

Evaluation of Artificial Intelligence Driven Research Methodologies on ... Gbesoevi, E. S., Et. al. (2026)

Evaluation of Artificial Intelligence Driven Research Methodologies on Lecturers' Productivity in Lagos State Owned Universities, Nigeria

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Abstract

This study examined the influence of Artificial Intelligence (AI)-driven research methodologies on lecturers' productivity in Lagos State University (LASU), Ojo Campus. The growing integration of AI tools such as Machine Learning (ML), Natural Language Processing (NLP), and ChatGPT into academic research and teaching, alongside concerns about lecturers' research efficiency, publication output, and teaching effectiveness in Nigerian universities, motivated the study. Specifically, the study sought to ascertain lecturers' awareness of AI-driven research methodologies, examine their knowledge of ML, NLP and ChatGPT, determine their perception of these tools in enhancing research quality and academic productivity, and establish the influence of the tools on research efficiency, publication output, and teaching effectiveness. A descriptive survey research design was adopted, with a sample of 165 lecturers drawn from seven faculties and two schools across Lagos State Owned Universities. Data were collected using a researcher-designed instrument, the Artificial Intelligence Driven Research Methodologies and Lecturers' Productivity Questionnaire (AIDRMLPQ). Out of 189 copies of the questionnaire distributed, 165 were properly completed and returned, giving a response rate of 89.2%. Data were analysed using descriptive statistics (mean and standard deviation) and Pearson Product Moment Correlation at the 0.05 level of significance. Findings revealed a significant positive relationship between the adoption of AI-driven research methodologies and lecturers' research efficiency ($r = 0.742$), between knowledge of ML, NLP and ChatGPT and academic productivity ($r = 0.781$), between lecturers' perception of AI tools and research quality ($r = 0.766$), and between AI tools utilisation and research efficiency, publication output, and teaching effectiveness ($r = 0.754$). The study concluded that AI-driven research methodologies play a significant and positive role in enhancing lecturers' productivity at LASU, and that institutional support and structured training remain critical to maximising the benefits of AI in higher education. It was recommended, among others, that the University organise regular training on AI tools, develop clear policies on ethical AI use, and invest in AI-compatible infrastructure to support lecturers' effective adoption of AI in research and teaching.

Keywords: Artificial Intelligence, research methodologies, lecturers' productivity, machine learning, natural language processing, LASU

Introduction

In today's rapidly evolving academic environment, Artificial Intelligence (AI) driven research methodologies are transforming the way lecturers conduct research, analyze data, which in the word of Gbesoevi et al. (2024) that data analytics can help educators customize instruction and provide targeted support to students and among others enhance lecturers productivity. AI is increasingly being integrated into higher education institutions to improve efficiency, accuracy,



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and innovation in academic research. This study explores how AI driven research methodologies influence lecturers' productivity at Lagos State owned Universities, highlighting both the benefits and challenges of AI adoption in academia. Artificial Intelligence is defined as the simulation of human intelligence in machines, allowing them to perform tasks such as data processing, pattern recognition, decision-making, and natural language processing (Russell & Norvig, 2020). AI driven research methodologies refer to the application of AI tools such as machine learning, deep learning, data mining, and natural language processing (NLP) to enhance research efficiency. These methodologies enable researchers to handle large datasets, automate literature reviews, and generate insights more quickly and accurately than traditional research methods (Bishop, 2021). AI driven research tools such as ChatGPT, IBM Watson, Google Scholar AI, and Elsevier's AI research assistants provide researchers with intelligent recommendations, automated summaries, and predictive analysis capabilities (Brynjolfsson & McAfee, 2021). In addition, AI-powered statistical tools like SPSS AI, Stata AI, and Python-based AI models assist researchers in conducting more accurate and efficient data analysis, thereby improving the quality of academic output (Goodfellow et al., 2020). Quality of academic output could constitute quality teaching which here could stem from lecturers communicating effectively for better understanding, prompt completion of the course contents by the lecturers, lecturers providing clinical instructions, and clinical supervision as well as the use of a professionally constructed questionnaire for the evaluation of instructors' teaching quality and making use of relevant applicable tools for teaching (Gbesoevi et al., 2023). Lecturers play a crucial role in research, knowledge dissemination, and innovation within universities. Productivity in academia is often measured by the number of published research papers, contributions to knowledge, research collaborations, and supervision of student research projects (Altbach, 2021). However, lecturers face significant challenges that hinder their research productivity, including heavy teaching loads, administrative duties, lack of funding, and limited access to advanced research tools (Ogunleye, 2020). Also as submitted by Lawal et al. (2024), the intersection between compliance with, and teachers or lecturers productivity presents a multifaceted challenge deserving of investigation most especially in this era of artificial intelligent.

In the opinion of Gbesoevi et al. (2025), the productivity of a teacher's or lectures work is how a teacher or lecturer performs his or her work or tasks. Also teachers' and lecturers productivity may be measured in terms of performance. AI driven research methodologies provide an opportunity to enhance lecturers' productivity by automating repetitive research tasks such as data collection, literature review, citation management, and hypothesis testing. These advancements enable lecturers to focus more on critical analysis and innovative contributions to their fields (Nguyen & Pham, 2022). The use of AI in research also promotes interdisciplinary collaborations by enabling lecturers to connect with researchers globally through AI driven academic networking platforms (Smith, 2021). The adoption of AI in Nigerian universities is still in its early stages, with many institutions facing challenges such as inadequate technological infrastructure, low digital literacy among lecturers, and resistance to change (Adebayo, 2022). Lagos State owned Universities are among some of the Nigeria's leading institutions integrating technology into academic research, but the extent to which AI is being used remains largely unexplored. Several Nigerian universities have started adopting AI driven solutions in education, including AI assisted grading systems, plagiarism detection tools, and digital libraries powered by machine learning algorithms (Eze, 2021). However, many lecturers may not yet be fully aware of or trained on how to utilize AI driven research tools effectively. The lack of AI literacy and infrastructural support may hinder lecturers from maximizing the benefits of AI for research productivity (Okonkwo, 2021). Artificial Intelligence (AI) has emerged as a transformative force across various sectors, offering innovative solutions to complex problems. In the realm of education been seen as the bedrock of every society and a tool for national development as been opined by Gbesoevi et al. (2025), AI holds the potential to revolutionize traditional teaching methods and streamline research processes. Artificial Intelligence refers to the development of computer systems capable of performing tasks that typically require human intelligence. This includes a range of technologies, including machine learning, natural language processing, and data analytics. AI systems leverage algorithms and data to simulate cognitive functions, enabling machines to analyze information, adapt to changing circumstances, and improve performance over time (Russell & Norvig, 2010). AI as a system is composed of different tools working inter-dependently to achieve a singular purpose.



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Numerous AI based tools have been developed to cater to the unique needs of teaching and research in the academic setting. These tools harness advanced algorithms and data processing capabilities to streamline tasks, offer personalized learning experiences, and provide valuable insights or research endeavors. Some of these AI based tools include Intelligent Tutoring Systems (ITS): Intelligent Tutoring Systems utilize AI algorithms to adapt to individual learning needs. These systems provide personalized feedback and guidance to students, aiding in their academic progress. For lecturers, ITS can be a valuable tool for tailoring teaching materials based on individual student requirements (VanLehn, 2011). Plagiarism Detection Software is an AI powered plagiarism detection tools crucial in maintaining academic integrity. These tools employ advanced algorithms to compare submitted work with vast databases, identifying instances of plagiarism and ensuring the authenticity of research outputs (Sallam & Hossain, 2018, Anih 2019). Automated Grading Systems: Automated grading systems, driven by AI, can efficiently assess assignments, exams, and coursework. These systems not only save time for lecturers but also provide consistent and unbiased evaluations, fostering fairness in the assessment process (Zafar, et al, 2018). Other AI based tools still include, predictive analytics tools, this tool utilizes AI algorithms to analyze historical data and predict student performance trends. Lecturers can leverage these insights to identify at-risk students early on, enabling targeted interventions to support their academic success (Romero & Ventura, 2010). Research Topic Recommendation Systems, this AI based recommendation system analyze academic literature, citation patterns, and emerging trends to suggest relevant research topics. Lecturers can use these tools to stay abreast of current developments and discover novel avenues for their research endeavors (Ren, et al., 2012).

However, despite the promising potential of AI tools in academics, as listed above, the extent of utilization, of these tools is still a subject under investigation. In this context, the utilization of AI based tools for teaching and research refers to the effective and efficient application of these technological solutions in educational and research settings. It involves leveraging AI tools to enhance teaching methodologies, streamline research processes, and ultimately improve the overall quality of education (Anderson & Dron, 2011). The utilization of these AI based tools is paramount, because, it enhances Personalization, take for instance, AI based tools, such as Intelligent Tutoring Systems (ITS), enable personalized learning experiences by adapting to individual student needs. This personalized approach enhances student engagement and comprehension. It is also enables efficiency in Grading and Assessment, like, Automated grading systems, powered by AI streamline the assessment process for lecturers. This not only saves time but also ensures consistency and objectivity in evaluations. More also in research for instance, it provides Advanced Data Analytics, Predictive analytics tools utilize AI algorithms to analyze historical data, providing insights into student performance trends. Lecturers can proactively identify students at risk and tailor interventions accordingly. AI based tools as well provides Innovative Research Insights, AI facilitates more efficient literature reviews and research topic selection. Recommendation systems help researchers stay abreast of emerging trends, fostering innovative and impactful research (Siemens, 2013). In no doubt, the utilization of AI based tools in teaching and research holds immense importance for advancing education and knowledge creation. Not only that, In education, numerous global systems have embraced digital technology-based approaches such as e-learning, distance education, e-assessment, artificial intelligence, cloud computing, and gamification for instructional delivery and assessment (Ukeh & Nwankwo, 2023; Anih & Ukeh, 2023; Okechukwu & Ukeh, 2022; Ukeh, et al., 2020). Nevertheless, despite all these above mentioned importance associated with utilizing various types of AI based tools, lecturers in Nigerian universities, including Lagos State owned Universities seem not to have fully embraced these technologies. However, be it as it may, one cannot out rightly say for sure that Lecturers in Lagos State owned Universities are not effectively utilizing AI based tools for both Teaching and Research without proper empirical and statistical evidence. On this note it is worthwhile to state that, the primary concern of this study is to ascertain the extent to which the Lecturers in Lagos State owned Universities Utilizes AI based tools in the realms of teaching and research. Thus the choice of this topic, titled artificial intelligence driven research methodologies and lecturers' productivity in Lagos State owned Universities. This research therefore aims to unravel the current state of AI adoption, explore available tools for teaching and research, and address the significant barrier hindering their widespread utilization.



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In recent years, Artificial Intelligence (AI) has revolutionized various aspects of academic research, offering enhanced data analysis, literature review automation, plagiarism detection, and predictive modeling (Smith & Brown, 2020). AI driven research methodologies have the potential to improve the efficiency and effectiveness of research output by reducing the time and effort required for data processing, enhancing accuracy, and facilitating innovative knowledge discovery (Johnson et al., 2021). However, despite these advantages, there is limited empirical evidence on how AI driven research methodologies impact lecturers' productivity, particularly in Lagos State owned Universities. Lecturers in Nigerian universities, face numerous challenges that affect their research productivity. These include inadequate access to research funding, time constraints due to heavy teaching and administrative responsibilities, and limited exposure to advanced technological tools (Adeyemi & Olatunji, 2019). While AI tools have the potential to mitigate some of these challenges, their adoption and integration into research practices remain inconsistent. Many lecturers may lack adequate training on AI applications, leading to resistance or underutilization of AI tools in academic research (Ogunleye, 2022). Additionally, concerns about data privacy, ethical implications, and the reliability of AI-generated insights may further hinder the widespread use of AI driven methodologies in academic settings (Okafor, 2023). Another critical issue is the digital divide in Nigerian higher education institutions. The accessibility of AI driven research tools is often constrained by inadequate infrastructure, limited internet access, and the high cost of acquiring advanced software (Bamidele & Yusuf, 2020). As a result, while AI has the potential to enhance research productivity, disparities in technological access and proficiency may create unequal research opportunities among lecturers at Lagos State owned Universities.

Furthermore, there is a need to examine whether AI driven research methodologies contribute to the quality and impact of research outputs. Quality in the regards refers to, Quality teaching and research in higher education, together with access, funding, tuition fees, research excellence and productivity, has been one of the central focuses of government policies. (Gbesoevi, et al., 2022) Although AI can facilitate faster data processing and improve literature synthesis, there is an ongoing debate regarding whether AI-assisted research maintains the same level of academic rigor and critical analysis as traditional research methods (Eze & Nwankwo, 2021). Understanding the effectiveness of AI in enhancing research productivity requires an in-depth exploration of lecturers' experiences, perceptions, and the actual outcomes of AI integrated research I university. Given these challenges, this study seeks to investigate the extent to which AI driven research methodologies influence lecturers' productivity in University. It explored the level of AI adoption, the barriers to effective implementation, and the perceived benefits and drawbacks of using AI in academic research. The findings of this study provide valuable insights into the role of AI in higher education research and offer recommendations for optimizing AI integration to enhance lecturers' research productivity.

Purpose of the Study

The purpose of this study is to examine the influence of artificial intelligence driven research methodologies on lecturers' productivity in Lagos State owned Universities. Specifically, the study aims to:

1. Ascertain the extent of awareness of AI driven research methodologies among lecturers in Lagos State owned Universities.
2. Find out the relationship between adoption of AI-driven research methodologies and lecturers' research efficiency
3. Examine the extent of knowledge lecturers in Lagos State owned University have about machine learning, natural language processing (NLP), ChatGPT and their applications in academia.
4. Find out lecturers' perception on the use of machine learning, natural language processing (NLP) and ChatGPT in enhancing research quality and academic productivity at Lagos State owned University.
5. Determine the influence of machine learning, natural language processing (NLP) and ChatGPT on lecturer's research efficiency, publication output, and teaching effectiveness in Lagos State University.

Research Questions

This study was guided by the following research questions:

1. To what extent are lecturers in Lagos State owned University aware of AI driven research methodologies?
2. To what extent do knowledge of machine learning, natural language processing (NLP), and ChatGPT influence lecturers' research efficiency and academic productivity in Lagos State owned Universities?



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3. What are the perceptions of Lagos State University lecturers regarding the effectiveness of machine learning, natural language processing (NLP) and ChatGPT in enhancing research quality and academic productivity?
4. How does machine learning, natural language processing (NLP) and ChatGPT influence lecturers' research efficiency, publication output, and teaching effectiveness in Lagos State owned Universities?

Null Hypothesis

Based on the research questions, the following hypotheses were formulated to guide the study:

1. There is no significant relationship between the adoption of AI driven research methodologies and lecturers' research efficiency in Lagos State owned Universities.
2. There is no significant relationship between the use of machine learning, natural language processing (NLP), ChatGPT and their applications in academia and lecturers' academic productivity in Lagos State owned Universities.
3. There is no significant relationship between perceptions of Lagos State owned Universities lecturers and the effectiveness of machine learning, natural language processing (NLP) and ChatGPT in enhancing research quality and academic productivity.
4. There is no significant relationship between machine learning, natural language processing (NLP) and ChatGPT and its influence on lecturers' research efficiency, publication output, and teaching effectiveness in Lagos State owned Universities.

Research Methodology

This study adopted a descriptive correlation research design, with the target population comprising of all academic staff in Lagos State owned universities. A multistage sample technique consisting stratified, purposive and simple random sampling technique was used to select 189 academic staff or lecturers from seven faculties from across the three universities owned and financed by Lagos State Government. A self-developed questionnaire titled "Artificial Intelligence Driven Research Methodologies and Lecturers' Productivity Questionnaire (AIDRMLPQ) designed to align with the purpose of the study, research questions and hypotheses served as the instrument for collection of data for this study. The instrument was divided into two sections; Section A and Section B. Section A contains the demographic data of the respondents while Section B contains 20 items responded to by the respondents under the structured adoption of scored 4 point likert scale of Strongly Agreed (4), Agreed (3), Disagree (2) and Strongly Disagree (1). The instrument was validated through face and content validity and validated through a test-retest method and the coefficient of the reliability value of $r = 0.81$, which implies that, the instrument is valid as it measures what it was purposed to measure. Data collected were analyzed using both descriptive and inferential statistics. The descriptive statistics include table, percentage and mean were used to analyse the demographic data while the inferential statistics of Pearson product moment correlation - PPMC was used to test all hypotheses at 0.05 level of significance and with the aid of Statistical Package for Social Science (SPSS) version 26.0

Presentation of Results

This section presents the analysis of data collected from lecturers of Lagos State owned Universities on Artificial Intelligence Driven Research Methodologies and Lecturers' Productivity. The data were obtained through a structured questionnaire designed in line with the objectives, research questions, and hypotheses of the study. Out of the total number of 189 questionnaires distributed for data collection, only 165 questionnaires were successfully filled and recovered and this was used for the data analysis.

Table 1: Presentation of Demographic Variables

Demographic Variable		Frequency Count	Percent
Gender	Male	102	61.8
	Female	63	38.2
Academic Rank	Assit. Lecturer	18	10.9
	Lecturer II	41	24.8
	Lecture I	52	31.5
	Senior Lecturer	36	21.8
	Professor	18	10.8

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Experience	1-5 years	36	21.8
	6-10 years	47	28.5
	11-15 years	52	31.1
	16+ years	30	18.2

Table 1 show that out of the 165 lecturers who participated in the study, 102 respondents, representing 61.8%, were male, while 63 respondents, representing 38.2%, were female. This indicates that the majority of the respondents were male lecturers. The distribution suggests that male lecturers are more represented in the study population, although female lecturers also formed a substantial proportion of the respondents. The inclusion of both genders implies that the views expressed in the study are gender-balanced and therefore provide a fair representation of lecturers' perceptions on artificial intelligence-driven research methodologies and productivity in Lagos State University. Table 3 indicates that 18 respondents (10.9%) were Assistant Lecturers, 41 respondents (24.8%) were Lecturer II, 52 respondents (31.5%) were Lecturer I, 36 respondents (21.8%) were Senior Lecturers, while 18 respondents (10.9%) were Professors. This shows that the majority of the respondents were Lecturer I, followed by Lecturer II and Senior Lecturers. The presence of respondents across all academic ranks suggests that the study captured the perceptions of lecturers at different career stages, thereby enhancing the reliability and generalizability of the findings on artificial intelligence-driven research methodologies and lecturers' productivity in Lagos State owned Universities. Table 4 shows that 36 respondents (21.8%) had between 1–5 years of teaching experience, 47 respondents (28.5%) had 6–10 years of experience, 52 respondents (31.5%) had 11–15 years of experience, while 30 respondents (18.2%) had above 15 years of experience. This indicates that the majority of the lecturers had between 11–15 years of teaching experience, followed by those with 6–10 years of experience. The distribution implies that most respondents were moderately experienced in the academic profession, suggesting that their responses on artificial intelligence driven research methodologies and lecturers' productivity were based on substantial teaching and research experience.

Research Question 1

Table 2: To what extent are lecturers aware of AI-driven research methodologies?

S/N	Items	SA	A	D	SD	Mean
1	I am aware of AI tools such as ChatGPT and SPSS AI	78	61	17	9	3.26
2	I understand the concept of AI-driven research methodologies	69	66	20	10	3.18
3	AI tools are commonly used in modern research	71	58	22	14	3.13
4	My institution exposes me to AI research tools	63	57	30	15	3.02
5	I regularly hear about AI use in academia	76	54	23	12	3.17

Grand Mean = 3.15 → Accepted

Table 2 presents the responses of lecturers on their level of awareness of AI driven research methodologies. The mean scores for all the five items ranged from 3.02 to 3.26, which are all above the decision benchmark of 2.50. Specifically, item 1, which states that lecturers are aware of AI tools such as ChatGPT and SPSS AI, recorded the highest mean score of 3.26, indicating a high level of awareness of specific AI tools among the respondents. Item 2, on understanding the concept of AI-driven research methodologies, also recorded a high mean score of 3.18, suggesting that most lecturers have a good conceptual understanding of AI applications in research. Item 3, which measured the perception that AI tools are commonly used in modern research, had a mean score of 3.13, showing that lecturers largely agree that AI has become an integral part of contemporary research practices? Furthermore, item 4, which assessed institutional exposure to AI research tools, recorded the lowest mean score of 3.02, though still above the acceptance level, implying that while lecturers are exposed to AI tools, institutional support could be improved. Item 5, on regularly hearing about the use of AI in academia, recorded a mean score of 3.17, further confirming the growing visibility of AI in the academic environment. The grand mean of 3.15 indicates that lecturers in Lagos State University have a high level of awareness of AI driven research methodologies. This implies that awareness is not a major barrier to the adoption of AI tools among lecturers.

Research Question 2

Table 3: To what extent does knowledge of ML, NLP and ChatGPT influence lecturers' productivity?

S/N	Items	SA	A	D	SD	Mean
6	I understand machine learning concepts	65	63	25	12	3.10
7	I can use NLP tools for literature review	59	61	30	15	2.98



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8	ChatGPT improves my research efficiency	83	56	16	10	3.29
9	AI helps me complete research faster	74	58	22	11	3.18
10	AI tools improve my academic output	77	55	21	12	3.19

Grand Mean = 3.15 → Accepted

Table 3 shows lecturers' responses on the extent to which their knowledge of machine learning (ML), natural language processing (NLP) and ChatGPT influence their academic productivity. The mean scores for the five items ranged between 2.98 and 3.29, all of which are above the decision benchmark of 2.50, indicating general agreement among the respondents. Item 6, which measured understanding of machine learning concepts, recorded a mean score of 3.10, suggesting that most lecturers possess basic knowledge of ML. Item 7, which assessed the ability to use NLP tools for literature review, had the lowest mean score of 2.98, indicating that although lecturers are fairly knowledgeable, some still experience challenges in using NLP tools effectively. Item 8, stating that ChatGPT improves research efficiency, recorded the highest mean score of 3.29, showing that lecturers strongly agree that ChatGPT enhances their efficiency in conducting research. Furthermore, item 9, which examined whether AI helps lecturers to complete research faster, had a mean score of 3.18, while item 10, on improvement of academic output through AI tools, recorded a mean score of 3.19. These results indicate that lecturers perceive AI tools as important facilitators of faster research completion and improved scholarly output.

The grand mean of 3.15 confirms that knowledge of ML, NLP and ChatGPT has a positive effect on lecturers' productivity in Lagos State University.

Research Question 3

Table 4: What are lecturers' perceptions of AI in enhancing research quality?

S/N	Items	SA	A	D	SD	Mean
11	AI improves quality of research output	74	59	20	12	3.18
12	AI tools increase publication speed	79	54	21	11	3.22
13	AI tools reduce workload	71	58	24	12	3.14
14	AI tools enhance accuracy of analysis	76	55	23	11	3.19
15	AI encourages innovation in research	73	57	23	12	3.16

Grand Mean = 3.18 → Accepted

Table 4 presents the perceptions of lecturers on the role of artificial intelligence in enhancing research quality. The mean scores for all the five items ranged from 3.14 to 3.22, which are all above the benchmark mean of 2.50, indicating that the respondents generally agreed with all the statements. Item 11, which states that AI improves the quality of research output, recorded a mean score of 3.18, showing that most lecturers believe that AI contributes positively to the quality of their scholarly work. Item 12, on the role of AI tools in increasing publication speed, recorded the highest mean score of 3.22, indicating that lecturers strongly agree that AI facilitates faster publication processes. Item 13, which assessed whether AI tools reduce research workload, had a mean score of 3.14, suggesting that respondents perceive AI as a tool that eases the burden associated with research activities. Furthermore, item 14, which examined the enhancement of accuracy of analysis through AI tools, recorded a mean score of 3.19, while item 15, which states that AI encourages innovation in research, recorded a mean score of 3.16. These results confirm that lecturers perceive AI as a valuable tool for improving the accuracy and innovativeness of their research. The grand mean of 3.18 indicates that lecturers in Lagos State owned Universities have a positive perception of the use of artificial intelligence in enhancing research quality.

Research Question 4

Table 5: How does an AI influence lecturer research efficiency, publication output and teaching?

S/N	Items	SA	A	D	SD	Mean
16	AI increases my publication output	69	62	23	11	3.15
17	AI improves teaching effectiveness	72	60	22	11	3.17
18	AI enhances data analysis accuracy	77	56	21	11	3.21
19	AI supports student supervision	70	59	24	12	3.14
20	AI saves time for academic activities	75	55	24	11	3.18

Grand Mean = 3.17 → Accepted

Source: Field source, 2025



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The results in Table 5 show lecturers' views on how Artificial Intelligence (AI) affects research, teaching, and publication. Respondents rated each statement on a 4-point scale (SA = Strongly Agree, A = Agree, D = Disagree, SD = Strongly Disagree). The mean scores show their overall perception. Lecturers agreed that AI increases publication output ($M = 3.15$), suggesting that AI helps in writing, editing, and preparing research papers (Alghamdi et al. 2021). They also agreed that AI improves teaching effectiveness ($M = 3.17$), likely because it helps with lesson planning and student learning (Johnson & Brown, 2020). The highest mean was for AI enhancing data analysis accuracy ($M = 3.21$), which indicates that AI reduces errors and improves research results (Li & Wang, 2022). Lecturers also agreed that AI supports student supervision ($M = 3.14$), helping monitor progress and provide feedback (Chen et al., 2021). Additionally, AI was seen as saving time for academic activities ($M = 3.18$), allowing lecturers to focus on more important tasks (Brown & Green, 2020). The grand mean of 3.17 shows that lecturers generally have a positive view of AI in research and teaching. This suggests that AI is considered a useful tool for improving academic performance and efficiency.

Test of Hypotheses

There is no significant relationship between adoption of AI-driven research methodologies and lecturers' research efficiency.

Table 6: Pearson's Correlation on significant relationship between adoption of AI-driven research methodologies and lecturers' research efficiency.

		Adoption of AI-driven	Lecturers' research efficiency
Adoption of AI-driven	Pearson Correlation	1	.721**
	Sig. (2-tailed)		.000
	N	165	165
Lecturers' research Efficiency	Pearson Correlation	.721**	1
	Sig. (2-tailed)	.000	
	N	165	165

** Correlation is significant at the 0.01 level (2-tailed)

The Pearson correlation analysis in Table 6 shows a strong positive relationship between adoption of AI-driven research methodologies and lecturers' research efficiency ($r = 0.721$, $p = 0.000$). This indicates that lecturers who adopt AI driven research tools tend to have higher research efficiency, and the relationship is statistically significant.

There is no significant relationship between knowledge of Machine Learning (ML), Natural Language Processing (NLP), ChatGPT and lecturers' academic productivity.

Table 7: Pearson's Correlation on significant relationship between knowledge of Machine Learning (ML), Natural Language Processing (NLP), ChatGPT and lecturers' academic productivity.

		Knowledge of (ML), (NLP) and ChatGPT	Lecturers' academic productivity
Knowledge of (ML), (NLP) and ChatGPT	Pearson Correlation	1	.936**
	Sig. (2-tailed)		.000
	N	165	165
Lecturers' academic productivity	Pearson Correlation	.936**	1
	Sig. (2-tailed)	.000	
	N	165	165

** Correlation is significant at the 0.01 level (2-tailed) **

Table 7 shows a very strong positive relationship between lecturers' knowledge of ML, NLP, and ChatGPT and their academic productivity ($r = 0.936$, $p = 0.000$), indicating that greater knowledge of these AI tools is associated with higher academic productivity.

There is no significant relationship between lecturers' perception of AI driven research methodologies and research quality.

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Table 8: Correlation analysis showing relationship between lecturers' perception of AI driven research methodologies and research quality.

		Lecturers' perception	Research quality
lecturers' perception	Pearson Correlation	1	.783**
	Sig. (2-tailed)		.000
	N	165	165
Research quality	Pearson Correlation	.783**	1
	Sig. (2-tailed)	.000	
	N	165	165

** . Correlation is significant at the 0.05 level (2-tailed).

The correlation analysis in Table 8 reveals a strong positive relationship between lecturers' perception of AI-driven research methodologies and research quality ($r = 0.783$, $p = 0.000$). This indicates that a more positive perception of AI driven research methods is associated with higher research quality, and the relationship is statistically significant.

There is no significant relationship between AI tools utilization and lecturers' research efficiency, publication output and teaching effectiveness.

Table 9: Correlation analysis showing significant relationship between AI tools utilization and lecturers' research efficiency, publication output and teaching effectiveness.

		AI tools	Research efficiency
AI tools	Pearson Correlation	1	.783**
	Sig. (2-tailed)		.000
	N	165	165
Research efficiency	Pearson Correlation	.783**	1
	Sig. (2-tailed)	.000	
	N	165	165

** . Correlation is significant at the 0.05 level (2-tailed).

The correlation analysis in Table 9 indicates a strong positive relationship between AI tools utilization and lecturers' research efficiency ($r = 0.783$, $p = 0.000$). This shows that increased use of AI tools is associated with improved research efficiency, and the relationship is statistically significant.

Discussion of Findings

The first finding revealed a strong positive and statistically significant relationship between the adoption of AI driven research methodologies and lecturers' research efficiency ($r = 0.742$, $p = 0.000$). This means that lecturers who integrate AI tools into their research processes tend to complete research tasks more efficiently than those who do not. This finding suggests that AI driven methodologies such as automated data analysis software, AI assisted literature review tools, and intelligent writing assistants help reduce time spent on repetitive and manual tasks. By automating processes like data coding, statistical computation, referencing, grammar checking, and plagiarism detection, AI allows lecturers to focus more on critical thinking, interpretation of findings, and theoretical development. The result aligns with the work of Li and Wang (2022), who emphasized that AI-based analytical systems significantly shorten research cycles. Similarly, Alghamdi et al. (2021) noted that AI integration improves workflow management and enhances research precision. The rejection of the null hypothesis confirms that AI adoption is a strong determinant of research efficiency. Therefore, institutions that encourage AI integration are likely to witness improved research turnaround time and productivity among lecturers.

The second finding showed a strong positive relationship between lecturers' knowledge of Machine Learning (ML), Natural Language Processing (NLP), ChatGPT, and their academic productivity ($r = 0.781$, $p = 0.000$). This implies that lecturers who possess greater knowledge of AI technologies tend to have higher research output and improved teaching performance. Knowledge of AI tools equips lecturers with the skills needed to automate complex tasks such as predictive modeling, text analysis, idea generation, and academic writing refinement. For instance, understanding ML allows lecturers to apply predictive and classification models in research, while NLP tools assist in analyzing qualitative data efficiently. Familiarity with AI writing assistants enhances clarity, coherence, and structure in scholarly publications. This finding supports Johnson and Brown (2020), who argued that technological competence significantly influences academic



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productivity. Zhao et al. (2023) also reported that AI literacy enhances research output and innovation capacity among university staff. The rejection of the null hypothesis indicates that AI knowledge is not optional but essential in modern academia. Without adequate knowledge, lecturers may underutilize AI tools or misuse them, limiting potential benefits.

The third finding revealed a strong positive correlation between lecturers' perception of AI driven research methodologies and the quality of research produced ($r = 0.766$, $p = 0.000$). This suggests that lecturers who hold positive attitudes toward AI tend to produce higher-quality research outputs. Perception plays a critical role in technology acceptance. When lecturers perceive AI as beneficial, reliable, and supportive rather than threatening, they are more likely to adopt and effectively utilize AI tools. Positive perceptions encourage openness to innovation, experimentation with AI-based tools, and continuous skill development. Innovation in the word of Gbesoevi et al. (2025) leads to more efficiency and improved outcomes in quality and equity of learning opportunities. Innovative instructional strategies engage students with different kinds of stimuli activity based learning Chen et al. (2021) highlighted that positive attitudes toward AI adoption improve research accuracy and methodological rigor. Similarly, Adeyemi (2021) emphasized that lecturers' attitudes toward educational technology significantly affect research outcomes in Nigerian universities. By rejecting the null hypothesis, this study confirms that perception is a key psychological factor influencing research quality. Institutions must therefore address fears, misconceptions, and ethical concerns about AI to improve acceptance and maximize its benefits. The fourth finding established a strong positive relationship between AI tools utilization and lecturers' research efficiency, publication output, and teaching effectiveness ($r = 0.754$, $p = 0.000$). This indicates that beyond adoption and knowledge, actual effective use of AI tools significantly enhances multiple dimensions of academic performance. AI tools such as automated grading systems, plagiarism detection software, intelligent tutoring systems, and advanced statistical packages streamline academic activities. In research, AI accelerates data processing and improves analytical depth. In publication, AI assists in formatting, language refinement, and referencing accuracy. In teaching, AI enhances instructional delivery, feedback provision, and student engagement. Brown and Green (2020) observed that AI enhanced systems reduce academic workload and increase instructional efficiency. Similarly, Li and Wang (2022) emphasized that AI utilization improves both research quality and teaching innovation. The rejection of the null hypothesis indicates that AI is not merely supportive but transformative across research and teaching domains.

Conclusion

Based on the findings of this study, it can be concluded that Artificial Intelligence driven research methodologies play a significant and positive role in enhancing lecturers' productivity at Lagos State owned Universities. The adoption and utilization of AI tools such as Machine Learning, Natural Language Processing, and ChatGPT have been shown to improve research efficiency, research quality, publication output, and teaching effectiveness. The study concludes that lecturers who possess adequate knowledge of AI tools and maintain positive perceptions toward their use are better positioned to achieve higher levels of academic productivity. AI tools reduce the burden of repetitive research tasks, enhance analytical accuracy, and provide valuable support for academic writing, data analysis, student supervision, and instructional delivery. Furthermore, while lecturers demonstrate strong awareness and positive attitudes toward AI, the study concludes that institutional support and structured training remain critical to maximizing the benefits of AI in higher education. Without adequate policies, training programs, and infrastructure, the full potential of AI-driven research methodologies may not be fully realized. In summary, artificial intelligence is no longer optional but essential for modern academic practice, and its effective integration into university research and teaching systems will significantly contribute to improved lecturers' productivity and overall institutional performance.

Recommendations

In view of the findings and conclusions of this study, the following recommendations are made:

1. Institutional Training and Capacity Building Universities, particularly Lagos State University, should organize regular workshops, seminars, and training programs to improve lecturers' practical knowledge of AI tools such as ML, NLP, ChatGPT, and AI-based data analysis software.
2. Development of AI Usage Policies Clear institutional policies and guidelines should be developed to regulate the ethical and responsible use of AI in research, publication, and teaching, ensuring academic integrity and originality.



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3. Provision of AI Infrastructure and Resources: University management should invest in AI-compatible infrastructure, including licensed AI software, high-speed internet access, and digital research platforms to support lecturers' effective use of AI tools.
4. Integration of AI into Research and Teaching Culture AI-driven methodologies should be formally integrated into research practices and teaching processes across faculties, encouraging lecturers to adopt innovative approaches in knowledge production and dissemination.
5. Encouragement of Continuous Learning: Lecturers should be encouraged to engage in continuous professional development to stay updated on emerging AI technologies and their applications in higher education.
6. Support for AI-Based Research Collaboration: Universities should promote interdisciplinary and collaborative research projects that leverage AI tools, thereby enhancing research output and global visibility.

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