as primary predictors of adoption (Davis, 1989; Venkatesh et al., 2003). While valuable, these models inadequately capture the organisational dynamics that influence sustained technology integration. The evidence reviewed illustrates the gap: business education lecturers held positive perceptions of AI yet largely disagreed that they used it in instruction (Akudolu et al., 2026), and library and information science lecturers showed high awareness but limited use (Fasola, 2024).

Current state of AI adoption in Nigerian universities and colleges of education

Level of awareness and competence

Recent empirical studies indicate that Nigerian lecturers demonstrate awareness of AI alongside gaps in practical skills. A survey of 271 lecturers in a Nigerian university found that lecturers were aware of AI (grand mean = 2.57), with no significant difference between male and female lecturers ($t = 1.047$, $p > .05$) (Thomas et al., 2024). Lecturers in arts faculties showed moderate awareness and an interest in discipline-specific training (Ibrahim, 2024), and library and information science educators reported high awareness and positive perceptions (Fasola, 2024). However, awareness does not necessarily translate into classroom integration. Business education lecturers in South-East universities held positive perceptions toward AI but their actual adoption for instruction remained low, and university ownership was a significant factor in adoption (Akudolu et al., 2026). Where lecturers do use AI, the reported uses are basic: in a survey of 300 lecturers in South-West colleges of education, AI helped lecturers to access materials for lecture notes, paraphrase ideas, improve their grammar, and assess students (Sulyman et al., 2026).

Gender and academic cadre differences

Eleje et al. (2025) investigated the influence of gender and academic cadre on lecturers' views of AI. Using a quantitative survey of 64 lecturers (18 male, 46 female; 30 professorial cadre) in one faculty, they found moderate concern about AI integration ($M = 3.62$), particularly its potential to affect student learning behaviours, and moderate views of AI's effectiveness ($M = 3.05$). Male lecturers and those in professorial roles rated effectiveness more highly, but only gender-related attitudes toward AI use were statistically significant ($U = 278$, $p = .041$). Academic cadre showed no significant differences. Given the small, single-faculty sample, these subgroup results should be treated as tentative. Most lecturers expressed a shared readiness to discuss AI and a clear need for training and support (Eleje et al., 2025).

Infrastructural and institutional constraints

Barriers reported across the included studies are largely structural. Lecturers in South-West colleges of education identified poor internet, poor power supply, inadequate technological skills, non-readiness to adapt to change, and lack of awareness (Sulyman et al., 2026). Library and information science lecturers cited rapid technological advancement, lack of infrastructure,

and resistance to change (Fasola, 2024). In South-West universities, the key barriers were strategy, organisational maturity, data governance, and IT infrastructure on campus (Kayode & Odumabo, 2024).

Correlates of AI adoption

Administrative support as the strongest predictor

A study of 210 lecturers at Chukwuemeka Odumegwu Ojukwu University, selected by stratified random sampling, examined growth mindset, perceived curriculum relevance, and administrative support as correlates of AI adoption (Ezeonwumelu et al., 2026). All three were significantly associated with adoption of AI-based instructional practices and collectively accounted for 37% of the variance. Administrative support emerged as the strongest predictor, followed by growth mindset, while curriculum relevance contributed significantly though to a lesser extent. Because 63% of the variance remained unexplained, other factors such as infrastructure and training access are likely to matter. The authors concluded that a holistic approach involving psychological, curricular, and institutional factors is crucial for advancing AI integration.

Institutional readiness and training needs

Six of the eight included studies recommended training or AI literacy programmes for lecturers (Akudolu et al., 2026; Eleje et al., 2025; Fasola, 2024; Ibrahim, 2024; Sulyman et al., 2026; Thomas et al., 2024). Fasola (2024) further recommended institutional policies on AI adoption and incentives for integration. Even where capability exists, adoption depends on whether institutions provide the support, policy, and infrastructure that turn awareness into routine practice.

Conceptualising a contextualised model for AI adoption

Synthesising the evidence reviewed, this paper proposes a contextualised model for understanding AI adoption among lecturers in Nigerian universities and colleges of education. The model was derived through the thematic synthesis described in the Methodology: findings from the eight studies were coded line by line, similar codes were grouped into themes, and each theme was assigned to the COM-B component it most directly reflects (Michie et al., 2011). A factor was retained only where at least one included study reported it. The model is a conceptual synthesis of existing evidence and has not been empirically tested.

Capability factors

- **Awareness and Digital Literacy:** Awareness of AI tools and basic ICT competence (Fasola, 2024; Thomas et al., 2024)
- **Technological Skills:** Skills needed to use AI tools for teaching and assessment (Ibrahim, 2024; Sulyman et al., 2026)
- **Ethical Understanding:** Awareness of academic integrity and student learning concerns (Eleje et al., 2025)

Opportunity factors

- **Infrastructure:** Reliable internet, power supply, and campus IT infrastructure (Kayode & Odumabo, 2024; Sulyman et al., 2026)
- **Institutional Support:** Administrative backing, strategy, and data governance (Ezeonwumelu et al., 2026; Kayode & Odumabo, 2024)
- **Training:** Workshops, seminars, and AI literacy programmes (Akudolu et al., 2026; Thomas et al., 2024)

Motivation factors

- **Perceived Benefits:** Belief that AI improves lecture preparation, assessment, and job performance (Sulyman et al., 2026)
- **Growth Mindset:** Openness to learning and adapting to new technologies (Ezeonwumelu et al., 2026)
- **Perceived Curriculum Relevance:** Alignment of AI with curriculum demands (Ezeonwumelu et al., 2026)
- **Readiness to Adapt to Change:** Willingness to move from established practice (Sulyman et al., 2026)

Behavioural outcomes

- **Exploratory Use:** Basic engagement with AI for lecture notes, paraphrasing, and grammar (Sulyman et al., 2026)
- **Integrative Use:** Incorporation of AI into assessment and feedback (Kayode & Odumabo, 2024; Sulyman et al., 2026)
- **Transformative Use:** Intelligent tutoring and advanced learning management systems, which remain infrequently applied (Bali et al., 2024)

Implications for policy and practice**Institutional strategies for sustainable AI integration**

The evidence reviewed suggests that Nigerian universities and colleges of education must address capability, opportunity, and motivation simultaneously, because isolated interventions are unlikely to produce sustained adoption (Michie et al., 2011). Each strategy below is tied to a specific finding of this review.

Capacity Building: Develop continuous, discipline-tailored AI literacy programmes for lecturers. Six of the eight studies recommended training, and positive perceptions have not translated into use among business education lecturers (Akudolu et al., 2026), while awareness in a sample of 271 lecturers was only moderate (grand mean = 2.57) (Thomas et al., 2024).

Infrastructure Investment: Address reliable internet and power supply and campus IT infrastructure, which three studies identified as barriers (Fasola, 2024; Kayode & Odumabo, 2024; Sulyman et al., 2026).

Policy and Governance: Establish clear policies on academic integrity, data governance, and responsible AI use. Lecturers expressed moderate to high concern about AI ($M = 3.62$), mainly about student learning behaviours (Eleje et al., 2025), and data governance was a barrier in South-West universities (Kayode & Odumabo, 2024).

Leadership and Incentive Structures: Make AI adoption an institutional leadership responsibility and create incentives for integration. Administrative support was the strongest predictor of adoption, within a model explaining 37% of variance (Ezeonwumelu et al., 2026), and incentives for AI integration were recommended by Fasola (2024).

Research directions

This review identifies several gaps in the existing literature that warrant further investigation:

1. **Longitudinal and Intervention Studies:** All eight included studies are cross-sectional surveys. Quasi-experimental studies that apply the Behaviour Change Wheel (Michie et al., 2011) to design and test training and support interventions are needed.
2. **Multi-Site Samples:** Several studies were conducted in one university or faculty (Eleje et al., 2025; Ezeonwumelu et al., 2026; Thomas et al., 2024). Comparative research across

regions, institutional ownership, and institution types, including colleges of education, would clarify contextual determinants (Akudolu et al., 2026).

3. **Disciplinary Variations:** Existing studies cover education, business education, library science, and arts lecturers (Fasola, 2024; Ibrahim, 2024; Akudolu et al., 2026). Adoption in science and engineering remains under-explored.
4. **Beyond Self-Report:** Studies rely on lecturers' self-reported awareness and use. Observational and usage-data studies are needed to establish how AI affects teaching effectiveness.
5. **Testing the Model:** The proposed model should be tested with structural equation modelling or mixed methods to establish which COM-B components carry the most weight.

The findings should be read with the limitations of the review in mind: the evidence base is small, the searches covered open-access sources only, and the studies differ in instruments and measures, so results could not be pooled statistically.

Conclusion

The central lesson of this review is that Nigerian lecturers are not held back mainly by unwillingness. They are aware of AI, hold favourable views, and ask for training; what the evidence shows to be missing is an institutional environment that converts this readiness into everyday teaching practice. Because administrative support outweighed individual dispositions in the only predictive study reviewed, institutions that acquire AI tools without investing in training, policy, and support are unlikely to see gains in teaching effectiveness. The practical implication is to treat AI adoption as an organisational change programme and to sequence it: first secure infrastructure and a clear academic-integrity policy, then provide tiered training, and then reward effective use. The COM-B model gives institutional leaders a simple diagnostic for identifying which of the three conditions is failing in their own setting, and testing that diagnostic in longitudinal and intervention studies is the most useful next step for the field.

References

1. Akudolu, C. A., Opara, L. U., & Ebenezer-Nwokeji, C. C. (2026). Innovative teaching in business education: Exploring lecturers' perceptions and adoption of AI-powered technologies in South-East Nigerian universities. *NAU Journal of Technology and Vocational Education*, 11(1). <https://journals.unizik.edu.ng/naujtved/article/view/8023>
2. Bali, B., Garba, E. J., Ahmadu, A. S., Takwate, K. T., & Malgwi, Y. M. (2024). Analysis of emerging trends in artificial intelligence for education in Nigeria. *Discover Artificial Intelligence*, 4(1). <https://doi.org/10.1007/s44163-024-00163-y>
3. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
4. Eleje, L. I., Ezeugo, N. C., Esomonu, N. P. M., Metu, I. C., Anierobi, E. I., Mbelede, N. G., Nwosu, K. C., Ezeonwumelu, V. U., Ufearo, F. N., & Eleje, G. U. (2025). Artificial intelligence adoption in higher education in Nigeria. *Discover Artificial Intelligence*, 5, Article 335. <https://doi.org/10.1007/s44163-025-00452-0>
5. Ezeonwumelu, V. U., Nkemdilim, A. I., Nwaru, P. E., & Onyekwelu, H. B. (2026). Growth mindset, perceived curriculum relevance, and administrative support as correlates of teachers' adoption of AI-based instructional practices. *Unizik Orient Journal of Education*, 12(2), 119–126. <https://journals.unizik.edu.ng/foej/article/view/7819>
6. Fasola, O. S. (2024). Awareness, perception and use of artificial intelligence tools by LIS educators in Nigerian higher institutions. *Cybrarians Journal*, (72). <https://doaj.org/article/d087cc8046af4be1b5d3274ee13eb043>
7. Ibrahim, A. B. (2024). *Assessing the knowledge and perception of artificial intelligence for teaching and research among lecturers in the faculties of arts in Nigeria* [Institutional repository record]. Kwara State University. <https://kwasuspace.kwasu.edu.ng/items/442bf81e-30df-40f1-9ca2-b85d6481468a/full>
8. Kayode, A. E., & Odumabo, A. T. (2024). The impact and challenges of artificial intelligence technologies on universities in Southwestern Nigeria. In *The European Conference on Education 2024: Official conference proceedings*. The International Academic Forum. <https://papers.iafor.org/?p=70416>
9. Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science*, 6, Article 42. <https://doi.org/10.1186/1748-5908-6-42>
10. Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, 372, Article n71. <https://doi.org/10.1136/bmj.n71>
11. Sulyman, K. O., Sheu, M. A., Shehu, O. S., & Ibrahim, F. (2026). Assessing the benefits and challenges facing artificial intelligence use by lecturers in South-West Colleges of Education, Nigeria. *Kwasu International Journal of Educational Management and Leadership*, 1(2), 225–235. <https://journals.kwasu.edu.ng/index.php/kijemal/article/view/717>
12. Thomas, G., Gambari, A. I., Yusuf, H. T., Abanikannda, M. O., & Daramola, F. O. (2024). Assessment of lecturers' awareness of artificial intelligence for education in a Nigerian university. *Educational Technology Quarterly*. <https://doi.org/10.55056/etq.777>

13. Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology*, 8, Article 45. <https://doi.org/10.1186/1471-2288-8-45>
14. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478. <https://doi.org/10.2307/30036540>