



## Accessibility of artificial intelligence tools and lecturers' productivity in public universities in Bayelsa state, Nigeria

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### Abstract

The study examines the Accessibility of Artificial Intelligence Tools and Lecturers' Productivity in Public Universities in Bayelsa State, Nigeria. The study used a descriptive research design with a population of 2,444 lecturers from the four (4) public universities in Bayelsa State. A sample of 290 lectures representing 20% of the population, using a stratified random sampling technique. Data were collected through a research instrument of twelve items. The reliability of the instrument was ascertained with the use of test-retest method to get the coefficient of 0.85. Data collected were analysed using mean and standard deviation statistics to answer the research questions, while linear regression was used to test the null hypothesis at 0.05 level of significance. The findings of the study show that there is a significant relationship between accessibility of AI tools and lecturers' productivity in public universities in Bayelsa State. It also shows that there is a significant relationship between the challenges of using AI tools and lecturers' productivity in public universities in Bayelsa State. The study, therefore, concluded that improving the accessibility and usage of AI tools can significantly contribute to the advancement of higher institutions, equipping lecturers to meet the demands of a rapidly evolving academic and technological landscape in the 21st century. Based on the findings of the study, it was therefore recommended that University management should organize workshops, seminars, and training sessions to equip lecturers with the skills required to effectively utilize AI tools. Universities should collaborate with private sector and tech providers for AI support software. The government and university management should invest in upgrading digital infrastructure that will enhance research.

**Keywords:** Artificial intelligence, accessibility, tools, lecturers' productivity, public universities

### Introduction

Education is one of the many professions changing due to rapid growth in artificial intelligence (AI) technologies. Artificial intelligence (AI) which provides solutions, like data analysis platforms, virtual assistants, and automated grading systems, is being used to enhance academic productivity, student engagement, and instructional procedures. As administrators and teachers look for answers to issues like scarce resources, growing class sizes, and administrative responsibilities, the usage of AI tools in Nigerian institutions is steadily gaining traction. AI is the study of programming computers to perform tasks that humans currently perform more effectively (George, 2020). According to Linh, *et al.* (2023)<sup>[8]</sup>, lecturers are faced with several demands that include not only teaching but also research and administrative responsibilities. Yasin and Al-Hamad (2023)<sup>[16]</sup> opined that AI tools potentially ease these burdens by streamlining tasks, enhancing data accessibility, and facilitating research activities. Despite the significant role it plays, the accessibility of AI tools in public universities remains limited, influenced by factors such as funding, training, and digital infrastructure (Saidakhror, 2024)<sup>[11]</sup>. AI tools are computer programs that reflect human intellect in various types of tasks by utilizing neural networks, machine learning algorithms, and other computational models (Anurag, *et al.*, 2024)<sup>[3]</sup>. According to Pranav and Lakhani (2024), IA technologies are fundamental for automating complicated activities, analyzing massive data sets, and supporting decision-making in various sectors, especially in education, since they are made to replicate cognitive processes like learning, problem-solving, and data analysis. AI tools are capable of adapting services to individual users, improving user experience and engagement. AI creates new methods of

learning and working, enabling even non-experts to use sophisticated technologies. Stewart and Velupillai (2021)<sup>[13]</sup> listed some among others different types of AI research assistant tools that are relevant to researchers; Tools like Chat GPT, Google NLP API, Iris.ai, Ref-N-Write, UiPath, Zotero, SciSummary, Mendeley, Semantic Scholar, and IBM Watson handle tasks like text analysis, translation, and sentiment analysis. These AI applications in education are useful in personalized learning, grading automation, and virtual teaching and learning. Danler *et al.* (2024)<sup>[4]</sup> asserted that AI-powered research tools assist lecturers with literature reviews, data analysis, and even generating insights from academic publications. Kingsley (2024)<sup>[6]</sup> revealed that more than two-thirds (84%) of lecturers are willing to accept AI for their students, while 16% stated non-acceptance of AI for students. In a similar research, Kingsley *et al.* (2023)<sup>[7]</sup> found out that over half (n = 102, 69.9%) of lecturers accepted AI in the classroom if it were available, while about one-third (n = 44, 30.1%) said they would not accept it. This led to the establishment of policies to support AI's adoption and application in education. Furthermore, Kingsley opined that students' psychological requirements, perceived utility, social influence, and innovation traits all have a positively significant impact on AI adoption in the classroom.

Observation has shown that some lecturers are not familiar with AI tools in research (Abdul-Wahab *et al.*, 2024)<sup>[2]</sup>. Going forward, it has also been noted by Kingsley (2024)<sup>[6]</sup> that university lecturers face several significant challenges in accessing AI tools that could enhance productivity. Here are some other challenges: limited infrastructure and internet access, lack of institutional support, lack of awareness, lack of skills, inadequate training prospects, and data privacy.

## Statement of the Problem

The advancement of artificial intelligence (AI) tools has transformed educational system globally, which has offered lecturers the opportunities to enhance administration, teaching and research effectively. However, their (AI) accessibility and effective use among lecturers notably in Bayelsa State remain uncertain either due to challenges such as: inadequate funding, limited infrastructure, and insufficient training etc. Additional barriers like low awareness, digital literacy gaps, and resistance to change, less efficient methods of teaching and research. Despite AI's potential to revolutionize education, little evidence exists on its accessibility and usage by lecturers for effective productivity in Bayelsa State. This study therefore, addresses this gap by exploring the accessibility of artificial intelligence tools and lecturers' productivity in public universities in Bayelsa State, Nigeria.

## Aim and Objectives

The aim of this study is to investigate Accessibility of AI Tools and Lecturers' Productivity in Public Universities in Bayelsa State. While the specific objectives are:

1. To assess the extent AI tools are accessible to lecturers in public universities in Bayelsa State.
2. To examine the challenges lecturers face in using AI tools in Bayelsa State public universities.

## Research Questions

The following research questions raised to guide the study

1. To what extent does AI tools accessible to lecturers in public universities in Bayelsa State?
2. What challenges do lecturers face in using AI tools in public universities in Bayelsa State?

## Hypotheses

The null hypotheses were tested at 0.05 level of significant:

1. There is no significant relationship between the accessibility of AI tools and lecturers' productivity in public universities in Bayelsa State.
2. There is no significant relationship between the challenges of using AI tools and lecturers' productivity in public universities in Bayelsa State.

## Review of Related Empirical Study

Abdel and Ibrahim (2024)<sup>[1]</sup> conducted a study to assess the knowledge and perception of artificial intelligence for teaching and research among lecturers and find out that respondents have a reasonable awareness of AI and a strong desire for additional training specific to the arts. AI integration is hampered by issues including technical limitations and resource scarcity, which emphasises the necessity for focused interventions and support systems. To enable the proper use of AI in arts education, recommendations include improved training programs, upgraded infrastructure, and ethical standards.

In the same vein, Rudolph *et al.* (2023)<sup>[10]</sup> examined the literature on artificial intelligence (AI) in education, focusing on OpenAI's Generative Pretrained Transformer

(GPT) and its applicability to teaching, learning, and evaluation in higher education. Despite the romanticised exaggeration of GPT-3's advantages, it was found to have significant flaws and occasionally make extremely dumb errors. Despite its limitations—such as its limited word character count, its inability to create diagrams, and its frequent network error prompts—the AI program was able to provide answers to certain important concerns in evaluation, learning, and teaching. It was determined that ChatGPT could be most helpful to educators in promoting more creative teaching and learning.

In a related study, Sullivan *et al.* (2023)<sup>[14]</sup> investigated over 100 news stories that used content analysis to describe how ChatGPT is upending higher education in the US, UK, Australia, and New Zealand. It was found that the data revealed broad worries about academic integrity and potential approaches to deter students from using ChatGPT. Furthermore, fewer studies explained how and why ChatGPT may be effectively applied to teaching, learning, and assessment.

Subsequent research by Sanusi *et al.* (2024)<sup>[12]</sup> examined how pre-service teachers perceived artificial intelligence (AI) using Planned Behaviour Theory (PBT) as a model to direct the research. In order to analyse the data from their survey of 796 pre-service teachers in Nigerian universities, the researchers used structural equation modelling. Out of all the constructs, it was shown that pre-service teachers exhibited a considerably positive behavioural intention to study AI, with the exception of self-efficacy, which was not able to independently result in real AI learning behaviour.

## Methodology

The study used a descriptive research design with a population of 2,444 lecturers from the four (4) public universities in Bayelsa State. A sample of 290 lectures representing 20% of respondents was drawn from the 4 public Universities in Bayelsa State, using a Stratified random sampling technique. Questionnaires were used for data collection. The instrument was divided into two sections: the demographic data of the respondent and the twelve items that answer the research question. The instruments were structured after a modified four-point Likert-type rating scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE), and Very Low Extent (VLE). The instrument was validated by two experts in measurement and evaluation and the reliability of the instrument was ascertained with the use of the test-retest method was used to get the coefficient of 0.85. Data collected were analysed using mean and standard deviation statistics to answer the research questions, while linear regression was used to test the formulated null hypothesis at 0.05 level of significance.

## Data Presentation

**Research Question One:** To what extent does AI tools accessible to lecturers in public universities in Bayelsa State?

**Table 1:** Extent AI Tools Accessible to Lecturers in Public Universities in Bayelsa State

S.No.	Item	Mean	Std. Deviation	Decision
1	AI tools are accessible only through personal subscriptions	3.44	0.91	High Extent
2	AI tools are not recommended by the institutions	3.24	0.89	High Extent
3	Lecturers have access to AI tools	1.47	0.84	Low Extent
4	AI facilities are fully founded by institution	2.49	0.96	Low Extent

5	Accessible AI tools makes research easier	2.65	0.99	High Extent
6	Lecturers are familiar with ChatGPT	2.90	0.92	High Extent
	Grand Mean	2.70	0.92	High Extent

Table one shows the extent AI tools are accessible to lecturers in public universities in Bayelsa State. In table 1, items 3 and 4 have mean values lower than the criterion mean of 2.5, while items 1, 2, 5, and 6 have mean values greater than the criterion mean of 2.5. Moreover, the table 1 shows that the grand mean is 2.70, which is greater than the

criterion means of 2.5. This shows that the extent AI tools are accessible to lecturers in public universities in Bayelsa State is high.

**Research Question Two:** What challenges do lecturers face in using AI tools in public universities in Bayelsa State?

**Table 2:** challenges Lecturers Face in Using AI Tools in Public Universities in Bayelsa State

S.No.	Item	Mean	Std. Deviation	Decision
1	Insufficient financial support.	2.64	1.23	High Extent
2	Inadequate interment services	2.09	1.00	Low Extent
3	Deficiency of interpersonal skills	3.14	0.89	High Extent
4	Privacy concerns	3.70	0.65	High Extent
5	Difficulty in explaining output	2.18	0.96	Low Extent
6	job displacement	1.90	0.78	Low Extent
	Grand Mean	2.61	0.92	High Extent

Table two shows the challenges lecturers face in using AI tools in public universities in Bayelsa State. In table 2, items 1, 5, and 6 have mean values lower than the criterion mean of 2.5, while items 3 and 4 have mean values greater than the criterion mean of 2.5. Moreover, the table 2 shows that the grand mean is 2.61, which is greater than the criterion

means of 2.5. This indicate that challenges lecturers face in using AI tools in public universities in Bayelsa State is high.

**Hypothesis One:** There is no significant relationship between the accessibility of AI tools and lecturers' productivity in public universities in Bayelsa State.

**Table 3:** Linear Regression Results of the Accessibility of AI Tools and Lecturers' Productivity in Public Universities in Bayelsa State

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1	(Constant)	-2.551	0.241	-10.598	0.000
	accessibility of AI tools	0.872	0.014	0.964	61.525

a. Dependent Variable: lecturers' productivity  
R = 0.964; R Square = 0.930; Adjusted R<sup>2</sup> = 0.929

Table 3 is a linear regression result of the dependent variable (lecturers' productivity) regressed against the independent variable (accessibility of AI tools). Testing the hypothesis at 0.05 significant level, the p-values of accessibility of AI tools (0.000) is less than the alpha value (0.05), therefore, there is a significant relationship. This means that accessibility of AI tools has significant relationship on lecturers' productivity. Also, the 92.9% adjusted R<sup>2</sup> indicates the variation in lecturers' productivity,

and can be explained by variability in explanatory variables as well as control variable in the model. Conclusively, there is a significant relationship between accessibility of AI tools and lecturers' productivity in public universities in Bayelsa State.

**Hypothesis Two:** There is no significant relationship between the challenges of using AI tools and lecturers' productivity in public universities in Bayelsa State.

**Table 4:** Linear Regression Results of the challenges of using AI tools and lecturers' productivity in public universities in Bayelsa State

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1	(Constant)	-2.097	0.196	-10.686	0.000
	challenges of using AI tools	0.873	0.012	0.974	73.337

a. Dependent Variable: lecturers' productivity  
R = 0.974; R Square = 0.949; Adjusted R<sup>2</sup> = 0.949

Table 4 is a linear regression result of the dependent variable (lecturers' productivity) regressed against the independent variable (challenges of using AI tools). Testing the hypothesis at 0.05 significant level, the p-values of challenges of accessing and using AI tools (0.000) is less than the alpha value (0.05), therefore, there is a significant relationship. This means that the challenges of using AI tools have significant relationship on lecturers' productivity in public universities in Bayelsa State. Also, the 94.9% adjusted R<sup>2</sup> indicates the variation in lecturers' productivity,

and can be explained by variability in explanatory variables as well as control variable in the model. Conclusively, there is a significant relationship between challenges of using AI tools and goals attainment in public universities in Bayelsa State.

**Discussion of the Findings**

The study shows that the extent AI tools are accessible to lecturers in public universities in Bayelsa State is high. This means that the accessibility of AI tools has a significant

relationship with lecturers' productivity. Therefore, there is a significant relationship between the accessibility of AI tools and lecturers' productivity in public universities in Bayelsa State. The findings are in line with Diala *et al.* (2024) <sup>[5]</sup> who opined that artificial intelligence (AI) technologies can improve English language instruction and library usage.

The study also revealed that the challenges lecturers face in using AI tools in public universities in Bayelsa State is high. This means that the challenges of using AI tools have a significant relationship on lecturers' productivity. Therefore, there is a significant relationship between the challenges of using AI tools and lecturers' productivity in public universities in Bayelsa State.

This is in line with Waleed (2024) <sup>[15]</sup> who found out that Using AI presented more challenges and barriers, including the complexity of the topic, the lack of appropriate instructional resources, and the absence of necessary subject-matter experience. In the same vein, Abdel and Ibrahim (2024) <sup>[1]</sup> findings revealed that AI integration is hampered by issues including technical limitations and resource scarcity, which emphasises the necessity for focused interventions and support systems.

### Conclusion

The outcome of this research highlights the critical role of artificial intelligence (AI) tools in enhancing lecturers' productivity in public universities in Bayelsa State, Nigeria. While AI tools have the potential to transform teaching, research, and administrative processes, their accessibility and effective utilization remain constrained by challenges such as inadequate infrastructure, insufficient training, limited awareness, and resistance to adoption. Improving the accessibility and usage of AI tools can significantly contribute to the advancement of higher institutions, equipping lecturers to meet the demands of a rapidly evolving academic and technological landscape in the 21<sup>st</sup> century.

### Recommendations

Based on the outcome of the study, it was therefore recommended that:

1. Universities management should organize workshops, seminars, and training sessions to equip lecturers with the skills required to effectively utilize AI tools.
2. Universities should collaborate with private sector and tech providers for AI support software.
3. The government and university management should invest in upgrading digital infrastructure that will enhance research.

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