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**RELATIONSHIP BETWEEN UTILIZATION OF ARTIFICIAL INTELLIGENCE AND  
MANAGEMENT OF PUBLIC UNIVERSITIES IN CROSS RIVER STATE, NIGERIA**

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**Abstract**

The study investigated relationship between utilization of artificial intelligence (AI) and management of public universities in Cross River State, Nigeria, for national development. The study was guided by two research questions and two hypotheses were formulated and tested at 0.05 level of significance. The study adopted correlation research design. The population of the study consisted of 3,785 staff in two public universities in Cross River State, Nigeria. A sample of 400 staff was selected using simple multi-stage sampling procedure. Two 15-items questionnaires titled “Utilization of Artificial Intelligence Questionnaire (UAIQ)” and “Management of Public Universities for National Development Questionnaire” (MPUNDQ) were used for data collection. The questionnaires were structured on four point rating scale of Strongly Agree (SA)=4, Agree (A)=3, Disagree (D)=2 and Strongly Disagree (SD)=1. The questionnaires were trial tested on 30 staff using Cronbach Alpha statistic and reliability coefficients of its 0.93 for UAIQ and 0.95 for MPUNDQ were obtained. The data collected were analyzed using simple Pearson Product Moment Correlation to answer research questions and test the null hypotheses. The findings of the study showed that there is strong positive significant relationship between utilization of artificial intelligence (AI) and management of public universities in Cross River State, Nigeria. The study concluded that improved utilization of AI brings about improvement in the management of public universities thereby leading to achievement of national development. The study therefore concluded that public universities should strengthen utilization of AI particularly in the areas of personnel administration and instructional practices in order to enhance achievement of national development in Nigeria.

**Keywords:** Artificial Intelligence (AI), personnel administration, instructional practices, management, national development.

**Introduction**

National development is essential because it represents the overall improvement in the economic, social, political and institutional well-being of a country, leading to higher living standards, reduced poverty, improved education and health outcomes and stronger governance structures that enhance citizens' quality of life. National development also promotes stability, social cohesion and global

competitiveness, enabling nations to participate meaningfully in international affairs and the global economy (Oguntona & Emere, 2025). However, achieving national development seems to remain a major global challenge due to factors such as persistent poverty and inequality, weak institutions and governance, corruption, inadequate infrastructure, limited access to quality education and healthcare, rapid population growth, conflict and insecurity and vulnerability to climate change and economic shocks.

National development refers to the comprehensive, multidimensional process through which a nation improves the economic, social, political and institutional well-being of its citizens, including sustained enhancements in living standards, equitable access to education, health and infrastructure, and the effective participation of people in governance and decision-making (Ugbogbo, et al., 2023). It goes beyond economic growth to include human welfare, social equity and national cohesion, reflecting both qualitative and quantitative improvements in the quality of life within a country (Okeke, 2025). It is also fundamentally driven by the capacity of a nation to generate skilled human capital, foster innovation and enhance institutional efficiency all of which position public universities as a strategic engine for sustainable economic and social transformation.

Public universities refers to universities established by government that provide advanced knowledge, specialized skills and professional competencies through certificates, diplomas, undergraduate and postgraduate degrees (Ogbuoka, et al., 2025). Achieving national development through public universities is essential to ensure its effective management. Management of public universities involves the strategic planning, organizing, administration and governance of institutions including the effective utilization of human and material resources, policy formulation and decision-making to achieve educational goals (Bua, 2020). Effective management of public universities may contribute to national development by improving teaching quality, research productivity and graduate employability especially in the era of utilization of Artificial Intelligence (AI).

Artificial intelligence (AI) is the branch of computer science concerned with designing systems that can perform tasks requiring human-like intelligence, such as learning, reasoning, problem-solving and decision-making (Russell & Norvig, 2021). Its utilization in the management of public universities has become a pivotal strategy for advancing national development, as institutions worldwide increasingly integrate AI tools to enhance administrative efficiency, personalize learning and strengthen research capacities, thereby contributing to economic growth and innovation (Chiu et al., 2023; UNESCO, 2025). Globally, AI in higher education supports talent development, workforce preparation and data-driven decision-making that align with national AI and development strategies (UNESCO, 2025).

In Africa, AI adoption in universities promises to address systemic challenges such as resource constraints and access inequities, fostering inclusive, sustainable educational ecosystems that equip graduates with 21st-century skills for continental development (Oguntona & Emere, 2025). In Nigeria, AI's integration into public universities enhances institutional management functions and student outcomes, even as policymakers and stakeholders call for comprehensive national AI policies to guide ethical implementation and capacity building (Ogbuoka et al., 2025). In Cross River State, studies show that while AI awareness is rising among administrators and educators, effective utilization in student personnel administration, instructional preparation and educational administration remains limited by infrastructure and skills gaps, highlighting the need for targeted investments and training to fully leverage AI for local and national development (Effiong, 2025; Ateb, 2025). This study therefore is concerned with establishing how utilization of AI relates with personnel administration and instructional practices in public universities in Cross River State, Nigeria.

Personnel administration is the management of an organization's workforce through recruitment, training, supervision, and welfare to achieve both individual and organizational goals. Utilization of AI in personnel administration within public universities enhances efficiency, objectivity and decision-making in human resource functions, such as recruitment, performance evaluation, professional development and student personnel management. AI tools can automate routine administrative tasks, improve standardization and support strategic planning, which may reduce workload and enable administrators to focus on higher-

level organizational goals (Mando & Yoosu, 2025). In the context of Nigerian public universities, Effiong (2025) indicates that institutional administrators are increasingly deploying AI for managing student records and supporting human resource functions, though capacity building and ethical governance remain critical for effective adoption. Dede and Nwafor (2025) also underscore the need for professional development that equips academic staff with AI competencies to maximize performance outcomes. AI not only enhances personnel administration but other institutional functions like instructional practices.

Instructional practices are the methods and strategies that teachers use to facilitate learning, engage students and achieve educational objectives in the classroom. Utilization of AI in higher education instructional practices is transforming teaching and learning by supporting personalized content creation, adaptive learning and instructional design while offering tools that can enhance educators' preparation and delivery of course materials (Atah, 2025). Empirical finding reveals that although lecturers often hold positive perceptions of AI's potential to improve research quality and assessment practices, actual utilization in instructional preparation and delivery remains limited without deliberate training and integration strategies (Sheu, 2025). Broader research highlights that AI tools, including generative models and adaptive learning systems, can assist instructors in developing lessons and responding to diverse learner needs when aligned with professional development and ethical guidelines, though institutions must balance innovation with academic integrity considerations (Mah & Groß, 2024; Ogunleye et al., 2024). These dynamics illustrate that AI's educational value hinges not only on technology itself but also on teacher readiness, policy frameworks and pedagogical alignment. It is based on the above background that this study investigated relationship between utilization of AI and management of public universities for national development in Cross River State, Nigeria.

### **Statement of the Problem**

Despite the increasing global adoption of Artificial Intelligence (AI) in educational management, public universities in Cross River State, Nigeria, continue to face many challenges in utilization of AI for national development particularly in personnel administration and instructional practices. It appears that public universities still rely heavily on traditional, manual methods for staff recruitment, performance appraisal, and human resource planning, which are often time-consuming, error-prone and inefficient. This inefficiency seems to undermine the effective deployment of human capital, leading to suboptimal productivity and limited contributions to the broader goals of national development. Moreover, gaps in digital infrastructure, inadequate training of administrative personnel, and resistance to technological change further restrict the effective integration of AI tools in managing personnel, thereby hampering universities efficiency and growth.

In the realm of instructional practices, the underutilization of AI impedes the ability of tertiary institutions to enhance teaching, learning and research processes that are critical to fostering innovation and national development. AI-driven solutions such as adaptive learning platforms, predictive analytics for student performance and automated assessment systems remain largely underexploited, limiting the quality and accessibility of education. Consequently, students may graduate without the requisite skills and competencies to contribute meaningfully to the national economy, while educators struggle with inefficient instructional delivery and evaluation methods. This scenario underscores a pressing need to investigate how AI can be strategically employed in personnel administration and instructional practices to improve universities performance and ultimately advance national development in Cross River State.

### **Purpose of the Study**

The purpose of the study was to investigate the relationship between utilization of artificial intelligence (AI) and management of public universities in Cross River State, Nigeria. Specifically, the study sought to:

1. examine the relationship between utilization of Artificial Intelligence (AI) and personnel administration in public universities for national development in Cross River State, Nigeria.

2. determine the relationship between utilization of Artificial Intelligence (AI) and instructional practices for national development in public universities in Cross River State, Nigeria.

### **Research Questions**

The following research questions guided the study:

1. What is the relationship between utilization of Artificial Intelligence (AI) and personnel administration in public universities for national development in Cross River State, Nigeria?
2. What is the relationship between utilization of Artificial Intelligence (AI) and instructional practices for national development in public universities in Cross River State, Nigeria? **Hypotheses**

The study formulated and tested the following hypotheses at 0.05 level of significance:

1. There is no significant relationship between utilization of Artificial Intelligence (AI) and personnel administration in public universities for national development in Cross River State, Nigeria.
2. There is no significant relationship between utilization of Artificial Intelligence (AI) and instructional practices for national development in public universities in Cross River State, Nigeria.

### **Methodology**

The study adopted correlation research design. The population of the study consisted of 3,785 staff in two public universities in Cross River State, Nigeria. A sample of 400 staff was selected using simple multi-stage sampling procedure. Two 15-items questionnaires titled "Utilization of Artificial Intelligence Questionnaire (UAIQ)" and "Management of Public Universities for National Development Questionnaire" (MPUNDQ) were used for data collection. The questionnaires were structured on four point rating scale of Strongly Agree (SA)=4, Agree (A)=3, Disagree (D)=2 and Strongly Disagree (SD)=1. The questionnaires were trial tested on 30 staff using Cronbach Alpha statistic and reliability coefficients of its 0.93 for UAIQ and 0.95 for MPUNDQ were obtained. These coefficients indicated high internal consistency. The data collected were analyzed using simple Pearson Product Moment Correlation to answer research questions and test the null hypotheses at 0.05 level of significance. The decision rule in answering the research questions was that the closer the calculated correlation coefficient ( $r$ ) is to +1 or -1, the stronger the relationship between the variables. The strength of the correlation was interpreted using the guideline by Nworgu (2015): 0.00 – 0.19 = Very weak correlation, 0.20 – 0.39 = Weak correlation, 0.40 – 0.59 = Moderate correlation, 0.60 – 0.79 = Strong correlation, 0.80 – 1.00 = Very strong correlation. In testing the hypotheses, the decision rule was that if the calculated p-value is less than or equal to 0.05 level of significance, the null hypothesis was rejected; otherwise, it was not rejected.

### **Results**

#### **Research Question 1**

What is the relationship between utilization of Artificial Intelligence (AI) and personnel administration in public universities for national development in Cross River State, Nigeria?

Table 1:

*Relationship between Utilization of Artificial Intelligence (Ai) and Personnel Administration in Public Universities for National Development in Cross River State, Nigeria*

Variables		<i>X</i>	<i>SD</i>	Personnel Administration	Utilization of Artificial Intelligence (AI)
Personnel Administration	Pearson Correlation Sig. (2-tailed)	2.87	0.82	1	.76** .000
	N			400	219
Utilization of Artificial Intelligence (AI)	Pearson Correlation Sig. (2-tailed)	2.89	0.80	.76** .000	1
	N			400	219

\* Correlation coefficient is significant at  $p < 0.05$ ; \*\*. Correlation is significant at the 0.01 level (2-tailed).  
**Source:** Field Survey Results (2026).

The result in Table 1 shows that  $r = 0.76$ . Since the value of  $r = 0.76$  falls within the range of 0.60 – 0.79, it indicates a **strong positive relationship**. This implies that improvement in the utilization of artificial intelligence (AI) is strongly associated with corresponding improvement personnel administration in public universities for national development, Cross River State, Nigeria. **Research Question 2**  
 What is the relationship between utilization of Artificial Intelligence (AI) and instructional practices in public universities for national development in Cross River State, Nigeria?

Table 2:

*Relationship between Utilization of Artificial Intelligence (AI) and Instructional Practices in Public Universities for National Development, Cross River State, Nigeria*

Variables		<i>X</i>	<i>SD</i>	Instructional Practices	Utilization of Artificial Intelligence (AI)
Instructional Practices	Pearson Correlation Sig. (2-tailed)	2.83	0.86	1	.70** .000
	N			400	219

<b>Utilization of Artificial Intelligence (AI)</b>	Pearson Correlation Sig. (2-tailed)	2.84	0.83	.70** .000	1
	N			400	219

\* Correlation coefficient is significant at  $p < 0.05$ ; \*\*. Correlation is significant at the 0.01 level (2-tailed).

**Source:** Field Survey Results (2026).

The result in Table 2 shows that  $r = 0.70$ . Since the value of  $r = 0.76$  falls within the range of **0.60–0.79**, it indicates a **strong positive relationship**. This implies that increased utilization of artificial intelligence (AI) is strongly associated with improved instructional practices in public universities for national development in Cross River State, Nigeria.

### Test of Hypotheses

#### Hypothesis 1:

There is no significant relationship between utilization of Artificial Intelligence (AI) and personnel administration in public universities for national development in Cross River State, Nigeria.

Table 3:

*Significant between Utilization of Artificial Intelligence (AI) and Personnel Administration in Public Universities for National Development in Cross River State, Nigeria*

Variables		Personnel Administration	Utilization of Artificial Intelligence (AI)
<b>Personnel Administration</b>	Pearson Correlation Sig. (2tailed)	1	.76** .000
	N	400	219
<b>Utilization of Artificial Intelligence (AI)</b>	Pearson Correlation Sig. (2tailed)	.76** .000	1
	N	400	219

\* Correlation coefficient is significant at  $p < 0.05$ ; \*\*. Correlation is significant at the 0.01 level (2-tailed).

**Source:** Field Survey Results (2026)

The result in Table 3 shows that  $r = 0.76$ , with a significance value of  $p = .000$ . Since  $p < 0.05$ , the null hypothesis which stated that there is no significant relationship between utilization of Artificial Intelligence (AI) and personnel administration in public universities for national development in Cross River State, Nigeria was **rejected**. This implies that there is strong positive significant relationship between utilization of Artificial Intelligence (AI) and personnel administration in public universities for national development in Cross River State, Nigeria.

**Hypothesis 2:**

There is no significant relationship between utilization of Artificial Intelligence (AI) and instructional practices in public universities for national development in Cross River State, Nigeria.

Table 4:

*Significant between Utilization of Artificial Intelligence (AI) and Instructional Practices in Public Universities for National Development in Cross River State, Nigeria.*

Variables		Instructional Practices	Utilization of Artificial Intelligence (AI)
Instructional Practices	Pearson Correlation Sig. (2tailed)	1	.70** .000
	N	400	219
Utilization of Artificial Intelligence (AI)	Pearson Correlation Sig. (2tailed)	.70** .000	1
	N	400	219

\* Correlation coefficient is significant at  $p < 0.05$ ; \*\*. Correlation is significant at the 0.01 level (2-tailed).

**Source:** Field Survey Results (2025)

The result in Table 4 shows that  $r = 0.70$ , with a significance value of  $p = .000$ . Since  $p < 0.05$ , the null hypothesis which stated that there is no significant relationship between utilization of Artificial Intelligence (AI) and instructional practices in public universities for national development in Cross River State, Nigeria was **rejected**. This implies that there is strong positive significant relationship between utilization of Artificial Intelligence (AI) and instructional practices in public universities for national development in Cross River State, Nigeria.

**Discussion of Findings**

The finding of the study showed that there is strong positive significant relationship between utilization of Artificial Intelligence (AI) and personnel administration in public universities for national development in Cross River State, Nigeria. This finding agreed with Mando and Yoosu (2025) that AI tools can automate routine administrative tasks, improve standardization and support strategic planning, which may reduce workload and enable administrators to focus on higher-level organizational goals. This finding also agreed with Effiong (2025) whose finding indicates that institutional administrators are increasingly deploying AI for managing student records and supporting human resource functions, though capacity building and ethical governance remain critical for effective adoption. Generally, utilization of AI in the management of universities can enhance personnel administration by ensure proper personnel records,

monitoring of staff activities as well supporting staff payment of salaries, ultimately motivating staff to perform effectively to achieve national development.

The finding of the study also showed that there is strong positive significant relationship between utilization of Artificial Intelligence (AI) and instructional practices in public universities for national development in Cross River State, Nigeria. This finding agreed with Atah (2025) who found that utilization of AI in higher education instructional practices is transforming teaching and learning by supporting personalized content creation, adaptive learning and instructional design while offering tools that can enhance educators' preparation and delivery of course materials. The finding also confirmed that of Sheu (2025) who revealed that although lecturers often hold positive perceptions of AI's potential to improve research quality and assessment practices, actual utilization in instructional preparation and delivery remains limited without deliberate training and integration strategies (Sheu, 2025). Similarly, Mah and Groß (2024) and Ogunleye et al. (2024) support this finding that AI tools, including generative models and adaptive learning systems can assist instructors in developing lessons and responding to diverse learner needs when aligned with professional development and ethical guidelines, though institutions must balance innovation with academic integrity considerations. When AI tools are effectively utilized for teaching and learning, they could improve instructional practices and make lesson presentation easy and learners will understand better thereby achieving national development.

### **Conclusion**

The study concludes that there is strong positive significant relationship between utilization of artificial intelligence (AI) and management of public universities in Cross River State, Nigeria. This means that the more utilization of AI in management of public universities in areas such as personnel administration and instructional practices, the more national development would be achieved in Cross River State, Nigeria.

### **Recommendations**

Based on the findings of the study, the following recommendations were made:

1. Public universities especially those in Cross River State, Nigeria should strengthen utilization of AI in personnel administration so that there would effective management of public universities thereby enhancing achievement of national development in Nigeria.
2. Also, the public universities should intensify the use of AI in instructional practices so that quality instructional delivery would be achieved leading to improved national development in Nigeria.

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