

Impact of Artificial Intelligence on Administrative Decision-Making in Colleges of Education in Borno State, Nigeria

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Abstract

This study investigated the Impact of Artificial Intelligence on Administrative Decision-Making in Colleges of Education in Borno State, Nigeria. Two objectives and two research questions were raised to guide the study. The study adopted survey research design. The population of the study was 457 which comprised management and non-teaching staff of the two Colleges of Education in Borno State, Nigeria, namely College of Education Waka Biu and Umar Ibn Ibrahim El-Kanemi College of Education, Science & Technology Bama, where 196 participants were drawn as the sample size of the study. The researcher used simple random sampling technique in the selection of the respondents. Two set of instruments were used for this study. Questionnaire on AI Tools Utilisation In Administrative Processes (QAIUAP) and Questionnaire on Challenges Affecting The Adoption of AI In Administrative Decision-Making (QCAIAD). The researcher designed questionnaires were confirmed to have content validity through validation by experts in the field of education. The reliability index obtained for (QAIUAP) and (QCAIAD) were 0.84 and 0.83, using Cronbach alpha reliability score. The data were analyzed using mean and standard deviation to answer the research questions. The findings of the study revealed that AI tools are moderately utilized in some administrative functions such as communication, data processing, reporting, and scheduling and that most of the listed challenges were agreed upon by respondents as significant barriers to AI adoption in administrative decision-making. These include: Limited access to AI tools, lack of technical skills and training, poor internet connectivity, and staff resistance to new technologies. The study recommended that Government and institutional management should prioritise improving internet bandwidth, network reliability, and digital resources and Colleges of Education in Borno State should invest in modern AI tools and systems that support administrative processes. Increasing access through procurement, partnerships, or shared digital facilities will strengthen adoption where utilisation is currently low, especially in record management and decision-making.

Keywords: *Impact, AI, Administrative, Decision Making, and Colleges of Education*

Introduction

The rapid advancement of Artificial Intelligence (AI) has transformed organisational processes globally, reshaping how institutions manage information, make decisions, and deliver services.

In the education sector, AI is increasingly being integrated into management systems to enhance administrative efficiency, data handling, staff coordination, and institutional planning. Colleges of Education, which serve as key institutions for preparing teachers and enhancing pedagogical standards, are beginning to explore AI as a tool for improving internal operations and addressing persistent administrative challenges. As demands for transparency, accountability, and effective resource utilisation grow, there is an urgent need for administrations to embrace innovative technologies capable of supporting evidence-based decision-making and improved service delivery. Furthermore Artificial Intelligence (AI) is gaining significant attention due to its potentials to revolutionize almost all facets of human endeavor, including the tertiary education environment. It is seen as a new technology and a key factor which has the potential to introduce new sources of growth and change the way work is done across institutions, organizations, and work-places inclusive (Duggal, 2023)

Artificial Intelligence (AI) refers to computer systems or software that can perform tasks that normally require human intelligence. These tasks include things like understanding and responding to language (like ChatGPT does), recognizing patterns in data, making predictions (e.g., student performance), personalizing learning experiences, and automating routine tasks (like scheduling or grading)

Despite the growing research interest in artificial intelligence, its practical application in Colleges of Education in Borno State remains limited due to challenges common across Nigeria. College management and academic staff often lack formal training in AI and related digital technologies, which constrains informed managerial decision-making and reduces confidence in deploying AI for administrative functions, teaching, and research. This situation aligns with broader evidence indicating that, in the absence of targeted capacity-building and intervention programs, the level of AI awareness and adoption among educators in Nigeria remains low.

However, AI-Based Management Systems offer capabilities such as automated record processing, predictive data analytics, virtual assistance, intelligent scheduling, digital workflow systems, and performance monitoring dashboards. These systems have been widely adopted in universities and corporate organizations, where studies have shown their potential to reduce human error, speed up administrative tasks, and promote strategic planning. However, in many developing contexts, including Nigeria, AI adoption in educational management remains limited due to challenges such as low awareness, insufficient digital infrastructure, funding constraints, and poor technological readiness. These gaps create a pressing need to examine whether AI adoption can significantly influence administrative effectiveness—especially in Colleges of Education, where administrative tasks such as staff management, student registration, financial administration, communication, and quality assurance heavily rely on accuracy and efficiency

Administrative effectiveness in Colleges of Education refers to the ability of the institution to achieve its goals through coordinated planning, resource management, decision-making processes, and timely execution of tasks. The integration of AI-based systems could potentially enhance these processes by improving speed, accuracy, information flow, transparency, and overall productivity. However, empirical evidence on this relationship is still emerging. While some institutions have begun experimenting with AI-driven platforms, the extent to which

these systems influence administrative effectiveness in Colleges of Education is not adequately documented, particularly within the Nigerian context (Shwedeh, 2024).

Therefore, this study investigates the adoption of AI-based management systems and their influence on administrative effectiveness in Colleges of Education. It seeks to explore the extent of AI utilization, factors affecting its adoption, and how these intelligent systems contribute to improved administrative outcomes. The findings of this study are expected to provide insights for educational policymakers, administrators, and government agencies on how AI can be strategically integrated to promote efficiency and strengthen management practices in Colleges of Education.

Statement of Problem

Administrative decision-making is a critical component of effective management in Colleges of Education, as it directly affects institutional performance, staff efficiency, and student outcomes. In recent years, Artificial Intelligence (AI) has emerged as a powerful tool capable of enhancing administrative processes, improving data management, automating routine tasks, and supporting evidence-based decision-making (UNESCO, 2023; Zawacki-Richter et al., 2019). However, despite the global recognition of AI's potential, the adoption and utilisation of AI tools in the administrative functions of Colleges of Education in Borno State remain uncertain.

Preliminary observations and reports suggest that administrative processes in many colleges are still heavily manual, resulting in inefficiencies, delays, and occasional errors in decision-making. There is limited empirical evidence regarding the extent to which AI tools are currently being utilised to enhance administrative effectiveness in these institutions. Without adequate knowledge of current AI utilisation, it is difficult for college management to evaluate how technology is improving administrative outcomes or to identify areas for improvement.

This study sought to determine the extent to which AI tools are utilized in administrative processes and to identify the challenges affecting the adoption of AI in administrative decision-making in Colleges of Education in Borno State. Addressing these gaps is essential for developing strategies that will enhance administrative efficiency, improve decision-making quality, and ensure that AI is effectively integrated into institutional management practices.

Objectives of the Study

Objectives of the study are to:

1. Determine the extent to which AI tools are utilized in administrative processes in Colleges of Education in Borno State
2. Identify the challenges affecting the adoption of AI in administrative decision-making in Colleges of Education in Borno State

Research Questions

The following research questions were formulated to guide the conduct of the study:

To what extent are AI tools utilized in administrative processes in Colleges of Education in Borno State?

What challenges hinder the adoption of AI for administrative decision-making in Colleges of Education in Borno State?

Theoretical Framework

The study hinges on Technology Acceptance Model (TAM) Propounded by (Davis, 1989). This theory elucidates processes related to the adoption/acceptance and utilization of technological infrastructure by users. This theory proposes that following the presentation of new technology to a user, various factors affect the user's decision related to when and how to utilize the technology, including its perceived usefulness as well as perceived ease of use. This study is relevant to this theory because Technology Acceptance Model explains how users come to accept and use new technologies. It proposes that Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) determine users' attitudes and behavioral intention to adopt technology.

In the context of AI in Colleges of Education in Borno State Administrators will adopt AI tools only if they believe AI improves the quality and speed of decision-making (PU). They must also feel that AI systems are easy to learn and apply (PEOU). This theory supports the objective that seeks to determine the extent of AI utilization, as utilization depends heavily on how useful and easy administrators find AI tools.

Review of Related Empirical Studies

Fadele, et al (2025), conducted a study on *Assessment of Artificial Intelligence (AI) tools for automating routine administrative tasks in the College of Education in Kaduna State, Nigeria*. Specifically, the objectives were transcribed into two research questions and two hypotheses, respectively. Survey research design was used in the study. The study population comprised 3,181 respondents, which comprised 1,658 lecturers and 1,523 senior management staff in the two (2) government-owned Colleges of Education in Kaduna State, Nigeria. A sample size of 346 participants, consisting of 180 senior management staff and 166 senior management staff, was used in the study. The instrument titled "Questionnaire on AI Tools and Automation of Routine Administrative Task (QARITARAT)" was used for data collection in the study. The validated instrument was pilot tested, and the reliability coefficient was determined using the Cronbach Alpha statistic, and a reliability coefficient of 0.82 was obtained. The descriptive statistics of frequency counts, mean, and standard deviation were used to answer the research questions, while the chi-square (χ^2) was used to test the hypotheses at the 0.05 level of significance. Findings revealed that a significant difference exists in the impact of AI tools on communication in colleges of education in Kaduna State, Nigeria.

Fausal, et al (2025) examined utilization of Artificial Intelligence (AI) in the management of tertiary institutions and challenges that might likely face the application of AI in tertiary education management in Nigeria. Secondary data collected from print and online publications was used in this paper. The paper revealed that AI if properly utilized, can aid effective tertiary institutions administration, facilitate efficient management of data and decision making, support resource optimization, aid implementation of teaching programme, improve research programme development, and improve security in tertiary institutions. The paper further identified bias and discrimination, data privacy and security breaches, lack of technical expertise and resources, power problem, job displacement amongst others as challenges that might likely affect the utilization of Artificial Intelligence in tertiary education management in Nigeria. Based on these points identified, the paper suggested that government should increase funding of tertiary institutions for the development of artificial intelligence in all public tertiary institutions across the country.

Shwedeh (2024). Examines the incorporation of artificial intelligence (AI) into decision support systems at higher education institutions in the United Arab Emirates (UAE), using the theoretical framework of the Diffusion of Innovations Theory. This study employs a cross-sectional survey design to examine the significant correlations among system complexity, data quality, organizational readiness, user engagement, technological infrastructure, and the efficacy of decision-making systems utilizing AI in higher education institutions in the UAE. UAE higher education institutions are targeted. A representative sample of institutions is selected via purposive sampling based on size, geography, and academic reputation. To ensure position and department representation, stratified random sampling is used to pick participants within each institution. Structural Equation Modeling (SEM) was used to examine the connections among the investigated variables. Data quality, organizational readiness, user engagement, and technology infrastructure were key factors influencing effective decision-making processes with $\beta = 0.503; 0.281; 0.193; 0.244$ at p-value less than .05, respectively, although system complexity did not reveal a significant association ($\beta = -0.016$, p-value = 0.65). Recommendations suggest focusing on investments in data quality assurance, preparing the organization, increasing user involvement, and improving technology infrastructure.

Research Methodology

Descriptive survey research design was adopted for this study. The descriptive survey research design is suitable for the study on the *Impact of Artificial Intelligence on Administrative Decision-Making in Colleges of Education* because the study aims at to describe and examine existing conditions without manipulating any variables. A descriptive survey allows the researcher to collect data directly from administrators, ICT staff, and decision-makers across Colleges of Education, enabling a comprehensive understanding of current practices, perceptions, and challenges. This design is ideal for gathering quantifiable information about trends and opinions from a large population, making it appropriate for educational administrative research.

The population of this study comprised the management and non-teaching staff of the Colleges of Education in Borno State. Management Staff constituted the Directors, Deans, Heads of department, and non-teaching staff of the (2) colleges of education in Borno State namely: College of Education Waka Biu and Umar Ibn Ibrahim El-Kanemi College of Education, Science & Technology Bama, Borno state, specific population of the study was 475 which made up 357 non-teaching staff and 118 management staff. A sample size of 196 was drawn from the population of 457 in the two Colleges using Research Advisors table (2006). A simple random sampling technique was used to select non-teaching and management staff who participated in responding to the questionnaire. This technique was chosen to give the respondents an equal chance of being selected.

Two set of instruments were used for this study. Questionnaire on AI tools utilization in administrative processes (QAIUAP) and Questionnaire on challenges affecting the adoption of AI in administrative decision-making (QCAIAD). However, the researcher design questionnaire were confirmed to have content validity through validation by experts in the field of educational administration and planning, as well as in educational technology at the Faculty of Education, University of Maiduguri, Borno State. The reliability obtained for Questionnaire on AI tools utilization in administrative processes and Questionnaire on challenges affecting the adoption of AI in administrative decision-making were 0.84 and 0.83 respectively using

Cronbach alpha reliability score. The instruments were designed based on Four- Point likert scale. The research questions were answered using mean and standard deviation.

Results

The following were the data presentation, analysis and discussions of the findings:

Research Question One : To what extent are AI tools utilized in administrative processes in Colleges of Education in Borno State?

Table 1 Extent of AI tools Utilized in Administrative Processes in Colleges of Education in Borno State?

S/no	Items	N	Mean	Std. Deviation	Decision
1	AI tools are utilized in managing staff and student records	96	2.3021	.80942	Rarely Utilized
2.	AI applications are used in processing administrative data and generating reports	96	3.0417	1.00438	Moderately Utilized
3.	AI tools are utilized for communication and information sharing within administrative units	96	3.1875	.97670	Moderately Utilized
4.	AI-based systems are used to support administrative decision-making processes.	96	2.6667	.99119	Rarely Utilized
5	AI tools are utilized in scheduling, planning, and coordinating administrative tasks	96	3.1875	.86222	Moderately Utilized

Keys

- 4= Highly Utilized (3.51 – 4.00)
- 3= Moderately Utilized (2.76 – 3.50)
- 2 = Rarely Utilized (1.76 – 2.75)
- 1 = Not Utilized (0.75 – 1.75)

Analysis in table 1 revealed that AI tools are utilized in managing staff and student records with Mean score of 2.3021 and SD of .80942 Category: Rarely Utilized This indicates that AI tools are not commonly used for managing staff and student records. Record management remains largely manual or dependent on basic digital systems rather than AI-driven platforms. Also AI applications are used in processing administrative data and generating reports indicating Mean = 3.0417 SD= 1.00438 Category: Moderately Utilized Respondents agree that AI applications are fairly used for processing administrative data and generating reports. This suggests growing adoption of automated data processing tools within the colleges. AI tools are utilized for communication and information sharing within administrative units Mean = 3.1875 SD = .97670 Category: Moderately Utilized AI is moderately used for communication and information dissemination, indicating the presence of tools such as automated email systems, chatbots, or AI-supported internal communication platforms. AI-based systems are used to support administrative decision-making processes Mean= 2.6667 SD= .97670 Category: Rarely Utilized. This mean score shows that AI tools are not widely applied in decision-making processes. Administrators rely more on human judgment or traditional decision-support

methods rather than AI-driven analytics. AI tools are utilized in scheduling, planning, and coordinating administrative tasks Mean = 3.1875 SD = .97670 Category: Moderately Utilized AI tools are moderately used to schedule and coordinate tasks such as meetings, timetables, and workflow planning. This reflects partial adoption of AI-enabled scheduling systems.

Findings indicate that AI tools are moderately utilized in some administrative functions such as communication, data processing, reporting, and scheduling. However, AI utilization is still low in critical areas like record management and decision-making support. This implies that while Colleges of Education in Borno State are beginning to integrate AI into their administrative operations, full adoption is yet to be realized.

Research Question Two: What challenges hinder the adoption of AI for administrative decision-making in Colleges of Education in Borno State?

The table 2 presents the mean responses of 96 participants on the challenges affecting the adoption of AI for administrative decision-making in Colleges of Education in Borno State, Nigeria

Table 2 Challenges hinder the adoption of AI for Administrative Decision-making in Colleges of Education

S/N	Title	N	Mean	Std. Deviation	Ranking
1	Limited access to AI tools hinders the adoption of AI in administrative decision-making	96	2.7917	.89345	Agree
2	Inadequate training and technical skills among administrators prevent effective AI adoption.	96	2.9375	.94938	Agree
3	Poor internet connectivity affects the use of AI systems for decision-making in this college.	96	3.1458	1.04609	Agree
4	High cost of acquiring and maintaining AI tools limits their implementation.	96	2.3542	.99450	Agree
5	Staff resistance to new technologies poses a challenge to adopting AI in administrative decision-making.	96	3.3437	.70827	Disagree

Key

SA Strongly Agree 4 (3.50-4.00)

A Agree 3 (2.50-3.49)

D Disagree 2 (1.50-2.49)

SD Strongly Disagree 1 (1.00-1.4)

Analysis in Table 2 revealed that Limited access to AI tools hinders adoption Mean = 2.7917 → Agree (A) Respondents agree that limited access to AI tools is a major challenge. This indicates that AI technologies are not sufficiently available, reducing effective adoption for decision-making. Inadequate training and technical skills among administrators Mean = 2.9375 → Agree (A) Participants agree that administrators lack adequate technical skills and training in AI. This skill gap prevents optimal use of AI tools in administrative activities. Poor internet connectivity affects the use of AI systems Mean = 3.1458 → Agree (A) Respondents agree that

poor internet connectivity is a significant barrier. Since AI systems require strong internet support, unreliable connectivity undermines adoption. High cost of acquiring and maintaining AI tools Mean = 2.3542 → Disagree (D) The mean score indicates disagreement, meaning respondents do not strongly perceive cost as a major challenge. This may suggest that either AI tools are not viewed as too expensive, or cost is not the primary barrier in their context. Staff resistance to new technologies Mean = 3.3437 → Agree (A) the participants agree that staff resistance to technological change poses a challenge to AI adoption. Resistance may stem from fear of job loss, lack of knowledge, or preference for traditional methods.

Most of the listed challenges were agreed upon by respondents as significant barriers to AI adoption in administrative decision-making. These include: Limited access to AI tools, lack of technical skills and training, poor internet connectivity, and staff resistance to new technologies.

However, cost was the only factor that respondents did not strongly view as a major obstacle. This indicates that improving access to AI tools, strengthening training programs, enhancing internet infrastructure, and addressing staff attitudes are key areas for improving AI adoption in Colleges of Education in Borno State.

Summary of Findings

Results from the data analysis are summarized below:

1. Findings indicate that AI tools are moderately utilized in some administrative functions such as communication, data processing, reporting, and scheduling. However, AI utilization is still low in critical areas like record management and decision-making support. This implies that while Colleges of Education in Borno State are beginning to integrate AI into their administrative operations, full adoption is yet to be realized.
2. The study revealed that most of the listed challenges were agreed upon by respondents as significant barriers to AI adoption in administrative decision-making. These include: Limited access to AI tools, lack of technical skills and training, poor internet connectivity, and staff resistance to new technologies. However, cost was the only factor that respondents did not strongly view as a major obstacle. This indicates that improving access to AI tools, strengthening training programs, enhancing internet infrastructure, and addressing staff attitudes are key areas for improving AI adoption in Colleges of Education in Borno State.

Discussion of Findings

The finding of the study indicates that AI tools are moderately utilized in some administrative functions such as communication, data processing, reporting, and scheduling. However, AI utilization is still low in critical areas like record management and decision-making support. The finding of the study opposed that of Fadele, et al (2025), who conducted a study on Assessment of Artificial Intelligence (AI) tools for automating routine administrative tasks in the College of Education in Kaduna State, Nigeria. Found that AI tools have no impact on attendance tracking in colleges of education in Kaduna State, Nigeria.

The findings indicate that most of the listed challenges were agreed upon by respondents as significant barriers to AI adoption in administrative decision-making. These include: Limited access to AI tools, lack of technical skills and training, poor internet connectivity, and staff

resistance to new technologies. However, cost was the only factor that respondents did not strongly view as a major obstacle. The finding of this study was in line with that of Fausal, et al (2025) who examined utilization of Artificial Intelligence (AI) in the management of tertiary institutions in Nigeria. Found that data privacy, security breaches, lack of technical expertise, resources, power problem, job displacement amongst others as challenges that might likely affect the utilisation of Artificial Intelligence in tertiary education management in Nigeria.

Conclusion

The study assessed the extent of AI utilization and the challenges affecting its adoption in administrative decision-making in Colleges of Education in Borno State. Findings show that while AI tools are moderately utilized in administrative functions such as communication, data processing, reporting, and scheduling, their use remains low in critical areas such as record management and decision-making support. This indicates that AI integration is still at an early stage, with institutions gradually exploring its potential but yet to achieve full adoption across all administrative domains.

Furthermore, the study established that several key challenges significantly hinder AI adoption in administrative decision-making. Respondents agreed that limited access to AI tools, inadequate technical skills and training, poor internet connectivity, and staff resistance to new technologies constitute major barriers. Interestingly, cost was not strongly perceived as a major challenge, suggesting that financial constraints may not be the primary obstacle.

Recommendations

Based on the findings and conclusion drawn, the study recommends the following:

Government and institutional management should prioritize improving internet bandwidth, network reliability, and digital resources. Robust internet connectivity is essential for seamless operation of AI systems used in reporting, communication, and decision-making.

Colleges of Education in Borno State should invest in modern AI tools and systems that support administrative processes. Increasing access through procurement, partnerships, or shared digital facilities will strengthen adoption where utilization is currently low, especially in record management and decision-making.

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