

## **Artificial Intelligence, Academic Staff Job Performance and Students' Academic Performance in Public Universities in North-Central, Nigeria**

**Audu Elizabeth Iyabode, PhD<sup>1</sup>**

Department of Administration and Planning, Institute of Education, University of Abuja, Abuja, Nigeria

Email: [auduelizabeth6@gmail.com](mailto:auduelizabeth6@gmail.com)

**Ngezack Amos Cletus**

Department of Educational Foundations, Faculty of Education, Taraba State University, Jalingo, Nigeria

Email: [cangezack@gmail.com](mailto:cangezack@gmail.com)

**Tswenji Sarah**

Taraba State Universal Basic Education Board, Jalingo, Nigeria

Email: [tswenjisarrah@gmail.com](mailto:tswenjisarrah@gmail.com)

### **Abstract**

The objective of this study is to assess the impact of artificial intelligence on academic staff job performance and students' academic performance in public universities in North-central Nigeria. The study adopted a descriptive survey design. The population of this study included three public universities in North-central Nigeria. A sample size of 300 academic staff and 300 final-year students was drawn using a stratified random sampling technique. The research instrument was titled "Artificial Intelligence, Academic Staff Job Performance and Students Academic Performance Questionnaire (AIASJPSAPQ)". The items focused on the variables of the study and were rated on four points Likert rating scale of (a) strongly agree (S.A) – 4, (b) Agree (A) – 3, (c) Disagree (D) – 2, and (d) Strongly Disagree (S.D) – 1. The instrument was validated by three lecturers in the Department of Educational Management, University of Abuja. The reliability of the instrument was computed using the Cronbach Alpha reliability coefficient. A reliability coefficient of 0.87 was obtained. Data obtained were analyzed using Z-test analysis and tested at 0.05 level of significance. The study concluded that artificial intelligence is an important education resource that has supported the academic staff to carry out their functions of teaching, research and provision of community services. The study also established that artificial intelligence aided students' academic performance in public universities. Based on these findings, the paper recommended that artificial intelligence should be provided to all the universities in North-central, Nigeria to Foster the implementation of teaching, research and provision of community services.

**Keywords:** Artificial intelligence, academic staff job performance, students' academic performance

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<sup>1</sup> Corresponding author

## Introduction:

Alagbe et al. (2021) viewed AI as the ability of a computer or machine to mimic the capabilities of the human mind – learning from examples and experience, recognising objects, understanding and responding to language, making decisions, solving problems – and combining these and other capabilities to perform functions a human might perform, such as greeting a hotel guest or driving a car. American technology giant International Business Machines Corporation defined AI as referring to any human-like intelligence exhibited by a computer, robot, or other machine.

Artificial intelligence (AI), defined as intelligence exhibited by machines, has many applications in today's society. Artificial intelligence according to Ogunode & Ukozor (2023) is the ability of a machine to carry out tasks usually carried out by human intelligence. Artificial intelligence is a branch of science that deals with programming machines with a simulation of human intelligence to perform similar tasks normally carried out by human beings.

Artificial intelligence (AI), according to Copeland (2023) is the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from experience.

Artificial intelligence (AI) is a technological resource used in educational institutions like universities to support the implementation of teaching and research. Artificial intelligence (AI) can support teaching and learning because it is an infrastructure. For instance, it has been noted that infrastructure can empower people (Ayeni, 2017). Validating the above, scholars have also argued that infrastructural development enhances human security (Ayeni et al., 2022). Not only that, massive infrastructural development is noted to provide a suitable environment and support for the development of entrepreneurship skills and industrialization (Ayeni et al., 2021b). Artificial intelligence (AI) is used by students and academic staff in universities. Artificial intelligence (AI) is one of the educational resources supporting academic staff to carry out their functions. The job performance of academic staff in the universities can be aided with Artificial intelligence (AI) deployment (Ogunode & Olowonefa, 2023; Ogunode & Gregory, 2023).

Academic staff job performance according to Adediwura & Tayo (2007) and Adu & Olatundun (2007) is the outcome of education, the extent to which a student and lecturer or institution have achieved their educational goals. This essence of academic staff job performance is explained by Ogunode & Ayeni (2023) when they argued that, training improves the performance of individuals on their jobs by correcting any deficiency in human effort. Therefore, the influence of lecturers' or teachers' teaching effectiveness on the learning outcome of students as measured by student's academic performance has been the subject of several studies. According to Ogunode et al. (2023a), academic staff job performance is the total performance of teaching, researching and community services responsibilities an academic staff as carried out and still carrying in the institutions that are employed at a particular time. Academic staff job performance is the general record of tasks carried out by an academic staff to be compared to the assigned responsibilities and functions given to them.

In this research, academic staff performance is measured with productivity. This productivity lies in the ability of the governance system to perform its roles (Ogunode et al., 2023c). Simon (2002) conceptualized academic performance from a societal standpoint. The author proved

this point through his work by examining the strong link between academic staff performance and the quality of society.

Academic staff job performance is a function of excellent leadership on the part of the university management. This is why scholars have contended that the success or failure of any human society or organization has its roots in leadership (Muhammed & Ayeni, 2018). Achieving both individual and organizational excellence is a pathway through which the society and members therein accomplish their goals (Simon, 2002). Academic staff job performance is the total performance of teaching, researching and community service responsibilities an academic staff has carried out and still carrying out in the institutions where he or she works at a particular time.

Academic staff job performance is the general record of tasks carried out by academic staff to be compared to the assigned responsibilities and functions given to them (Ogunode & Eimuhi, 2023). Academic staff job performance means assigned responsibilities and functions given to academic staff to actualize the aims and objectives of the institutions and the decree execution or accomplishment (Ogunode et al., 2023b).

### **Purpose of the Study:**

The objective of this study is to assess the impact of artificial intelligence on academic staff job performance and students' academic performance in public universities in North-central Nigeria. The sub-objectives include:

- i. To find out the impact of artificial intelligence on aiding academic staff job performance in public universities in North-central Nigeria; and
- ii. To assess the impact of artificial intelligence on supporting students' academic performance in public universities in North-central Nigeria.

### **Research Hypotheses:**

Based on this research objectives, the researcher formulated the following research hypotheses to address the objectives:

H<sub>01</sub>: There is no significant difference between the mean scores of male academic staff and female academic staff on the extent of artificial intelligence aiding academic staff job performance in public universities in North-Central, Nigeria.

H<sub>02</sub>: There is no significant difference between the mean scores of male and female students on the extent of artificial intelligence supporting students' academic performance in public universities in North-Central, Nigeria.

### **Methods:**

The study adopted a descriptive survey design. The population of the study included three public universities in North-central Nigeria. A sample size of 300 academic staff and 300 final-year students was drawn using a stratified random sampling technique. The research instrument was titled "Artificial Intelligence, Academic Staff Job Performance and Students Academic Performance Questionnaire (AIASJPSAPQ)". Therefore, a quantitative research method was employed. The reason for choosing the quantitative research method was that it made it easier for

the researchers to study individuals, groups or organizations as a unit of analysis (Ayeni et al., 2019a). The instrument consisted of three sections: A, B and C. Section A was designed to request demographic data from the respondents, these are name of school, position in school, cadre, class taught, age and sex. Section B consists of 12 items generated for academic staff job performance and section C consists of 9 items on students’ academic performance. These items focused on the variables of the study and these were rated on a points rating scale of (a) strongly agree (S.A) – 4, (b) Agree (A) – 3, (c) Disagree (D) – 2, and (d) Strongly Disagree (S.D) – 1. The instrument was validated by three lecturers in the Department of Educational Management, University of Abuja. The reliability of the instrument was computed using the Cronbach Alpha reliability coefficient. A reliability coefficient of 0.87 was obtained. Data obtained were analyzed using Z-test analysis and tested at 0.05 level of significance.

**Data Analysis:**

**Table 1: Z-test Analysis of the Mean Scores of Academic Staff**

Variables	N	Mean	SD	DF	Z-cal	Z-crit	Sign Lev	Remarks
Male academic staff	192	2.93	0.82	781	.29	1.99	0.05	Accepted
Female academic staff	108	2.97	0.86					

Table 1 indicates that the z-calculated value of 0.29 is less than the z-critical value of 1.99 at 781 degrees of freedom and 0.05 significance level. Hence the null hypothesis states. Hence the null hypothesis which states that there is no significant difference between the mean scores of male and female academic staff on the extent of artificial intelligence aiding academic staff job performance in public universities in North-Central, Nigeria is accepted.

**Table 2: Z-test Analysis of the Mean Scores of Students**

Variables	N	Mean	SD	DF	Z-Cal	Z-Crit	Sign Lev	Remarks
Male students	189	2.88	0.81	781	0.25	1.89	0.05	Accepted
Female students	111	2.91	0.87					

Table 2 discloses that the z-calculated value of 0.25 is less than the z-critical value of 1.89 at 946 degrees of freedom and 0.05 significance level. Hence the null hypothesis which states that there is no significant difference between the mean scores of male and female students on the extents extent of artificial intelligence supporting students’ academic performance in public universities in North-Central, Nigeria is accepted.

**Discussion of Findings:**

The result collected revealed that there is a positive significant relationship between artificial intelligence and academic staff job performance in public universities in North-Central, Nigeria. This implies that artificial intelligence is a technological resource that can support academic staff to carry out their academic services. It means that artificial intelligence is actively supporting lecturers to teach their students both virtually and physically in the lecture halls. Lecturers also deployed artificial intelligence for marking students’ scripts, assigning projects for students and carrying out research. A study by Al-Sarhani (2013) aimed to identify international

and international standards for total quality and their impact on achieving excellence for Arab universities, including universities in the Kingdom of Saudi Arabia; The results of the study showed that Saudi universities obtain academic accreditation through their application of comprehensive quality standards that enable them to reach distinguished academic outputs capable of meeting the needs and requirements of the Saudi community and the local market. Artificial intelligence aided the implementation of teaching, research and provision of community services (Ogunode et al., 2023b)

The result also disclosed that there is a positive significant relationship between artificial intelligence and students' academic performance in public universities in North-Central, Nigeria. This implies that artificial intelligence is helping students to learn faster and carry out academic assignments. Artificial intelligence has also assisted students in universities to learn fast and learn in any part of the world without distance barriers. The above is because Artificial intelligence which is a product of infrastructural development has intended and unintended benefits (Ayeni et al., 2021a). This result is in line with Zarrouqi & Falta (2020) who showed that academic programs that depend on artificial intelligence increase self-education opportunities for students, and make them more effective in the educational process. Artificial intelligence supports students learning and students' academic performance (Sang et al., 2010; Igbokwe, 2023; Ogunode & Ukozor, 2023). Ogunode & Gregory (2023) noted that artificial intelligence plays a pivotal role in aiding the implementation of teaching and research in educational administration and planning programs. The above function performed by Artificial Intelligence is coterminous with the role libraries play in university education. Just like a university without a standard library for students lacks university integrity (Ayeni, 2018). Tertiary institution students and lecturers without the knowledge and usage of Artificial Intelligence can be said to lack integrity. This is because it contributes to effective student learning within their programs in tertiary institutions in Nigeria.

### **Conclusion:**

The study concluded that artificial intelligence is an important education resource supporting the academic staff to carry out their functions of teaching, research and provision of community service.

The study revealed that artificial intelligence also aids students' academic performance in public universities. Students are using artificial intelligence for learning, research and carrying out various academic works.

### **Recommendations:**

Based on these findings, the paper recommended that artificial intelligence should be provided to all the universities in North-central, Nigeria to aid implementation of teaching, research and provision of community services.

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