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ARTIFICIAL INTELLIGENCE (AI) AND THE MANAGEMENT OF PUBLIC UNIVERSITIES, IN BENUE AND NASARAWA STATES OF NORTH CENTRAL, NIGERIA

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Abstract

This study explores the integration of Artificial Intelligence (AI) in the management of Public universities located in Benue and Nasarawa States, North Central Nigeria. The research is guided by two pivotal questions: 1) How is AI currently utilized in the administrative processes of public universities in these regions? 2) What impact does AI implementation have on the efficiency and effectiveness of university management? To achieve a comprehensive analysis, a descriptive survey design was employed, focusing on a population of 4,623 academic staff across five public universities. A sample size of 462, representing 10% of the total population, was selected through a multi-stage sampling procedure. Data collection was facilitated using a structured questionnaire titled "Artificial Intelligence and Management of Universities Questionnaire (AIMUQ)." The collected data were analyzed using descriptive statistics—mean scores and standard deviations—while chi-square tests were employed to evaluate the hypotheses at a significance level of 0.05. Findings reveal that there is a significant utilization of AI technologies in the management practices within these public universities. Based on these findings, it is recommended that university administrations enhance internet connectivity and promote AI literacy among staff to leverage the potential benefits of AI technologies. Additionally, it is crucial for government and donor agencies to provide necessary computing resources, ensuring that these tools are well-maintained and functional for effective university Management.

Keywords: Artificial Intelligence (AI), Management of public universities and North Central Nigeria.

Introduction

Artificial Intelligence (AI) has emerged as a transformative force across various sectors, offering innovative solutions to complex problems. Defined as the development of computer systems capable of performing tasks that typically require human intelligence—such as decision-making, problem-solving, and learning from experience AI is reshaping industries and societies (Cleopas, 2023).

In the realm of education, AI holds the potential to revolutionize traditional teaching methods and streamline research processes. Popenici and Kerr (2017) highlight several benefits of AI in education, including monitoring students' work and performance, providing timely feedback, creating individualized learning platforms, facilitating special education for diverse learners, and enabling access to global information. These capabilities not only enhance teaching and learning but also assist in reducing

manual workloads for educators, thereby improving overall educational efficiency. Furthermore, Cleopas (2023) emphasizes that AI empowers learners with essential skills and fosters a culture of lifelong learning by promoting entrepreneurial skills and creativity.

Incorporating AI into university management offers numerous advantages, including improved information dissemination and enhanced cost-efficiency. According to, AI technologies provide equitable access to educational resources while fostering collaboration among stakeholders in the management of public universities. Effective management of public universities necessitates ac Akpomi, Kayii, and Nwile (2022) curate and timely information to support decision-making processes. The integration of AI can significantly enhance these processes by facilitating communication, organization, dissemination, and management of information. This paper investigates

the role of AI in the management of public universities in Benue and Nasarawa State, North Central Nigeria.

The impact of AI extends beyond immediate educational benefits; it also influences broader societal trends. As noted by Russell and Norvig (2016), advancements in AI technology are driving changes in workforce dynamics, requiring a reevaluation of skills necessary for future employment. The authors argue that as machines become capable of performing more tasks traditionally done by humans, there is an urgent need for educational systems to adapt accordingly. This adaptation includes integrating AI literacy into curricula to prepare students for a future where collaboration with intelligent systems will be commonplace.

Bostrom (2014) discusses the ethical implications surrounding the deployment of AI technologies. He posits that while AI can enhance efficiency and productivity across various sectors including education it is crucial to consider potential risks such as bias in algorithmic decision-making and privacy concerns related to data usage. Therefore, incorporating ethical frameworks into the development and implementation of AI technologies is essential to ensure their responsible use.

The integration of Artificial Intelligence into education not only enhances teaching methodologies but also necessitates a comprehensive understanding of its implications on society at large. As we explore the role of AI in managing public universities in North Central Nigeria within this paper, it is imperative to consider both its transformative potential and the ethical responsibilities it entails.

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performance, providing timely feedback, creating individualized learning platforms, facilitating special education for diverse learners, and enabling access to global information. These capabilities not only enhance teaching and learning but also assist in reducing manual workloads for educators, thereby improving overall educational efficiency. Cleopas (2023) further emphasizes that AI empowers learners with essential skills and fosters a culture of lifelong learning by promoting entrepreneurial skills and creativity.

Incorporating AI into university management offers numerous advantages, including improved information dissemination and enhanced cost-efficiency. AI technologies provide equitable access to educational resources while fostering collaboration among stakeholders in the management of public universities (Akpomi, Kayii & Nwile, 2022). Effective management of public universities necessitates accurate and timely information to support decision-making processes. The integration of AI can significantly enhance these processes by facilitating communication, organization, dissemination, and management of information. This paper investigates the role of AI in the management of public universities in Benue and Nasarawa States of North Central

Despite the considerable advantages associated with AI technologies such as increased efficiency in administrative tasks there remains a reliance on traditional methods among many university managers, staff, and students. This reliance often leads to delays in administrative functions and challenges in managing academic tasks effectively. Observations indicate difficulties faced by lecturers in sourcing online materials for research purposes while administrators spend excessive time on routine office tasks that can result in errors. This situation underscores the need for an investigation into the impact of AI on university management practices in Benue and Nasarawa States.

The primary objective of this study is to explore the integration of AI into the management practices of public universities located in Benue and Nasarawa States. Specifically, it aims to:

- i. To assess the current applications of Artificial Intelligence in managing public universities in Benue and Nasarawa States.
- ii. To evaluate the effects of AI integration on administrative efficiency and effectiveness on decision-making processes within these institutions.

Hypotheses

1. There is no significant relationship between the utilization of Artificial Intelligence and administrative efficiency in public universities in Benue and Nasarawa States.
2. The implementation of Artificial Intelligence has no significant impact on decision-making processes within university management

Material and Method

The design adopted for the study was descriptive survey research design which is described by Emaikwu (2015) as the type of research design in which a group of people or items is studied by collecting and analyzing data from few subjects considered to be representative sample of the entire population. The study was conducted in Benue and Nasarawa States, Nigeria. Benue and Nasarawa States are among the 6 states located in the North Central Nigeria. The population of the study comprises 4,623 academic staff in 5 public universities (3 in Benue State and 2 in Nasarawa State), (National Universities Commission, 2020). The sample size consists 462 or 10% of 4,623 staff of the 5 public universities in the

study area. The multiple stage sampling procedure was adopted for this study. The instrument be used for data collection is a researchers' structured questionnaire. The researchers' structured questionnaire titled: "Artificial Intelligent and Management of Universities Questionnaire (AITMUQ)" was used to collect responses from the staff in the five public universities. The instrument was validated by three experts, one from Educational Management, Benue State University, Makurdi, the Second from Educational Administration and Planning, and the third from Measurement and Evaluation all from J.S Taka University, Makurdi, Benue state. Reliability indices of 0.78 and 0.96 were obtained for clusters 1 and 2 respectively. An overall reliability index of 0.87 was obtained, indicating that the instrument was reliable and suitable for use. The total number of 462 copies of questionnaire was distributed (100%) to the 462 staff of the five public universities. The collected data were analyzed using the descriptive statistics of mean scores and standard deviation to answer the research questions. While, chi-square was used to test the hypotheses at 0.05 level of significance.

Results and Discussion

Objective 1:

To assess the current applications of Artificial Intelligence in managing public universities in Benue and Nasarawa States.

Table 1: *Applications of Artificial Intelligence in Managing Public Universities in Benue and Nasarawa States.*

S/No	Item Description	N	SA	A	D	SD	Decision		
1	AI reduces the workload on administrative staff, through automating routine tasks such as admissions processing, scheduling, providing instant responses and freeing up human resources for more complex tasks	450	147	161	62	80	2.83	1.07	Agree
2	AI technologies facilitate better data management and analysis in public universities by identify trends, forecast enrollment numbers, and	450	176	156	60	38	3.13	0.94	Agree

	optimize resource allocation.									
3	Machine learning algorithms can help administrators make informed decisions based on predictive analytics, thereby enhancing strategic planning efforts.	450	221	151	25	53	3.20	0.99	Agree	
	AI tools are transforming communication channels within universities by providing platforms for real-time interaction between students, faculty, and administration.	450	285	27	51	87	3.13	1.23	Agree	
5	By automating repetitive tasks and optimizing resource use through intelligent systems, universities can lower operational costs associated with staffing and manual processes.	450	178	132	82	58	2.96	1.05	Agree	
	Cluster Mean						3.05		Agree	

Source: Researcher's Field Work, 2024

Table 1 shows Mean score values of 2.83, 3.13, 3.20, 3.13, 2.96 and cluster of 3.05 while Standard Deviation score values stood at 1.07, 0.94, 0.99, 1.23 and 1.06.

The result indicated that item 1-5 individual scores agreed that Applications of Artificial Intelligence in Managing Public Universities helps **Improved Data Management and Analysis**. AI technologies facilitate better data Management and analysis in public universities. With large volumes of data generated daily from student records to financial transactions AI systems can analyse this data to identify trends, forecast enrolment numbers, and optimize resource allocation. Machine learning algorithms can help administrators make informed decisions based on

predictive analytics, thereby enhancing strategic planning efforts. Additionally, AI can help identify areas where financial resources may be wasted or underutilized, allowing for better budget management.

The Mean score cluster value of 3.05 was above the Mean score value benchmark of 2.50. This shows the impact of *Applications of Artificial Intelligence in Managing Public Universities in Benue and Nasarawa States*.

Objective 2:

To evaluate the effects of AI integration on administrative efficiency and effectiveness on decision-making processes within these institutions.

Table 2: Effects of AI integration on administrative efficiency and effectiveness on decision-making processes within these institutions.

S/No	Item Description	N	SA	A	D	SD			Decision
6	AI tools can provide insights that help administrators make better strategic decisions regarding resource allocation, program development, and	450	237	87	58	68	3.10	1.12	Agree

	student support services in university.										
7	AI-driven predictive analytics can identify students at risk of dropping out or underperforming, allowing universities to intervene early with targeted support services.	450	161	133	57	99	2.79	1.15	Agree		
8	Utilization of computers enhances production of course materials for students.	450	237	74	89	59	3.09	1.11	Agree		
9	AI facilitates advanced research capabilities by providing tools for data analysis and simulation that were previously unavailable or too complex for traditional methods.	450	217	80	82	71	2.98	1.14	Agree		
10	Artificial Intelligence in university management within Benue and Nasarawa states has the potential to revolutionize administrative efficiency, enhance decision-making processes through data analytics, and improve student engagement via personalized learning experiences.	450	321	16	43	79	3.29	1.19	Agree		
0	Cluster Mean						3.05		Agree		

Source: Researcher's Field Work, 2024

Table 2 shows Mean score values of 3.10, 2.79, 3.09, 2.98, 3.29 and cluster of 3.05 while Standard Deviation score values stood at 1.12, 1.15, 1.11, 1.14 and 1.19. The result indicated that item 6-10 individual scores agreed that, AI integration has significant impact on administrative efficiency and effectiveness on decision-making processes, and the Management of public universities in Benue and Nasarawa State. University Management within Benue and Nasarawa states has the potential to revolutionize Management efficiency, enhance decision-making processes through data analytics, improve student engagement via personalized learning experiences, optimize financial management practices, and bolster research capabilities all contributing to a more effective

educational environment. The Mean score cluster value of 3.05 was above the Mean score value benchmark of 2.50. This shows the impact of utilization of computers on management of Public Universities in Benue and Nasarawa State.

Test of Hypotheses

The following null hypotheses were tested at 0.05 alpha level of significance using χ^2 square.

Hypothesis 1:

There is no significant relationship between the utilization of Artificial Intelligence and administrative efficiency in public universities in Benue and Nasarawa States.

Table 3: *Chi-square Analysis Summary of significant relationship between the utilization of Artificial Intelligence and administrative efficiency in public universities in Benue and Nasarawa States. Nigeria*

Responses	Fo	Fe	P	df	χ^2 Cal.	Decision
SA	205	112.5	0.000	3	63.547 ^a	Sign.
A	125	112.5				
D	56	112.5				
SD	63	112.5				
Total	450					

Source: Researcher's Field Work 2024

Table 3 showed Chi-square calculated value of 63.547^a at 3 degree of freedom; P=0.000 is less than 0.05. With this result, the null hypothesis which states that there is no significant relationship between the utilization of Artificial Intelligence and administrative efficiency in public universities in Benue and Nasarawa States., was rejected.

This can be interpreted to mean that there is significant relationship between the utilization of Artificial

Intelligence and administrative efficiency in public universities in Benue and Nasarawa States.

Hypothesis 2:

The implementation of Artificial Intelligence has no significant impact on decision-making processes within public university Management

Table 4: *Chi-square Analysis Summary of significant impact on implementation of Artificial Intelligence on decision-making processes within public university management.*

Responses	Fo	Fe	P	df	χ^2 Cal.	Decision
SA	235	112.5	0.000	3	187.564 ^a	Sign.
A	78	112.5				
D	62	112.5				
SD	75	112.5				
Total	450					

Source: Researcher's Field Work 2024

Table 4 showed Chi-square calculated value of 187.564^a at 3 degree of freedom; P=0.000 is less than 0.05. With this result, the null hypothesis which states that there is no significant impact on implementation of Artificial Intelligence on decision-making processes within public university management. Was rejected. This can be interpreted to mean that 'There is significant positive impact on implementation of Artificial Intelligence on decision-making processes within public university management in Benue and Nasarawa State of North Central Nigeria.

Discussion of Findings

The first finding of the study showed that there is significant relationship between the utilization of Artificial Intelligence and administrative efficiency in public universities in Benue and Nasarawa States.

This finding agreed with the findings of Iorwashima, Asen and Agugu (2019) whose findings indicated that artificial intelligence have significant influence on the management of tertiary institutions in Benue and Nasarawa States of Nigeria.

The second finding of the study showed that there is a significant impact on implementation of Artificial Intelligence on decision-making processes within public university management. This finding agreed with the findings of Temu (2018) whose findings indicated that AI awareness among Educational Administrators was high.

AI reduces the workload on administrative staff, through automating routine tasks such as admissions processing, scheduling, providing instant responses and freeing up human resources for more complex tasks

AI technologies facilitate better data management and analysis in public universities by identify trends, forecast enrollment numbers, and optimize resource allocation

Conclusion

Based on the results of the study, Findings reveal that there is a significant utilization of AI technologies in the management practices within these public universities. Artificial Intelligence reduces the workload on administrative staff, through automating routine tasks such as admissions processing, scheduling, providing instant responses and freeing up human resources for more complex tasks.

AI facilitates advanced research capabilities by providing tools for data analysis and simulation that

were previously unavailable or too complex for traditional methods.

Recommendations

Based on the findings of the study the following recommendations were made.

Based on these findings, it is recommended that

- i. University administrations should enhance internet connectivity and promote AI literacy among staff to leverage the potential benefits of AI technologies.
- ii. It is crucial for government and donor agencies to provide necessary computing resources, ensuring that these tools are well-maintained and functional for effective university Management.

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