

STRATEGIC LEADERSHIP AND THE UTILIZATION OF ARTIFICIAL INTELLIGENCE FOR ACADEMIC STAFF SERVICE DELIVERY IN PUBLIC UNIVERSITIES IN CROSS RIVER STATE, NIGERIA

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ABSTRACT

This study investigated the relationship between Strategic leadership and the utilization of artificial intelligence for academic staff service delivery in public universities in Cross River State, Nigeria. The study adopted a correlational research design, which was considered appropriate for examining the nature and strength of the relationship between variables that occur naturally without manipulation. The population comprised 2,867 academic staff members from the University of Calabar and the University of Cross River State. A sample of 573 academic staff was selected through random sampling techniques. Data were collected using a researcher-developed instrument titled “Strategic Leadership and the Utilization of Artificial Intelligence for Academic Staff Service Delivery in Public Universities Questionnaire (SLUAIASSDPUQ)”. The instrument consisted of two sections measuring AI utilization and academic staff service delivery, respectively, using a four-point Likert scale. The instrument was validated by two experts in Measurement and Evaluation to ensure content validity. Of the 573 copies of the questionnaire administered, 562 were successfully retrieved, representing a 98% return rate. Data collected were coded and analyzed using simple linear regression set at .05 level of significance with the aid of Statistical Package for the Social Sciences (SPSS) version 28. The study’s findings provided empirical evidence on the extent to which AI utilization predicts academic staff service delivery, offering strategic leadership insights for improving efficiency, productivity, and service quality in public universities. The study recommended that university management should prioritize investment in the provision of AI powered tools that should facilitate effective teaching in line with the global best practice in the university system in Cross River State, Nigeria, and academic staff members in the university system should leverage AI tools in the conduct of their scholarly research.

Keywords: Artificial Intelligence, Academic Staff Service Delivery, Strategic Leadership, Public Universities, Cross River State, Nigeria.

Reference to this paper should be made as follows:

Asuquo, M. E., Okon, E. E., & Igwe, S. A. (2026). Strategic leadership and the utilization of artificial intelligence for academic staff service delivery in public universities in Cross River State, Nigeria. *International Journal of Institutional Leadership, Policy and Management*, 8(2), 133-142. <https://doi.org/10.5281/zenodo.20700298>.

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INTRODUCTION

Globally, university is the apex of educational institutions. Academic staff members in the universities are expected to perform three cardinal responsibilities including teaching, research and rendering of community services. Driven by increasing number of students' enrolment in the Nigerian Universities, the mandatory requirements and need for academic staff members to research and publish for promotion in reputable Journals and involvement in social responsibilities keep growing significantly. This means that, at all times, academic staff members are always very busy as evidence in being saddled with the responsibilities of teaching, keeping students' class attendance, evaluating students, grading of students' performance, publishing students' result, research and publication of scholarly works. All these seem to be stressful, burden, time consuming and demanding.

Nevertheless, with the development and technological advancement, there have been paradigm shifts in the methods of academic staff service delivery in the university system at the instance of Artificial Intelligence (AI). Globally, AI is gradually being applied in the management of organizations of which educational organization is not an exception. Application of AI is increasingly wide embracing as evidence in digital technologies connectivity that is trendy in an attempt to bridge information gap and timely decision making. Academic staff members have unique opportunity to leverage AI to bridge their service delivery gap.

In the literature, AI is associated with John McCarthy who coined the term Artificial Intelligence to describe computer programs which seemingly exhibit intelligence or computer perform tasks, which if performed by human require them to be intelligent (Rajaraman, 2014). In this connection, Naqvi (2020) considered AI as the field of computer science that involves creating computer programs capable of imitating intelligent behavior and ideally enhancing human-like abilities. Similarly, Stryker and Kavlakoglu (2024) opined that AI as a technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy. Artificial Intelligence (AI) powered systems offers numerous advantages in educational organizations. These benefits include but not limited to increased efficiency and effectiveness, reduction in academic members' workload, improved accuracy, assisting in making of informed decisions, handling of complex tasks that were initially exclusion meant to be performed human. For instance, scholars have noted that, emergence of AI in the universities have consistently leveraged digital technology to enhance educational quality, making it more accessible and cost-effective for students (Ferdousmou et al., 2025).

In educational system in particular, Srinivasa et al. (2022) noted that with utilization of AI's platforms, students' assignments have been reviewed and graded more effectively and efficiently and instructors' teaching activities have also been improved. Utilization of machine learning and adaptability has resulted in curriculum and content customization and personalization to meet students' needs, promote retention, and ultimately improve students' learning experience and the overall quality of education (Srinivasa et al., 2022). This brings about the need for daily demands for AI technologies to digitally support and enhance personalized learning, facilitate timely management and administrative processes, improve student engagement in teaching and learning processes. Safana and Fari (2024) noted that AI can be applied when it comes to information retrieval services; reference services; circulation section; and research support services. Similarly, AI-based technologies can automate various records management processes, such as classification, indexing, retrieval, and archival, ability to

completely transform the way educational institutions in Nigeria manage their data when applied to records management methods (Ailakhu et al., 2025).

Owan et al. (2023) noted that AI have become essential for educators and educational assessment professionals to enhance teaching and learning experiences and that AI has the potential to revolutionize the way education is delivered and assessed and ultimately leading to better educational outcomes for students. Another scholar opine that the future of artificial intelligence in education is highly promising, as technology is gaining drastic transformation and improving the way we learn and teach (Mishra,2019). In a similar line of thought, all applications and devices equipped with AI can see and identify objects, understand and respond to human language, learn from new information and experience, make detailed recommendations to users and experts, act independently and replacing the need for human intelligence or intervention (Stryker & Kavlakoglu, 2024). Utilization of machine learning and adaptability as resulted in curriculum and content customization and personalization to meet students' needs, promote retention, and ultimately improve students' learning experience and the overall quality of education (Srinivasa et al., 2022). Other scholars have documented that with the emergence of AI, universities have consistently leveraged digital technology to enhance educational quality, making it more accessible and cost-effective for students (Ferdousmou et al., 2025).

Empirically, researchers have explored AI as a crucial tool in service delivery in the educational system. In this regard, the result of a previous research has indicated that, AI significantly improved personalized learning experiences and administrative workflows, but the widespread adoption of AI was hindered by infrastructure gaps, financial constraints, and a lack of digital literacy (Eyikorogha & Chigozie, 2024). Another study was carried out by Ezebuio (2025) to investigate librarians' application of AI for service delivery in academic libraries in public universities in Imo State, Nigeria. The result showed that there was a high and significant level of librarians' application of artificial intelligence for improving information retrieval, cataloguing and classification in academic libraries in public Universities in Imo State. Although this study by Ezebuio is closely related to this study, nevertheless, the previous study had a narrow focus which was on librarians' application of artificial intelligence for service delivery in academic libraries in public Universities leaving a gap to be filled by conduction this study which is extended to AI and academic staff service delivery in universities.

In a study on "The contribution of artificial intelligence to stimulating the innovation of educational services and university programs in public administration," Popescu et al. (2023) noted that AI powered system is a system that facilitates solutions to problems in the provision of educational services. Popescu et al specifically noted that application of AI has such positive effects as improving academic experience and active student participation. Safana and Fari (2024) also investigated the awareness and perception of library staff on the Application of AI for information services delivery in some university libraries in Katsina State. The findings of the study were that: majority of the staff were aware of AI in information services delivery and they believed AI can be applied in their respective libraries in the areas of pattern and image recognition and natural language processing; there was a positive perceptions of AI by the library staff especially towards improving their performance and enhancing productivity. Nevertheless, others library staff were found to have perceived AI as being a threat to their jobs and individual privacy issues. Furthermore, it was also found that library staff members are ready to embrace and apply AI, especially in the areas of policies formulation, infrastructure, training and retraining.

Although certain challenges such as inadequate financial or budgetary provision, lack of AI support infrastructure, AI policy document, plagiarism and intellectual freedom theft, and fear of job loss or polarization were identified as being hindrance with respect to application of AI, it was however found that, library staff members are open and ready to apply AI if well provided (Safana & Fari, 2024). Scholar have documented that, AI is one of the latest digital technological trends that can be used to provide digital library users with alternative educational services in such areas as decision for retrieving and sharing information for learning and research (Okunlaya et al., 2022). Although there are several empirical studies in relation to AI and service delivery in the universities, the focus of majority of previous studies reviewed were on library services as opposed to teaching, research and community services, hence, the need for this study to fill the gap.

Statement of the Problem

Utilization of Artificial Intelligence has a lot of potential in academic staff service delivery in such areas as teaching, research and community service. Academic staff members therefore need to explore how AI can be leveraged to facilitate their timely service delivery in terms of pedagogical processes, conduct of research and research's result communication as well as in rendering social services to the community members. In the contemporary educational system, the importance of AI cannot be over-emphasized as its application seems to usher in change and innovation in educational programmes and activities, improved teaching, research and in the rendering of community services.

Nevertheless, in spite of the advantages of AI in facilitating activities such as academic contents delivery and timely completion of academic research, it still appears as if academic staff members are still ineffective in the delivery of their cardinal services. Although AI possesses more widespread and solutions to the problems associated with academic staff members' service delivery, however, it seems as if academic staff members are still missing out of AI utilization to enhance their service delivery. This manifest in inability of majority of academic staff members not leveraging AI in their teaching, grading system, research as well as in their responsibility as in the rendering of community services. Continuing with academic staff members' conservative propensity without utilization of AI in their service delivery, harnessing their services delivery in terms teaching, research and rendering of community services in the digital age may remain irrelevant and invaluable. It is against this backdrop that the researchers were motivated to investigate the extent to which utilization of AI predict academic staff service delivery in universities

Purpose of the study

The main purpose of this study was to investigate Strategic leadership and the utilization of artificial intelligence for academic staff service delivery in public universities in Cross River State, Nigeria. Specifically, the study sought to:

- Find out whether utilization AI significantly predicts academic staff service delivery in terms of teaching in universities in Cross River State, Nigeria.
- Assess how utilization AI significantly predict academic staff service delivery in terms of research teaching in universities in Cross River State, Nigeria.

Hypotheses

The following null hypotheses were formulated for the study:

- Utilization of Artificial Intelligence does not significantly predict academic staff service delivery in terms of teaching in universities in Cross River State, Nigeria.
- There is no significant prediction of academic staff service delivery in terms of research by AI in universities in Cross River State, Nigeria.

METHODOLOGY

Correlation research design was used for this study. Correlation research design is a research approach adopted that attempts to find the nature of the non-causal relationship existing between a set of variables of which cannot be determined by the researcher or manipulated, but present naturally within a group or sample. It is appropriate when the interest of the researchers is to explore the nature of the relationship between variables in order to make predictions of future trends of the variables through such approaches as naturalistic observation, survey and archival research (Isangedighi, 2012). This design is chosen because this research is designed to explore the nature of statistical relationship between utilization of AI and academic staff service delivery in public universities in Cross River State, Nigeria.

The population of this study comprised 2867 academic staff across University of Calabar (Unical) and University of Cross River State (Unicross) all located in Calabar Metropolis of Cross River State, Nigeria. The sample for the study was 573 academic staff members randomly selected to respond to the questionnaire. The instrument for data collection was designed by the researchers titled “Strategic Leadership and the Utilization of Artificial Intelligence for Academic Staff Service Delivery in Public Universities Questionnaire (SLUAIASSDPUQ)”. SLUAIASSDPUQ had two sections (A and B). Section A was designed to collect data regarding utilization of AI. On the other hand, section B was designed to obtain data with respect to academic staff service delivery. The instrument had response items such as Strongly Agree (A), Agree (A), Disagree (D) and Strongly Disagree (SD) for both Sections A and B.

The instrument was validated by 2 experts from Measurement and Evaluation to ensure that the items on the instrument were structured to measure the variables they were intended to measure. The instrument was administered directly to the respondents by the researchers with the help of 2 research assistants. The researchers with the help of research assistants were able to retrieve 562 copies (98%) of copies of questionnaire administered. Data collected were coded analyzed using simple linear regression analysis. The analyses were done using the Statistical Package for the Social Science (SPSS) version 28.

RESULTS

Hypothesis 1: Utilization of Artificial Intelligence does not significantly predict academic staff service delivery in terms of teaching in universities in Cross River State, Nigeria.

Table 1: Summary of Simple Linear Regression Analysis for the predictive validity of utilization of AI and academic staff service delivery in terms of teaching

Source of Variation	Sum of Squares	Df	Mean Square	F	Sig
Regression	205.991	1	205.991	11.100*	.002
Residual	10,391.92	560	18.557		
Total	10,597.911	561			
Model	B	Std Error	Beta	T	Sig
Constant	24.540	5.148		4.767*	.000
Utilization of AI	.910	.273	.441	3.332*	.002

*significant at .002; R = .441; R² = .194; Adjusted R² = .177

The independent variable in the above hypothesis is utilization of Artificial Intelligence, while the dependent variable is academic staff service delivery in terms of teaching. The test statistic used in testing the hypothesis was simple linear regression. Results of the analyses in Table 1 show a calculated F-ratio of 17.821 at a p-value of .002. Since the p-value of .002 is less than .05, the null hypothesis was rejected. This means that utilization of AI significantly predicts academic staff service delivery in terms of teaching in public universities in Cross River State. Results also show a correlation coefficient, measuring the strength of association between the two variables (R) of .441, and coefficient of determination (Adjusted R²) of .177. This shows the extent to which the variation of the dependent variable about its mean is explained by the independent variable. It means that 17.7% of the variation in academic staff service delivery in terms of teaching in public universities in the study area was as a result of variation in the utilization of AI, while the other 82.3% (1-R²) was as a result of variables extraneous to the study. The regression equation, $Y^1 = a + bX + e$ is, therefore, given as:

$$\text{Predicted schools effectiveness} = 24.540 + .441(X) + .273$$

The test of significance using the t-statistic (t=3.332) shows significance at .002 level, confirming that utilization of AI significantly predict academic staff service delivery in terms of teaching. The standardized coefficient (Beta) of .293 shows a positive strong relationship between utilization of AI and academic staff service delivery in the universities. This means that the more AI is utilized, the better and effective academic staff service delivery in terms of teaching.

Hypothesis 2: There is no significant prediction of academic staff service delivery in terms of research by AI in universities in Cross River State, Nigeria.

Table 2: Summary of Simple Linear Regression Analysis for the predictive validity of utilization of AI and academic staff service delivery in terms of research

Source of Variation	Sum of Squares	Df	Mean Square	F	Sig
Regression	91.116	1	91.166	4.330*	.043
Residual	11,790.24	560	21.054		
Total	1059.627	561			
Model	B	Std Error	Beta	T	Sig
Constant	29.852	5.668		5.267*	.000
Utilization of Artificial Intelligence	.629	.302	.293	2.081*	.043

*significant at .043; R = .293; R² = .086; Adjusted R² = .066

The independent variable in hypothesis 2 is utilization of AI while the dependent variable is academic staff service delivery in terms of research. The test statistic used in testing the hypothesis was simple linear regression. The results of the analysis are presented in Table 2. Results of the analyses in Table 2 show a calculated F-ratio of 4.330 at a p-value of .043. Since the p-value of .043 is less than .05 the null hypothesis was rejected. This means that utilization of AI significantly predicts academic staff service delivery in terms of research in public universities in Cross River State. Results also show a correlation coefficient, measuring the strength of association between the two variables (R) of .293, and coefficient of determination (Adjusted R²) of .066. This shows the extent to which the variation of the dependent variable about its mean is explained by the independent variable. It means that 6.6% of the variation in academic staff service delivery in terms of research was as a result of variation in the utilization of AI, while the other 93.4% (1-R²) was as a result of variables extraneous to the study. The regression equation, $Y^1 = a + bX + e$ is, therefore, given as:

$$\text{Predicted academic staff service delivery in terms of research} = 29.852 + .293(X) + .302$$

The test of significance using the t-statistic (t=2.081) shows significance at .043 level, confirming that utilization of AI predict academic staff service delivery in terms of research. The standardized coefficient (Beta) of .293 shows a positive moderate relationship between utilization of AI and academic staff service delivery in terms of research. This means that the more AI is utilized by academic staff, the better their service delivery with respect to research in public universities in Cross River State, Nigeria

DISCUSSION OF FINDINGS

The first finding shows that Utilization of AI significantly predicts academic staff service delivery in terms of teaching in public universities in Cross River State. This means that the more Utilization of AI by academic staff member, the better their service delivery in terms of teaching. This further suggests that when academic staff member make good use of AI tools, this will a direct positive impact in their teaching service. The result of this study aligns with the Srinivasa et al. (2022) who documented that utilization of machine learning and adaptability has resulted in curriculum and content customization and personalization to meet students' needs, promote retention, and ultimately improve students' learning experience and the overall quality of education and that with that with utilization of AI's platforms, students' assignments have been reviewed and graded more effectively and efficiently and instructors' teaching activities have also been improved. The finding of the current study also supports Owan et al. (2023) who opined that, AI has become essential for educators and educational assessment professionals to enhance teaching and learning experiences. Similarly, the result is also in line with Mishra (2019) that artificial intelligence in education is highly promising, as technology is gaining drastic transformation and improving the way we learn and teach. By extension, when academic staff members have positive propensity with respect to utilization of AI in their service delivery in the area of teaching, it means that they will be effective in teaching base on the demand of the digital age.

The second findings of this study revealed that utilization of AI significantly predicts academic staff service delivery in terms of research in public universities in Cross River State. The implication of the result is that the more academic staff members make use of AI, the better their service delivery in terms research productivity in the university system. This result is in tandem with Safana and Fari (2024) who noted that AI can be applied when it comes to

information retrieval services; reference services; circulation section; and research support services. The result of this study also supports Ezebuoro (2025) who found out a high and significant level of librarians' application of artificial intelligence for improving information retrieval. This implies that, utilization of AI is prerequisite when it comes to data and information search for academic research writing and publication (communication). By extension, AI has the capacity to provide the necessary data and information needed by academic staff in the course of conducting scholarly research.

Strategic Leadership Imperative

In a dynamic system like university, leaders such as the Vice-Chancellors, Provosts, Deans, Directors and Heads of Department are expected to be proactive, initiate intuitive thinking, demonstrate strategic foresight and system and system thinking ability to anticipate areas of needs and provide future direction to address system entropy. Strategic leaders in the university system are conscious of the fact that university institutions need to constantly monitor internal and external activities as well as the trend of things so that timely adjustment, change and innovation could be introduced where necessary (Bassey & Asuquo, 2025). There is no doubt that, in the university system, general administration, academic programmes and activities are influenced by changes at the instance of policies and technological development and advancement

Strategic leadership imperative in the context of the utilization of Artificial Intelligence (AI) and academic staff service delivery in public universities has to do with the need for university leaders to demonstrate strategic foresight and forward-thinking approaches to facilitate effective integration of AI into the university system to facilitate academic staff service delivery. By extension, Strategic leadership imperative in the context of the utilization of Artificial Intelligence (AI) to promote academic staff service delivery in public universities stress that, the effective use of AI in improving teaching, research, and administrative functions within the university system is a function of leaders' ability to provide clear vision, align AI initiatives with institutional goals, and ensure adequate investment in infrastructure, training, and policy development for academic staff members. Leadership imperative in this regard also stresses that, without strategic planning and leadership as well as sustained commitment on the part of university leaders, improvement in the utilization of AI may likely not be feasible with respect to academic staff overall service delivery of academic staff in Nigerian public universities.

CONCLUSION

Based on the findings of this study, it is concluded that utilization of AI significantly predicted academic staff service delivery in terms of teaching and research. There is no doubt that the AI and its utilization is gradually initiating changes and innovation in teaching and research and well as well in all facets of educational activities, programmes and the entire administration of the university system. As such, it is imperative for university leaders to demonstrate strategic foresight and forward-thinking approaches to facilitate effective integration of AI into the university system to facilitate academic staff service delivery.

Recommendations

Based on the findings of the study, the following are stated as the recommendations:

- University management should prioritize investment in the provision of AI powered tools that should facilitate effective teaching in line with the global best practice in the university system in Cross River State, Nigeria.
- Academic staff members in the university system should leverage AI tools in the conduct of their scholarly research.

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