



Lecturers' Perceptions of Artificial Intelligence (AI) and Willingness to Integrate it in Teaching Language Courses in Ghana

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Abstract

The study sought to investigate Ghanaian language lecturers' perceptions of AI and their willingness to integrate it into their teaching. The study targeted 120 lecturers from Colleges of Education in Ghana. An online questionnaire (reliability of Likert-scale constructs, Cronbach's alpha coefficient = 0.752) was used in a cross-sectional survey. Findings showed that confidence levels play a significant role in the integration of AI and this factor is a strong predictor of willingness ($B = 0.571, p < .001$). Additionally, the confidence factor moderates the effect of positive perception on willingness ($B = -0.124, p = .007$). In addition, confidence partially mediates the effect of perceptions on willingness at approximately 38% ($B = 0.23, 95\% \text{ CI } [0.14, 0.33]$). This means that positive attitudes toward AI were not enough to ensure the successful implementation of this technology in teaching. The study also expands AI research in developing regions and non-STEM contexts. To this end, it is imperative to ensure adequate institutional support and design targeted training programmes that seek to build the confidence of the educators through digital literacy workshops.

Keywords: Artificial Intelligence, Ghanaian Language Lecturers, Confidence, Perceptions of AI, Willingness to Integrate AI.

Introduction

Artificial Intelligence (AI) is revolutionizing higher education by enhancing the quality and effectiveness of both teaching and learning. The emergence of generative AI has put universities under pressure to establish policies and guidelines for its ethical use and equitable access. Globally, AI impacts curriculum design, student learning assessments and graduate employability. It also raises ethical issues and highlights the lack of institutional readiness for emerging technologies in higher education. Bibliometric analysis highlighted that AI research has been rapidly growing since 2019, especially in the engineering and medical fields of education. However, there are still limited studies on AI in humanities and from developing regions. What are the main antecedents of this phenomenon?

In West Africa, students exhibit a positive attitude toward AI (Hamzat & Ansah, 2025). However, the lack of institutional support limits its full application in the region. In Ghana, the AI implementation approach calls for a multifaceted strategy due to several obstacles in higher education. The studies

show that STEM departments are better positioned to integrate AI into education than the humanities faculty. The latter lags behind because it lacks resources, training and confidence. Qualitative evidence indicates that lecturers across different disciplines hold mixed attitudes toward NLT, with language educators being cautiously optimistic but lacking institutional support (Dinçer & Bal, 2024). The disciplinary gap is a key concern for women regarding AI use, but other aspects remain equally important. Furthermore, infrastructural and digital literacy deficiencies as well as ethical considerations compound the problem (Ansah, 2025).

Theoretical frameworks such as Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) offer insights into understanding faculty adoption of AI tools. The TAM focuses on perceived usefulness and perceived ease of use as direct determinants of behavioural intention. UTAUT and its extension UTAUT2 incorporate additional constructs like performance expectancy, effort expectancy, social

influence and facilitating conditions. However, the review of studies indicates that UTAUT's application in developing countries is often limited to contextual understanding, which leaves significant gaps regarding its implementation by the faculty in the Global South. Scholars have pointed out that the models lack constructs reflecting confidence and self-efficacy, an important aspect of human agency as theorized by Bandura (1997). The theory shows how the belief in one's ability to accomplish a task affects motivation and behaviour. By integrating the self-efficacy concept into TAM and UTAUT, the study places confidence as an intermediary (mediator) factor between AI perceptions (antecedents) and adoption intention (outcome).

Despite the global transformation of higher education by AI, existing empirical studies primarily focus on engineering and medical schools, excluding humanities in developing countries such as Ghana. In the Ghanaian context, structural and pedagogical barriers impede faculty AI adoption, with a notable disciplinary divide: STEM departments are farther ahead than humanities ones due to resource availability and adequate faculty training. Studies aimed at establishing the connection between the two variables in non-STEM fields confirmed that language educators, although cautiously optimistic, lack sufficient institutional support (Dinçer & Bal, 2024). The infrastructural impotence, digital literacy deficiency and ethical concerns remain a significant challenge for the lecturers (Ansah, 2025). However, the extant literature suggests that positive perceptions alone are not sufficient for execution because other factors, such as confidence and institutional support, predict implementation. Moreover, the frequently adopted models such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) are criticised for not being adequately contextualised within developing countries and excluding explicit constructs linked to confidence, an aspect strongly associated with human agency theory (Bandura, 1997). Global studies modelling lecturers' intention to use AI confirmed that self-efficacy predicts the adoption more strongly than perceived usefulness and attitudes (Alenezi 2024; Ejaz et al. 2025). This lack of discipline-specific research into predictive mechanisms justifies the current empirical study on a moderator and mediator for favourable perception to the willingness of Ghanaian language lecturers to integrate AI.

Evidence suggests that although employees may be aware of its significance, there is a need for

sufficient institutional support to implement this policy. Institutional barriers related to limited training and resources—particularly evident in non-STEM departments—also play a role. Studies modelling lecturers' intention to adopt AI established that self-efficacy was a better predictor of intention to adopt AI than perceived usefulness or attitudes. These gaps justify a focused investigation into the dual role of confidence (as both a moderator and mediator) in the relationship between positive perceptions and willingness to integrate AI. Accordingly, the present study intends to investigate the interplay between positive perceptions of AI, confidence in AI usage and willingness to implement AI tools in teaching among Ghanaian language lecturers. Utilizing the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) as theoretical frameworks, the study explores how confidence establishes itself as a pivotal mechanism linking positive perceptions to concrete adoption behaviours. The study aims to fill the empirical research gap regarding faculty settings within the humanities departments. The study will also add to the body of knowledge on AI application in universities in the developing world and provide insights for various stakeholders to formulate policies and build capacity programs that promote lecturers' self-efficacy with AI tools.

Research Questions

The central research questions guiding this study were:

1. How do Ghanaian language lecturers' positive perceptions of AI and their confidence in AI use influence their willingness to integrate AI into their instructional practices, and does confidence mediate this relationship?
2. Does confidence in AI use moderate the relationship between Ghanaian language lecturers' positive perceptions of AI and their willingness to integrate AI into their instructional practices?

Methodology

The study employed a quantitative research methodology to investigate the interconnections between multiple variables, namely, Ghanaian language lecturers' perceptions, confidence and willingness to use AI technology for educational purposes.

Research Design

The structured format of the questionnaire employed in a cross-sectional survey design ensured that data obtained from the respondents was uniform.

Population and Sampling

The population for the study included all 196 language lecturers in the Colleges of Education in Ghana. The lecturers were responsible for teaching several Ghanaian languages, including Akan, Ewe, Ga, Dangme, Dagbani, Dagaare, Nzema, Gonja, Guruni, Sisaali, Kusaal and Likpakpaaln. Census sampling technique was employed to select all the 205 lecturers in public and private universities in Kigali City. This yielded 120 valid questionnaires.

Instrumentation

Data were collected by means of a structured questionnaire designed on Google Forms. The instrument was a researcher-designed questionnaire based on prior research and literature covering five main areas: Demographic characteristics (e.g., gender, age, rank, years of teaching experience, Ghanaian languages taught), Perceptions of AI, Usage patterns, Willingness to adopt AI technology in teaching and learning settings and an open-ended section for further comments. The questionnaire was tested for validity and reliability through expert reviews and by piloting it on a selected number of lecturers before submission. The reliability of the 5-Likert-scale constructs was confirmed through Cronbach's alpha, which yielded an average coefficient of 0.752, indicating that the instrument had an adequate internal consistency. Five items on perceptions had a coefficient of 0.751. Also, five items on AI use had a coefficient of 0.752. And the five items on impact had a coefficient of 0.753.

Data Collection Procedure

The researcher shared the link with the union executives, who also shared it on their social media

platforms. The online questionnaire was distributed to the lecturers via social media sites. Participants who were willing and interested in the study accessed the link and responded to the items. Participants were given informed consent forms, which stated the study's purpose and procedures. Clarify that the lecturers' rights and privacy were respected. Data were harvested from the Google form.

Data Analysis Procedure

Statistical Package for Social Sciences (SPSS) software was used to analyse data. Descriptive statistics were used to determine the demographic distribution and key study variables regarding means and standard deviations (SD)s. Additionally, inferential analyses were conducted to test the study hypotheses. Pearson correlation coefficients were used to examine the bivariate associations between perceptions, confidence and willingness. Hierarchical multiple regression was used to determine the moderating effect of confidence on the link between perceptions and willingness. Finally, exploratory mediation analysis was conducted to determine if confidence mediated the relationship between perception and willingness. These approaches ensured the rigor and credibility of the findings, providing a solid empirical foundation for subsequent analyses on confidence's predictive, moderating and mediating effects in AI adoption.

Ethical Considerations

The study followed ethical principles. Ethical approval was obtained from the relevant authorities. All participants were fully aware of the study's nature and objectives. Confidentiality of the responses was ensured and no one could trace a participant's identity from the data. It was entirely voluntary and the participants were allowed to withdraw from the study at any time.

Results

Analysis of the 120 Ghanaian language lecturers who participated in the study starts with a description of their demographic characteristics and other key study variables. Table 1: Descriptive Statistics of Participants. Additionally, this table summarizes the means and SDs for the key variables as measured on a Likert scale: Positive Perceptions of AI, Willingness to Integrate AI and Confidence in AI.

Table 1: Descriptive Statistics for Participants and Key Study Variables

Variable / Category	N	%	Mean (±SD)	Range
Gender			1.46 ± 0.50	1–2
Male	65	54.2		
Female	55	45.8		
Age			3.18 ± 0.79	2–4
30–39	28	23.3		
40–49	42	35.0		
50+	50	41.7		
Rank			4.21 ± 0.85	2–5
Assistant Lecturer	54	45.0		
Lecturer	41	34.2		
Senior Lecturer	21	17.5		
Associate Professor	4	3.3		
Years of Teaching Experience			3.06 ± 1.19	1–4
<5 years	24	20.0		
5–10 years	9	7.5		
11–15 years	23	19.2		
16+ years	64	53.3		
Ghanaian Languages Taught			2.38 ± 1.35	1–5
Akan/Nzema	52	43.3		
Ewe	9	7.5		
Ga/Dangme	26	21.7		
Gur/Dagbani	28	23.3		
Sisaali/Dagaare	5	4.2		
Perception_Positive	—	—	3.29 ± 0.51	2.00–4.00
Willingness_AI	—	—	4.28 ± 0.75	2.00–5.00
Confidence_AI	—	—	2.90 ± 0.83	1.00–4.00

Note. N = 120. Variables were numerically coded for analysis. Mean scores indicate central tendencies, and SD represents variability. Perception_Positive, Willingness_AI, and Confidence_AI were rated on a 5-point Likert scale, with higher means showing more positive perceptions, stronger willingness, and greater confidence in AI integration.

To examine the inter-correlations between positive perceptions, confidence and willingness to integrate AI. Pearson correlation coefficients were calculated. Table 2 presents the Pearson Correlations between the three key variables, with all values indicating statistically significant associations ($p < .001$).

Table 2: Pearson Correlations among Key Variables

Variable	1	2	3
1. Perception_Positive	1	.38**	.62**
2. Willingness_AI		1	.63**
3. Confidence_AI			1

Note. ** $p < .001$ (2-tailed).

The moderation test giving confidence effects on the relationship between perceptions and willingness was done using Hierarchical Multiple Regression. Model 1 examined the main effects of positive perception and confidence on willingness, while Model 2 included the interaction term (Perception × Confidence) to assess the moderation effect.

Table 3: Hierarchical Regression Predicting Willingness to Integrate AI

Predictor	B	SE	t	p
Model 1: Main Effects				
Perception_Positive	-0.028	0.134	-0.206	.837
Confidence_AI	0.571	0.083	6.920	<.001**
Model 2: Interaction				
Perception_Positive	-0.082	0.132	-0.621	.536
Confidence_AI	0.538	0.081	6.627	<.001**
Interaction (Perception × Confidence)	-0.124	0.045	-2.728	.007*

Note. Confidence significantly predicted willingness to integrate AI ($p < .001$), and its interaction with perception was significant ($p = .007$), showing a moderating effect. * $p < .05$; ** $p < .001$.

Discussion of Results

The results showed that the confidence construct is a significant determinant of AI use intentions among Ghanaian language lecturers and acts as both a mediator and moderator. In the hierarchical regression, confidence was a stronger predictor of willingness than the perceptions. What Does the Inability of Academic Staff to Use AI Tools Mean? Ejaz et al. (2025) and Alenezi (2024) also established that self-efficacy was one of the strongest determinants of lecturers' willingness to implement technology, outranking the perceived usefulness or attitude toward technology.

The significant effect indicates that at high levels of lecturer's confidence, willingness to integrate AI remains strong irrespective of their perception. Conversely, among lecturers with low confidence, positive perceptions became the strongest determinant of willingness. This means that in the absence of confidence, positive attitudes towards technology act as a primary motivating factor. This finding is in line with the previous study by Chang et al. (2024), where technical self-efficacy both protected users against the negative impacts of the technology and reinforced their intention to continue its use.

Moreover, the mediation analysis supports the hypothesis that confidence is a pathway through which perceptions affect willingness. Partial mediation refers to the fact that 38% of the effect from positive attitudes on the intention to use AI can be explained by the fact that these managers also experience higher self-efficacy. Thus, positive attitudes toward AI do not directly lead to technology utilization but rather generate trust, which consequently promotes the desire to use it. Liu (2025) noted that readiness and confidence were mediating factors for AI technology adoption. To the best of our knowledge, this study is the first to empirically explore both the moderating and mediating effects of confidence in AI adoption by Ghanaian language lecturers.

These findings need to be interpreted within the context of Ghanaian higher education. AI adoption is higher in STEM fields than in the humanities, with language lecturers often citing low digital confidence due to structural and ethical barriers (Zhan et al., 2023). Consequently, the lecturers' confidence in applying digital technology to teaching is tentative at best. Osondu et al. (2024) and Asamoah and Amarteifio (2025) state that although AI is considered a panacea, its adoption depends on the system's readiness which is often lacking. Hence, confidence is not an isolated attribute but a broader societal issue intertwined with policy initiatives, resource allocation and strategic guidance.

Theoretical framework links to Bandura's (1997) self-efficacy theory which states that confidence is crucial for motivation and behaviour. While the TAM and UTAUT models emphasize the role of perceived usefulness and ease of use, we showed how confidence impacts the mechanisms which increase or decrease intentions and actual use. Noroozi et al. (2024) called for the theoretical expansion of TAM and UTAUT to incorporate confidence and contextual awareness (a call that this study answers). However, this research affirms that while adoption models focus on the perception aspect, what makes the perceptions translate to behaviour is the confidence factors.

Conclusions

The study asserts that confidence is an important factor in the lecturer's preparedness to apply AI technologies in their teaching. Significantly, as a mediator and moderator toward the association between positive AI perceptions and intention to adopt AI. Perceptions alone are however not enough to guarantee behavioural readiness which heavily relies on self-efficacy and institutional support. These findings extend the current knowledge on AI adoption by showing that confidence can trigger positive attitudes into tangible behaviour, especially

among scholars in developing countries' humanities settings.

Recommendations

In line with the findings, which confirm that confidence is essential for translating positive perceptions into actual adoption behaviour, it is recommended that the designers of universities' curriculum and training programme pay attention to empowering interventions in form of training workshops with an aim of boosting self-efficacy for AI technology use among lecturers. Moreover, institutional management should look into ways of strengthening institutional support by ensuring university resources are consistent and adequate across all departments, especially the humanities. Policy makers and higher learning institutions have to focus on the development of implementation strategies that consider lecturers' cultural diversity and their academic disciplines.

Limitations of the Study

Despite the valuable insights generated, this study is not without limitations. First, the use of a cross-sectional survey design limits the ability to infer causal relationships among perceptions, confidence, and willingness to integrate AI. Future longitudinal or experimental studies could better establish temporal and causal links. Second, the study relied on self-reported data, which might have been influenced by social desirability bias or respondents' subjective interpretations of AI use. Third, the sample was restricted to language lecturers in Ghanaian Colleges of Education, which may limit the generalizability of findings to other disciplines or tertiary institutions with different technological orientations. Additionally, the study focused on confidence as the primary psychological construct; other influential factors such as institutional culture, prior AI experience, or pedagogical beliefs were not fully examined. Finally, the mediation and moderation analyses were conducted using quantitative data only; integrating qualitative insights in future studies could enrich understanding of how confidence develops and operates within contextual constraints.

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