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Assessing Lecturers' Perception of Employing and Deploying Generative Artificial Intelligence in Education and Research: Implications for Human-Driven Factors

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Abstract

This study investigated Emmanuel Alayande University lecturers' perceptions of employing and deploying Generative Artificial Intelligence (Gen AI) in education and research. The research design was a case study to determine the most frequently employed Gen AI models, uses and limitations in employing and deploying Gen AI models in education and research. The lecturers' perception of Gen AI prompts and outputs, users' accessibility to Gen AI models, ethical and cultural biases, and data privacy and protection issues in employing and deploying Gen AI models were investigated. The effect of the lecturers' gender, faculty, and level of usage were examined on the employment and deployment of Gen AI models. The research instrument was limited to a self-structured questionnaire on the level of usage, uses and issues in Gen AI using Google Forms. Eighty-nine (89) lectures from the five (5) faculties in the university completed the questionnaire. Both descriptive and inferential statistics were employed for the data analysis. The findings revealed that 77.5% of the participating lecturers utilised Gen AI models, with ChatGPT being the most frequently used. Gen AI models were employed to generate research topics, questions, hypotheses, literature reviews, create content, videos, and images. There were significant differences between the lecturers' perceptions of employing and deploying Gen AI models by gender, Gen AI users and non-users. However, no significant differences were found between lecturers' perceptions by gender and faculty. The study recommended human responsibilities in ensuring that Gen AI outputs are not biased, do not violate users' privacy, and dignity.

Keywords: Data privacy, Ethical and Cultural issues, Generative Artificial Intelligence, Human-driven Factors, Lecturers' Perception

INTRODUCTION

Artificial Intelligence (AI) is a capability of computer systems, trained with many datasets to produce an output in response to a prompt or query that is input into the system. An AI large language model (LLM) is utilised for processing natural language to execute specific tasks using the predefined logic or algorithm to mimic or simulate human intelligence, such as reasoning, learning, planning, and decision-making. It can perform tasks that require human intelligence, including recognising voices, creating images and text, solving complex problems, and identifying patterns and relationships in a dataset. AI can be categorised into two types: traditional and generative AI. The two types were trained with data to perform their functions. The traditional artificial intelligence performs tasks using predefined machine learning algorithms and rules set by the programmers to produce output based on

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the input data. The generative artificial intelligence (Gen AI), in contrast, utilises advanced deep learning models such as generative adversarial networks (GANs) and transformers to perform simple tasks like traditional artificial intelligence and still perform complex tasks and create new content different from the pre-trained large and diverse data sets such as written tests, images, videos and pieces of music. The generative adversarial networks (GANS) used in training Gen AI models constantly evaluate and improve the generated content through their generator and discriminator networks. The repeated process of developing and accessing content by the Gen AI models assists Gen AI models to achieve significant improvement in their content creation over time (Kumar & Singh, 2023; Lee, 2024; Senger et al, 2024)

The launch of ChatGPT in late 2022 sparked the development of numerous Gen AI models for specific functions and use in various sectors. Many of these models have been made available for public use (United Nations Educational, Scientific and Cultural Organisation, UNESCO, 2023). Examples of generative artificial intelligence include ChatGPT, Perplexity, DALL-E, Gemini, Synthesia, Jasper, Claude, Copilot, Bard, and Pictory. In contrast, traditional artificial intelligence includes Spam Filters, Image Recognition Software, Predictive Analytics Tools, Rule-Based Chatbots, Fraud Detection Systems, and Voice Recognition Systems.

Gen AI promotes immersive learning experiences via the use of AI-powered tools like Virtual Reality (VR) and Augmented Reality, (AR) to create interactive learning environments and to improve content comprehension and retention. Gen AI helps to adapt learning materials for students with disabilities to enhance their access to the generative models. Gen AI models can be used in research to formulate hypotheses, summarise large volumes of research literature, generate new ideas, and analyse data. Gen AI broadens global access to educational resources, facilitating collaboration among researchers. Gen AI fosters creative and critical thinking by providing diverse perspectives and insights into some educational issues (Ali et al., 2024 and Pangandama, 2024).

Statement of Problem

The benefits of Gen AI models in education and research are numerous, depending on users' accessibility and ability to effectively employ the models for significant benefits. Gen AI models can be tailored to analyse students' academic performance, use the data to generate customised learning patterns, provide targeted feedback and practice materials to foster students' individual needs and learning styles. The dynamic and interactive learning engagement in using Gen AI enhances students' interest and motivation and improves learning outcomes (Kasneci et al., 2023; Michel-Villarreal et al., 2023 and Ng, Chan & Lo, 2025). Many ethical issues have been raised concerning employment and deployment of Gen AI models in education and research (Ali et al., 2024 and Ng, Chan & Lo 2025). These include plagiarism and cheating, biases and misinformation in Gen AI outputs, lack of critical thinking skills, data privacy and security, equity, and cultural diversity. Some of the challenges and limitations of Gen AI have been researched to verify the claims. However, many of these studies were limited to foreign studies and had not assessed Gen AI issues based on gender, usage level and area of specialisation of respondents. Hence, the study sought to find if university lecturers hold these views about deploying and employing Gen AI in education and research. The study would also determine the influence of lecturers' gender, faculty, Gen AI model users and non-users on issues of employing and deploying Gen AI in education and research.

The Study Objectives

The specific objectives were to:

1. Find the number of lecturers who have ever used Gen AI in education and research.
2. List in order of frequency, from the most frequent to least, the Gen AI models the lecturers had used in education and research.
3. Identify the benefits of Gen AI systems in education and research.
4. Determine the influence of the lecturers' gender, faculty, and Gen AI users and non-users of Gen AI on issues of deploying and employing Gen AI in education and research.

Research Questions

The following research questions were raised for the study.

1. What is the number of lecturers who have ever used Gen AI in education and research?
2. What are the most frequently used Gen AI models in education and research by the lecturers?
3. What are the benefits of Generative Artificial Intelligence (Gen AI) in education and research as perceived by the lecturers?

Research Hypothesis

The following research hypotheses were formulated at 0.05 level of confidence.

1. There is no significant difference in the lecturers' perception of employing and deploying Gen AI in education and research.
2. There is no significant difference between the perceptions of male and female lecturers on employing and deploying Gen AI in education and research.
3. There is no significant difference between the perception of lecturers on employing and deploying Gen AI in education and research by faculty.
4. There is no significant difference between the perceptions of lecturers on employing and deploying Gen AI in education and research by Gen AI users and non-users.

THEORETICAL FRAMEWORK FOR GEN AI EMPLOYMENT AND DEPLOYMENT

Several learning theories are related to the employment and deployment of Gen AI in education and research. These include learning theories of connectivism, human-computer interaction theory, environmental determinism and diffusion of innovation. The connectivism theory (Dowen, 2005; Siemens, 2005) sees learning as network creation between technology, which is non-human appliances and humans. The connectivism theory emphasises the diversity of ideas and opinions residing in non-human appliances. The accuracy and up-to-date knowledge depend on the connection between humans and technology. Gen AI is a learning network that connects learners with unlimited learning resources.

The human-computer interaction theory (Card et al., 1983) posits that technologies can impact the thought and actions of human beings and determine the growth and transformation of a society. It examines the interaction of humans with technology to optimise usability and effectiveness. Gen AI platforms enhance user experiences and knowledge. Technology is a primary force for societal changes and has the capability to change human behaviours and society, and it can be adopted into various sectors.

The theory of environmental determinism, as proposed by Skinner, emphasises that consequences significantly influence behaviours. A positive reinforcement encourages a behaviour, while a negative reinforcement strengthens it by removing the unpleasant situations. Skinner believed that understanding the factors of the environment that influence human behaviours, society could shape individual action significantly (Begelman, 1978). Gen AI usage has both negative and positive impacts on human behaviour and culture. In employing and deploying Gen AI models, users should ensure that their outputs do not to violate human integrity and dignity and ethnical consideration should be sought before their deployment.

Diffusion of innovation theory (Roger, 2003) explains how, why and at what rate new ideas, practices, products, innovations and technologies are spread and adopted through a given population, culture, or race over time by different groups. These groups are categorised as innovators, early adopters, early majority, late majority and laggards. The innovators are open to risks and are the first to adopt new ideas. The early adopters are those who are interested in trying new technologies and establishing their utilisation in society. The early majority are those who are members of the society and pave the way for the usage of an innovation within mainstream society. The late majority follows the early majority in adopting innovations as part of their daily life, while the laggards lag in the general population's adoption of innovations. This theory explains why some individuals and institutions adopt Gen AI quickly, while others delay in adoption.

Review of Related Works

Yu (2024) indicated that ChatGPT could answer user queries, complete user-specified tasks, and optimise continuous task performance. Nevertheless, the study found that data pollution, ethical and safety concerns, and plagiarism were the main concerns in employing and deploying ChatGPT. Ogurlu and Mosshlder (2023) examined the perception of educators about ChatGPT and found that the educators had less knowledge about ChatGPT. The study indicated that the educators were ready to be trained on ChatGPT applications in education. The study also identified plagiarism, loss of higher thinking skills, overreliance, lack of authenticity, and decrease in content comprehension, fear of the unknown, and emotional and social issues as the challenges of Gen AI models.

The employability of ChatGPT in various sectors, including education, is greater than its predecessors like DALL-E, GPT-3 and other Gen AIs due to its friendly interface, widespread use, users' ease of usage and ability to automatically generate outputs more likely to be precise and produce various outputs to an input. However, the reliability of BARD, ChatGPT and Bing AI was compared in presurgical planning, decision making and patient education. Seth et al (2023) found BARD to give succinct and comprehensive information on the factors, followed by ChatGPT and Bing AI.

Rossettini et al. (2024) compared the accuracy of predicting correct answers from ChatGPT-4, Microsoft Copilot, and Google Gemini in the Italian entrance standardised examination test of healthcare science degree and found that ChatGPT-4 and Microsoft Copilot performed better than Google Gemini. The narrative coherence of ChatGPT-4 and Microsoft Copilot was more logical than Google Gemini. Roy et al (2025) assessed the comparison of ChatGPT, Gemini and Metal AI in answering higher-order questions. The mean rank of ChatGPT was highest in competencies, followed by Gemini, then Meta AI. Lee (2023) found ChatGPT to be the most employed Gen AI model in processing and generating natural languages, as well as performing real-world problems through back-and-forth conversations.

Each Gen AI model has its strengths and weaknesses. Users must assess the model AI's competencies and identify the appropriate Gen AI tool for a specific task. Chia et al. (2024) investigated graduate students' perception and use of ChatGPT as a learning tool for writing skills in Singapore. The students identified the benefits of ChatGPT for grammar correction, paraphrasing, summarising texts, gathering information, and data analysis. The study reported that graduate students lacked a research focus in their projects when employing ChatGPT. Dinachandra and Chingakham (2024) found that eighty-one (81) per cent of university teachers in India were aware of ChatGPT in education, but fifty (50) per cent of the teachers used the model and proposed the usage of the model for their students.

Ortega-Ochoa et al (2024) also examined the effect of generative artificial intelligence on students' cognitive and emotional needs in education. The study identified an inability of Gen AI to promote critical thinking, consistent response, accuracy, and sufficiently personalise to individual emotions and cognitive needs.

Guidoum and Elkhansa (2024) investigated university teachers' perspectives on the impact of artificial intelligence on students' academic performance. The findings indicated the perceived positive impact of artificial intelligence techniques on students' academic performance, and inadequacies in the students' critical thinking, problem-solving skills, creativity, and independence. The study, however, identified a reduction in human interactions, over-dependence, and digital disparity as challenges of artificial intelligence adoption in education.

A gender gap was found in the use of Gen AI, with men more likely to employ and show interest in Gen AI tools in education and in professional contexts (Mogelvang et al., 2024). The gender gap could be explained by the gender differences in attitudes towards privacy and trust in counterparties, with consistent findings that women were more concerned about the negative consequences of sharing data and perceived risks from Gen AI for employment (Aldasoro et al, 2024; Tang, 2024). Cho and Ofosu-Anim (2025) found that international students in South Korea showed familiarity with Gen AI and its uses in learning. However, the usage frequency differed between male and female students, with the latter finding Gen AI more often. Daraysen (2023) observed no significant difference in teachers' adoption of AI by gender and age. The study also revealed an age difference in the willingness of

the students to adopt GenAI; younger students showed high interest levels in adopting GenAI based on gender and age. Nja et al. (2023) reported high approval for utilisation of artificial intelligence in education, and the predicting factors for adoption of artificial intelligence are behavioural intent and ease of usage. The study found that sex, age and teacher residence location did not affect the behaviour of teacher intention in the utilisation of artificial intelligence tools. Alrehaili and Alenezi (2022) found that presumed effort, societal factors and perceived performance influenced acceptance of the utilisation of artificial intelligence in education. Ukoh and Nicholas (2022), Li and Gu (2023) and Dimitriadou and Lanitis (2023) emphasised that the usefulness of AI would contribute to its adoption. The adoption of AI is influenced by the level of risks associated with the AI, and training on AI utilisation would promote the ease of its utilisation and employment of AI tools in the classroom.

Augustus-Daddie et al. (2025) and Okaforcha (2024) indicated early stages of adoption of Gen AI in developing nations like Nigeria as a lack of technical skills, insufficient funding for Gen AI tools deployment and employment, uncertainty, ethical concerns, users' attitudes, poor infrastructures, poor network connectivity and ineffective policies. Okaforcha (2024) found a lack of ICT infrastructures, erratic power supply, and high cost of hardware and software to support the integration of machine learning for effective teaching in a university in Anambra State, Nigeria. The study also found that lecturers differed in technology experience, with those who had technology experiences on the benefits of machine learning. Okafor et al. (2025) identified infrastructure limitations and a lack of expertise as barriers to the effective implementation of Gen AI in the Nigerian University of Education. The study recommended a comprehensive faculty training for Gen AI implementation.

Okorkor and Gideon (2024) investigated lecturers' perceptions on the integration of Artificial intelligence technologies into education in Southeast universities in Nigeria. The findings revealed that 44.29% of respondents had no awareness, 24.06% indicated little awareness, 17.5% had moderate awareness, 8.80% had high awareness, and 5.29% had very high awareness of AI integration in education. The lecturers recognised the benefits of capacity in enhancing efficiency in programmes, improving educational content, personalising learning experiences, tailoring content to individual needs and enhancing assessment. The study identified several challenges to integrating artificial intelligence in education, including a lack of technical skills, high acquisition costs, limited awareness, regulatory and ethical issues, insufficient institutional support and policies, and the time and effort required for planning integration.

Chan and Hu (2023) demonstrated students' positive response to the potential of artificial intelligence in personalising their learning experiences, aiding in writing, generating ideas, and conducting research. However, the study expressed concerns about the Gen AI data accuracy, privacy, and impact on personal development, plagiarism, and ethical issues on generative artificial intelligence adoption.

METHODOLOGY

Research Design

The research employed a case study research design to determine the Emmanuel Alayande University of Education, Oyo, lecturers' perception of using and deploying Generative Artificial Intelligence (Gen AI) in education and research. The purpose of choosing this population was to gain a deep and detailed understanding of Gen AI concepts in education and research, and to assess the lecturers' digital literacy.

Population and Samples for Study

The lecturers in Emmanuel Alayande University of Education, Oyo, Nigeria, were the population for the study. This population was selected to critically illustrate the issues with Gen AI tools deployment and employment, rather than generalising the study's outcomes, and to limit the findings to the institution.

The lecturers in the five faculties - Faculty of Arts Education, Faculty of Science Education, Faculty of Social Sciences, Faculty of Specialised Education, and Faculty of Vocational, Innovative, and Engineering Education - were the samples for the study. As of the time of this research, the university had three hundred and twelve (312) lecturers. Eighty-nine (89) lecturers completed an online questionnaire tagged Lecturers' Perception of

Employing and Deploying Generative Artificial Intelligence in Education and Research (*LPEDGAIER*), which contained closed and open-ended structured questions using the Google form. The sample size was 42 % of the lecturers in the university. This sample size was large enough to reflect the characteristics, diversity and variation of the entire population. Also, this proportion was considered appropriate because it exceeded the commonly recommended range of 10 - 30 % regarded as adequate for social science research (Gay, Mills, & Airasian, 2012; Creswell, 2014).

Research Instrument, Validation and Reliability

The questionnaire had three sections; section A was the respondent's demographic information, where the respondents were to indicate their gender and faculty in the institution. Section B was a closed questions on the usage and uses of Gen AI models in education and research while Section C contained the issues related to Gen AI deployment and employment in teaching and research. This was an open-ended question on prompts and outputs, user accessibility, ethical and cultural issues, and data privacy and security. Each of these Gen AI issues had four statements structured for the respondents to indicate their level of agreement on a four-point rating scale of strongly disagree, disagree, agree, and strongly agree, with the scores of 1, 2, 3, and 4, respectively. Example:

Prompts and Outputs

1. Gen AI outputs generated sometimes lack the specificity that I need to solve problems effectively. a. Strongly disagree [] b. Disagree [] c. Agree [] d. Strongly agree []
2. Gen AI occasionally misunderstands the query/request. Misses key context, leading to responses that are off-topic or irrelevant. a. Strongly disagree [] b. Disagree [] c. Agree [] d. 3. The Gen AI's responses can sometimes reflect biases and assumptions that do not align with the needs and information I am seeking. a. Strongly disagree [] b. Disagree [] c. Agree [] d. Strongly agree []
3. I am concerned about the factual correctness and timeliness of the information provided by Gen AI, especially in the fast-evolving fields. a. Strongly disagree [] b. Disagree [] c. Agree [] d. Strongly agree [].

The research instrument was given to three science educators for content and construct validity, and to rate the items in the questionnaire. The corrected version of the instrument was used to restructure the items in the questionnaire. The inter-rater reliability value was 0.78 using Scott's π.

The final version of the instrument was pilot tested in a university with twenty lecturers to determine the adequacy and workability of the structured items. The reliability value was 0.72 using Cronbach's Alpha. The validated and reliable instrument was put into a Google Form. Permission was sought from the Director of Research and International Programmes of the university before the prepared Google form was forwarded to the Academic WhatsApp platform. The form was available for two weeks, from 3rd to 16th February 2025, for lecturers to complete. No lecturer was coerced into completing the form.

Data Analysis

The responses of participants were analysed using descriptive and inferential statistics of frequencies, percentages, independent sample t-test, and analysis of variances (ANOVA).

RESULT AND DISCUSSION

Table 1. The distribution of participants' faculties and Gen AI usage by gender.

	Faculty					Total	Usage		Total
Gender	**Arts Edu.**	**Science Edu.**	**Social Science Edu**	**Specialised & Prof. Edu**	**Voc., Innov. & Eng. Edu.**		**No**	**Yes**	
Male	6	10	14	12	6	48	11	37	48
Female	7	11	1	16	6	41	9	32	41
Total	13	21	15	28	12	89	20	69	89

Table 2. The first five frequently used Gen AI models in education and research by the lecturers.

S/N	Gen AI Model	Total
1.	ChatGPT	43
2.	Meta AI	17
3.	Gemini	12
4.	Perplexity	08
5.	Copilot	05

The frequently used Gen models by the lecturers were ChatGPT, Meta AI, Gemini, Perplexity, and Copilot. The most used Gen AI model was ChatGPT.

Table 3. Results of the use of Gen AI models in education and research by the lecturers.

Uses	Number of Respondents	Percentage (%)
Understanding of Concepts/Topics	59	66.3
Generate Research Topics, Research Questions, and Hypotheses	45	50.0
Literature Review and Insight into Analysis Data	38	42.7
Data Visualisation	16	18.0
Create Videos and Images for Learning	12	13.5
Create content	25	28.1
Other (specify)	5	5.6 %

Table 4. Mean scores on Gen AI issues and decision on the issues.

Gen AI Issue	N	Mean Score	Decision
Prompts and Outputs	89	2.43	Disagree
User Accessibility	89	2.88	Agree
Ethical and Cultural	89	2.89	Agree
Data Privacy and Security	89	2.61	Agree

Interpretation guide: strongly disagree, 1.00 - 1.75, disagree 1.76 - 2.50, agree 2.51 - 3.25, strongly agree, 3.25 - 4.00.

p-value = 0.101, which is greater than 0.05. Therefore, no significant difference between male and female lecturers' perceptions

Table 5. Lecturers' perception on employing and deploying Gen AI in education and research.

Test value = 32						
Employing & Deploying GEN AI	**t**	**df.**	**Sig. (2-tailed)**	**Mean Diff.**	**95 % Confidence Interval of the Difference**	
					Lower	**Upper**
	17.96	88	.000	10.85	9.65	12.05

p-value = 0.000, which is less than < 0.05. There is a significant difference in lecturers' perception of employing and deploying Gen AI models.

Table 6. The result of the mean, the Levene's test and the t-test for equality of means between male and female lecturers' perception on Gen AI models deployment and employment.

Lecturers' Perception by Gender	**N**	**Mean**	**Levene's Test for Equality of Variance**		**T-test for Equality of Means**				**95 % Confidence Interval of the Difference**	
Male	48	43.77	**F**	**Sig.**	**Df.**	**Sig. (2-tailed)**	**Mean diff.**	**Std. Error Diff.**	**Lower**	**Upper**
Female	41	41.78	1.663	.201	87	.101	1.99	1.200	- .3953	- 4.376

Table 7. The ANOVA data for lecturers' perception on the employing and deploying of Gen AI in education and research by faculty.

	Sum of Squares	**Df.**	**Mean Square**	**F**	**Sig.**
Between Groups	163.838	4	40.960	1.277	.286
Within Groups	2695.263	84	32.086		
Total	2859.101	88	32.086		

p-value = .286, which is greater than 0.05. There is no significant difference between the lecturers' perceptions on employing and deploying Gen AI models by the faculty of the lecturers.

P-value is .000, which is less than 0.05. There is a significant difference between Gen AI users' and non-users' perceptions of employing and deploying Gen AI in Education and Research.

Table 8. One-sample t-test for Gen AI users and non-users on deploying and employing Gen AI in education and research.

Test value = 0.5						
Usage Level	**t**	**df**	**Sig. (2-tailed)**	**Mean diff**	**95 % Confidence Interval of the Difference**	
					Lower	**Upper**
	6.187	.88	.000	.275	.19	.38

DISCUSSION OF FINDINGS

The lecturers of Emmanuel Alayande University of Education, Oyo, Oyo State, Nigeria, were aware of Gen AI models and had engaged in the use of Gen AI models in education and research. Sixty-nine (69) of the participants, 77.5 per cent of the lecturers, were aware and made use of Gen AI systems, while 22.5 per cent of the lecturers were not aware and did not make use of Gen AI, as shown in Table 1. This percentage of the lecturers' awareness and usage was encouraging. This finding was supported by Dinachandra and Chingakham (2024), who found that 81 per cent of university teachers in India were aware of ChatGPT in education. However, the findings of Okorkor and Gideon (2024) contradicted this finding, who found that 44.29% of the lecturers had no awareness and 5.29% had very high awareness of AI models integration in education in Southeast universities, Nigeria. The high awareness and usage of Gen AI models might be attributed to their benefits in teaching.

ChatGPT, Meta AI, Gemini, Perplexity, and Copilot were the frequently used Gen AI models by the lecturers. In contrast, the most commonly used Gen AI model among lecturers in education and research was ChatGPT, as indicated in Table 2. 48 per cent of the lecturers indicated ChatGPT as the most frequently used Gen AI model. The finding was nearly closed with Dinachandra and Chingakham (2024), who found 50.0 per cent of the Indian lecturers made use of ChatGPT. This finding supports Lee's (2023) finding, which indicates that ChatGPT is the most employed Gen AI model because of its capacity to process, generate and perform exceptionally in solving real-world problems through conversation, question-answering and language translations. The reason behind the use of ChatGPT as the most frequently used tool in education and research by lecturers may be due to its user-friendly interface, widespread adoption, ease of use, its capability to generate outputs that are more likely to be precise, and its ability to produce several outputs for a single input.

The lecturers affirmed the benefits of Gen AI models include ChatGPT, Meta AI, Gemini, Perplexity, and Copilot as beneficiaries in understanding concepts, generating research topics, research questions, and hypotheses, reviewing literature in research, generating insight into data analysis, visualise data, create videos and images in education and research as shown in Table 3. The benefits of Gen AI were also supported by Yu (2024), who found Gen AI models not only in answering questions but also in completing specific tasks specified by the users. The finding of Chia et al. (2024) was also in agreement with the findings. Chia et al. found ChatGPT to be a learning tool for writing skills, grammar correction, paraphrasing, summarising texts, gathering information, and data analysis.

The issues in deploying and employing Gen AI, such as prompts and outputs, user accessibility, ethical and cultural concerns, and data privacy and security, were of concern for the lecturers. The level of concern among lecturers about Gen AI issues varied. Table 4 results showed that the lecturers were less concerned with the prompts and outputs issue. They had high concerns for user accessibility, ethical and cultural, and data privacy and security issues. This was to say that the issue of prompts and outputs of the Gen AI models was not of a serious concern to the respondents, as user accessibility issues, ethical and cultural issues, and data privacy and security. Prompts and outputs should be of concern to users of Gen AI models because the models' effectiveness depends on users' ability to structure prompts effectively, given the context in which Gen AI models are expected to process them to generate accurate and desired outputs. One of the challenges of Gen AI models was the inability to give correct answers to the questions (Yu, 2024). The effectiveness of using Gen AI models to generate the desired outputs depends on the ability of the users to structure the prompts correctly.

The results in Table 5 indicated that the lecturers' perception of employing and deploying Gen AI models was significantly different. The lecturers' perception may be different due to their knowledge, usage, and adoption of Gen AI. According to diffusion theory of innovation (Roger, 2003), which explains how, why and at what rate new ideas, practices, products, innovations and technologies are spread and adopted through a given population, culture, or race over time by different groups.

The Gen AI users and non-users also differed in their perception of employing and deploying Gen AI in education and research, as shown in Table 8. This finding may be due to influencing factors such as users' expertise in

Gen AI models, educational background, awareness of bias, privacy and ethical issues, experiences with Gen AI models usage, and media reports on Gen AI. These factors may also be responsible for the significant difference by the lecturers' gender in employing and deploying Gen AI in education and research in favour of male lecturers. The gender difference may be explained as men being more likely to use and show interest in Gen AI models adoption than their female counterparts (Mogelvang et al., 2024), while female users were more concerned about the negative consequences of the models, hence, non-adoption and poor interest in the use of the models (Tang, 2024).

The faculty of the lecturers did not affect their perception of employing and deploying Gen AI tools in education and research. That is, the lecturers' disciplines do not affect the perceptions of Gen AI. The possible factors may be an individual's technical expertise, interest and benefits derived from using Gen AI tools.

Summary of the Findings

The findings are summarised as:

1. The frequently used Gen models by the lecturers were ChatGPT, Meta AI, Gemini, Perplexity, and Copilot. The most used Gen AI model was ChatGPT.
2. Gen AI are used for understanding concepts/topics, generating research topics, research questions, and hypotheses, literature review and insight into analysis data, data visualisation, creating content videos and images for learning. Other identified benefits include checking for plagiarism, grammatical accuracy and the meaning of words.
3. The lecturers were less concerned with the prompts and outputs issue in Gen AI. They had high concerns for user accessibility, ethical and cultural issues, and data privacy and security issues.
4. There was a significant difference in the perception of the lecturers on Gen AI employment and deployment in education and research.
5. There was a significant difference in the perception of the lecturers on Gen AI employment and deployment in education and research by gender.
6. There was no significant difference in the perception of the lecturers on Gen AI employment and deployment in education and research by faculty.
7. There was a significant difference in the perception of the lecturers on Gen AI employment and deployment in education and research.

Implications of the findings that are crucial for human responsibilities

1. **Low usage of Gen AI models in education and research:**

The number of lecturers who willingly participated in this study was low. It may be that some respondents had not utilised Gen AI models in their educational or research contexts. There is a need to enhance lecturers' knowledge of Gen AI models, specifying their functions, benefits, and associated challenges in education and research. Users with limited skills and knowledge of Gen AI applications may find it challenging to access and utilise Gen AI systems.

2. **Prompts and outputs:**

Gen AI models sometimes lack specific information the user needs if the prompts are not properly structured for the models to give accurate outputs. The prompts should be coherently articulated using simple, clear, and non-ambiguous words. Gen AI users should use different words to repeat the prompts, specifying the context in which the outputs should be generated would assist the user in getting meaningful and relevant outputs. The user should evaluate the accuracy of the outputs, bearing in mind that outputs to prompts generated are based on the Gen AI pre-trained data, curated from the internet and social media.

The outputs must be meticulously validated for accuracy before their adoption in education and research, otherwise, the user would be promoting incorrect information. Before deploying Gen AI models, their developers should ensure that the pre-trained data undergoes evaluation through a combination of adversarial testing, automated testing, blind evaluation by multiple human reviewers, and

continuous real-time monitoring to detect post-deployment errors.

3. **User accessibility to Gen AI:**

The most used Gen AI models were built using an English-based programming language. The documentation and training datasets were often in English, which limited the users who could not communicate in English. However, some Gen AI models, like ChatGPT and Google Gemini, support multilingual language. Popular languages covered are French, Spanish, Chinese, Russian, Hindi, and German. The developer must ensure the deployment of Gen AI to cover many common languages and dialects for user accessibility.

Lack of reliable internet access, electricity, and advanced hardware (Android phone, iPhone, desktop, and laptop) in specific regions limits the ability to use Gen AI models. Users with limited skills and knowledge of Gen AI applications may find it difficult to access and use Gen AI systems. The high cost of Gen AI model development and deployment also makes it challenging to access Gen AI models. To ensure usage, inclusive and diverse users, the government and educational agencies should identify and make provisions for individuals who cannot afford the hardware and data connection. Such individuals should be trained and re-trained on effective and responsible ways of engaging Gen AI models for their benefits in education and research.

4. **Ethical and cultural issues:**

Gen AI systems have been reported to limit human interactions. This has psychological effects on users and raises concerns about the ethical issues affecting learners' cognitive development and critical social-emotional well-being. Gen AI systems were trained with the cultural values and social backgrounds of the developed countries. The trained data may not align with other cultures' ethical values and norms, especially those of developing countries. This promotes the inequality and marginalisation of already marginalised countries like Nigeria in digital development. (Metz, 2021).

Gen AI providers should consider the values, norms, and linguistics of the intended users so as not to violate the users' ethics and cultures.

Educational institutions should design and adopt Gen AI models that address the specific human needs of learners and society. The values, skills, and knowledge should be integrated into the Gen AI models. There should be a limit to the amount of content of Gen AI models that should be allowed in education to promote human interactions, critical thinking, and creativity. The application of real-world collaborations in problem-solving among teachers, learners, and the community at large through observations, field trips, experimentation, and critical thinking discussions should be encouraged to promote human interactions in education.

5. **Data privacy and security:**

Gen AI models use data from diverse websites and media without prior permission from the owners, thereby causing copyright infringement. Images, videos, sound, or code created and shared by a particular Gen AI on the internet may be exploited by other Gen AI models, thereby violating copyright. Sensitive education data, if not protected, may be made public by Gen AI, which may raise concerns about data breaches.

In ensuring data privacy and security in education and research, a role-based access control (RBAC) could be employed to limit data access based on the user roles, such as students, teachers, or researchers, to prevent unauthorised use. There should be continuous authentication and monitoring to ensure only authorised and verified users' access sensitive educational data. All data transmissions between Gen AI models and users should be encrypted to prevent interception by unknown persons. Users of Gen AI models should remove all personally identifiable information before processing students' or research data. Educational institutions should adopt clear data usage policies to inform students and researchers about how Gen AI models collect, store, and use data. The consent of the students and researchers should be sought in using their data for data personalisation. The Gen AI usage in education and research should be clearly stated. Artificial intelligence models like Turnitin, Grammarly Plagiarism Checker, Unicheck, Plagscan and Quetest could be used to detect, avoid plagiarism and other misconduct.

CONCLUSION

The deployment and employment of Gen AI models in education and research require institutional and individual access to internet connectivity, hardware that supports Gen AI usage, and regular sources of power to ensure user accessibility to Gen AI models' employability.

There is a need for the establishment of fair guidelines to ensure ethical AI deployment in scoring, students' admission, decision-making, feedback, or research findings. Regular training and retraining are necessary for educational stakeholders on the uses, ethical biases, and misinformation of Gen AI models, as well as data privacy and responsible use of Gen AI models, in the deployment and employment of Gen AI. There should be strict compliance of Gen AI models with privacy regulations like the General Data Protection Regulation (GPPR) and Family Educational Rights and Privacy Act (FERPA) for deployment and employment of Gen AI models in educational institutions. Regular audits of Gen AI models from generators to check for security vulnerabilities. AI-powered cybersecurity measures could also be used to monitor and detect suspicious activities of the institutional database, to respond to potential cyberattacks on educational platforms, and to prevent phishing scams that target academic documents.

Recommendations

The following are recommended based on the findings in this study.

1. Artificial Intelligence literacy programs should be provided to reduce gender gaps in confidence and usage of Gen AI in the institution.
2. The institution should encourage women and men to engage with Gen AI research through mentorship and workshops to understand the benefits, limitations and ethical use of Gen AI in education.
3. There should be clear guidelines for academic integrity in the usage, deployment, and employment of Gen AI in education by the institution.
4. The institution should establish support desks for Gen AI users and non-users to seek guidance on safe and effective Gen AI deployments to the institution.
5. Outputs generated by Gen AI should not be accepted based on face value. Their accuracy, fairness, and potential biases should be critically evaluated.

Limitations and Suggestions for Future Study

The study made use of a questionnaire in data collection. Future studies can explore a mixed-method approach combining questionnaires and interviews to assess the lecturers' perceptions of Gen AI issues. A field assessment method, with the consent of the lecturers, can be used to track the benefits, skills, and attitudes of the lecturers' exposure to Gen AI instead of self-report.

REFERENCES

Ali, O., Murray, P. A., Momin, M., Dwivedi, Y. K. and Malik, T. (2024). The Effects of Artificial Intelligence Application in Education Settings: Challenges and Strategies. *Technological Forecasting and Social Change*. 199, 123076-123093.

Augustus-Daddie, J., Asiegbu, V. I. and Obinna, E. (2025). Leveraging Artificial Intelligence (AI) for educational development in Nigeria: Examining the challenges and opportunities. *Journal of Social Science*, 2(2), 128-139.

Begelman, P. A. (1978). Skinner's determinism. *Behaviorism*, 6, 13-25.

Bender, E. M., Gebru, T., McMillan-Major, A. and Shmitchel, S. (2021). On the Dangers of Stochastic Parrots: Can Language Models Be Too Big? *FAccT '21: Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*, 610 - 623.

Card, S. K., Moran, T. P., and Newell, A. (1983). The Psychology of Human-Computer Interaction. Lawrence Erlbaum Associates.

Chan, C. K. Y. and Hu, W. (2023). Students' voices on generative artificial intelligence: perceptions, benefits and challenges in higher education. International Journal of Education Technology in Higher Education. 20 (43), 1-18.

Chia, C., Phan, J., Harry, O., & Lee, K. (2024). Graduate Students' Perception and Use Of ChatGPT as A Learning Tool to Develop Writing Skills. *International Journal of TESOL Studies*, 6 (3), 113-127.

Cho, C. and Ofosu-Anim, D. (2025). Exploring international students' perceptions of adopting generative artificial intelligence (GenAI) technologies in learning. *Social Sciences & Humanities Open*, 11, 101418-101425.

Crewwell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*. (4th ed.). Sage Publication.

Darayseh, A. A. (2023). Acceptance of artificial intelligence in teaching science: Science teachers' perspective. *Computers and Education: Artificial Intelligence*, 4, 100132- 100141.

Dimitriadou, E., and Lanitis, A. (2023). A critical evaluation, challenges, and future perspectives of using artificial intelligence and emerging technologies in smart classrooms. Smart Learn. Environ., 10(12), 1-26.

Dinachandra, S. and Chingakham, D. (2024). A Study of Teachers' Perception about Using ChatGPT in Teaching and Learning at Higher Education. *Alochana Journal*, 13 (1), 178-187.

Downes, S. (2005). An introduction to connective knowledge. *Media, Knowledge & Education: Exploring New Spaces, Relations and Dynamics in Digital Media Ecologies*, 77-102.

Gay, L. R., Mills, G. E., and Airasin, P. (2012). *Educational Research: Competencies for Analysis and Applications*. (10th ed.). Pearson Higher Education.

Guidoum, S. and Elkhansa, S. (2024). The Impact of Artificial Intelligence on Students' Academic Performance from University Teachers' Perspectives. *ATRAS*, 5 (3), 381-395.

Kasneci, E., Sebler, K., Kuchemann, S., Bannert, M., Dementieva, D. Fisher, F. et al. (2023). ChatGPT for Good? On Opportunities and Challenges of Large Language Models for Education. *Learning and Individual Difference*. Doi: 10.1016/j.lindif.2023.102274.

Kumar, L., and Singh, D. K. (2023). A comprehensive survey on generative adversarial networks used for synthesise multimedia content. *Multimedia Tools Applications*, 82(26), 40585-40624.

Lee, H. (2023). The rise of ChatGPT: Exploring its potential in medical education. *Anatomical Sciences Education*, 16(3), 1-6.

Li, S., and Gu, X. (2023). A risk framework for human-centered artificial intelligence in education. *Educational Technology & Society*, 26(1), 187–202.

Metz, C. (2021). Who is making sure the AI Machines aren't Racist? New York, The New York Time.

Michel-Villarreal, R. Vitalta-Perdomo, E., Navarro, D. E. S. and Aguilera, R. T. & Gerardou, F. S. (2023). Education Science. 13 (9), 856-873.

Ng, D. T. K., Chan, E. K. C., and Lo, C. K. (2025). Opportunities, Challenges and School Strategies for Integrating Generative AI in Education. *Computers and Education: Artificial Intelligence*, 8, 100373-100385.

Ogurlu, Z. and Mossholder, J. (2023). The Perception of ChatGPT among Educators: Preliminary Findings. *Research in Social Sciences and Technology*, 8(4), 196-215.

Okafor, B. N., Ogboh, V. C., Obiora-Okeke, C. A., and Ogboke, H. N. (2025). The impact of artificial intelligence in university of education in Nigeria towards a built and sustainable environment. *Iconic Research and Engineering Journals, IRE*, 8(11), 747-756.

Okaforcha, C. C. (2024). Benefits and challenges of integrating machine learning for effective teaching in university in Anambra State.

International Journal of Advanced Academic Research, 10(11), 19-29.

Okorkor, N. & Gideon, N. M. (2024). Lecturers' perceptions on the integration of artificial intelligence technology into Agricultural Education in universities in Southeast Nigeria. *International Journal of Agricultural and Home Economics Education (IJAHEE)*, 11(2), 11-25.

Ortega-Ochoa, E., Sabate, J., Arguedas, M., Conesa, J. Daradoumis, T. and Caballe, S. (2024). Exploring the Utilization and Deficiencies of Generative Artificial Intelligence in Students' Cognitive and Emotional Needs: A Systematic Mini-Review. *Frontiers in Artificial Intelligence.* 7:1493566. https://www.frontiersin.org doi:10.3389/frai.2024.1493566.

Pangandama, H. K. (2024). Advantages and Challenges in Using AI (Artificial Intelligence) in research: A literature review. *Scope*. 14 (02), 1709-1721.

Rogers, E. M. (2003). Diffusion of Innovations (5th ed.). Free Press.

Rossettini, G., Rodeghiero, L., Corradi, F. Cook, C. Pillastrini, P., Turolla, A, Castellini, G., Chiappinotto, S. Gianola, S & Palese, A. (2024). Comparative accuracy of ChatGPT-4, Microsoft Copilot and Google Gemini in Italian entrance test for healthcare sciences degree: a cross-sectional study. BMC Med. Educ. 24, 694

Rossettini, G., Rodeghiero, L., Corradi, F., Cook, C., Pillastrini, P., Turolla, A., Castellini, G., Chiappinotto, S. Gianola, S. and Palese, A. (2023). Comparative accuracy of ChatGPT-4, Microsoft Copilot and Google Gemini in the Italian entrance test for healthcare sciences degrees: a cross-sectional study. *BMC Medical Education*, 24, 694-702.

Roy, R. D., Gupta, S. D., Das, D. and Chowdhury, P. D. (2025). ChatGPT, Gemini or Meta AI: A comparison of AI platforms as a tool for answering higher-order questions in Microbiology. *Journal of Postgraduate Medicine*, 71(1), 28-32

Sengar, S. S., Hasan, A. B., Kumar, S. and Carroll, F. (2024). Generative artificial intelligence: a systematic review and applications. *Multimedia Tools Applications*, 84, 23661-23700.

Seth, I., Lim, B., Xie, Y., Cevik, J., Rozen, W. M., Ross. R. J. and Lee. M. (2023). Comparing the efficacy of large language models ChatGPT, BARD, and Bing AI in providing information on rhinoplasty: An observational study. *Aesthetic Surgery Journal Open Forum*, 5(0), 1-9

Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International Journal of Instruction Technology and Distance Learning*, 2(1), 3-10.

Ukoh, E. E., & Nicholas, J. (2022). AI adoption for teaching and learning of physics. *International Journal for Infonomics (IJI)*, 15(1), 2121–2131.

United Nations Educational, Scientific and Cultural Organisation, (UNESCO, 2023). Guidance for Generative AI in Education and Research. UNESCO https://www.unesco.org/en/open-access/cc-sa.

Yu, H. (2024). The Application and Challenges of ChatGPT in Educational Transformation: New Demand for Teachers' Roles. *Helyon*, 10 (2). https://www.doi.org/10.1016/j.heliyon.2024.e24289