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# IMPACT OF AI-DRIVEN ADMINISTRATIVE SYSTEM ON ORGANIZATIONAL PERFORMANCE IN NIGERIA

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**Abstract**
The rapid advancement of Artificial Intelligence (AI) technologies has redefined administrative processes across organizations globally, with growing interest in its application within developing countries such as Nigeria. This study investigated the impact of AI-driven administrative technology on organizational performance in Nigeria. Four research objectives guided the study. Correspondingly, four research questions and three null hypotheses were formulated. The study adopted a descriptive survey research design. A multi-stage sampling technique was used to select 200 administrative staff from 10 organizations across Nigeria's six geopolitical zones. Data were collected using a structured instrument titled *AI-Driven Administrative Technology Impact Questionnaire (AIDATIQ)*, which was validated by experts and tested for reliability using Cronbach's alpha ($\alpha$ = 0.86). Descriptive statistics (mean and standard deviation) were used to answer the research questions, while regression analysis tested the hypotheses at a 0.05 significance level using SPSS version 25. Findings revealed that AI technologies were moderately adopted, primarily for internal operations such as document management and attendance tracking. AI was found to significantly enhance administrative efficiency by reducing task completion time, minimizing human error, and improving scalability. AI also positively influenced decision-making, especially in providing real-time insights and forecasting, though some areas like risk assessment showed lower trust. Additionally, challenges such as poor infrastructure, high implementation costs, low technical capacity, and internet limitations were found to significantly hinder AI implementation. Based on these findings, it was concluded that while AI held substantial potential to improve administrative performance in Nigerian organizations, its full benefits are limited by contextual challenges. It was recommended that investments in digital infrastructure, staff training, progressive integration of AI systems, and the development of clear policy frameworks to guide ethical and effective implementation.

**Keywords:** Artificial Intelligence, Administrative System, Organizational Performance, AI Adoption, Decision-Making, Administrative Efficiency.

## Introduction

Artificial Intelligence (AI) refers to the ability of machines and computer systems to perform tasks that typically require human intelligence. These tasks include learning, reasoning, problem-solving, perception, and language understanding (Russell & Norvig, 2016). AI systems are designed to analyze data, recognize patterns, and make autonomous decisions with minimal human intervention. The integration of AI into organizational systems has introduced transformative capabilities across various sectors, enabling more efficient, accurate, and intelligent operations. Administrative technology, on the other hand, encompasses digital tools, systems, and platforms used to support and enhance administrative tasks such as scheduling, data entry, communication, document management, and performance tracking. These technologies aim to streamline workflow processes, reduce redundancy, and enhance the accuracy and speed of administrative functions (Laudon & Laudon, 2020). When AI is embedded into administrative technology - resulting in AI-driven administrative systems—the outcomes can include automated email responses, intelligent document classification, predictive scheduling, and virtual assistants that manage day-to-day administrative functions.

Globally, AI-driven administrative processes are gaining momentum, especially as organizations seek to optimize operational efficiency and adapt to digital transformation. According to McKinsey Global Institute (2018), AI is projected to contribute up to $13 trillion to the global economy by 2030, with significant impacts expected in organizational productivity and decision-making. For instance, many multinational firms are already using AI-powered enterprise resource planning (ERP) systems, customer service bots, and HR automation tools to improve operational agility and reduce costs (Bughin et al., 2018). Moreover, trends show a growing shift towards cognitive automation, where AI systems not only process data but also provide insights and recommendations to support strategic decision-making (Davenport & Ronanki, 2018). This trend is especially evident in sectors like banking, healthcare, and education, where AI tools handle routine administrative tasks such as appointment scheduling, record keeping, and compliance monitoring freeing human staff for more value-driven activities. As AI technology becomes more accessible and adaptable, its application in administrative functions continues to evolve, setting new standards for organizational performance and competitive advantage worldwide. This global shift underscores the necessity of understanding how such innovations are being implemented and the outcomes they generate in various national contexts, including Nigeria.

The emergence of AI in organizational administration marks a pivotal transformation in how modern institutions operate, manage resources, and make decisions. AI is no longer limited to high-end research or futuristic applications; it has become a practical tool for streamlining routine administrative operations in both public and private sectors. Its relevance in today's organizational landscape lies in its capacity to automate repetitive tasks, improve data handling, and support real-time decision-making processes that enhance overall performance and productivity (Dwivedi et al., 2021). AI plays a crucial role in streamlining administrative tasks that traditionally required significant human effort and time. Functions such as scheduling meetings, managing emails, processing payrolls, updating records, and handling routine customer service queries can now be managed by AI-driven

systems. These systems not only reduce administrative workload but also minimize human error and free up staff to focus on strategic and creative aspects of their jobs (Chui, Manyika, & Miremadi, 2016). In the context of administrative operations, AI contributes to operational speed, accuracy, and consistency, which are key indicators of organizational efficiency. Various AI tools have been adopted across organizations to support administrative efficiency. Chatbots are now commonly deployed in customer service and human resource departments to handle inquiries and provide instant responses to frequently asked questions. Robotic Process Automation (RPA) is used to automate repetitive data-entry tasks across multiple platforms without the need for human intervention. Data analytics and machine learning algorithms assist administrators in identifying patterns in employee performance, financial records, or client behavior, which can guide policy and operational adjustments. Predictive systems use historical data to forecast outcomes such as employee turnover, financial trends, or operational risks, thereby enabling proactive management decisions (Pan et al., 2019).

Organizational performance refers to how effectively an organization achieves its goals and objectives, particularly in terms of productivity, efficiency, quality of service, innovation, and financial results. It encompasses both tangible outputs and intangible factors like employee satisfaction, leadership effectiveness, and organizational adaptability (Venkatraman & Ramanujam, 1986). Performance is often assessed by examining how well an organization uses its resources to deliver value to stakeholders, while also maintaining sustainability and competitiveness. The components of organizational performance typically include financial performance (e.g., profitability, return on investment), operational performance (e.g., production output, turnaround time), and administrative performance, which focuses on internal efficiency, documentation processes, and decision-making accuracy. Administrative performance is critical in shaping the broader organizational culture and service quality (Richard et al., 2009). Key performance indicators (KPIs) relevant to administrative functions include employee productivity, service delivery speed, response time to inquiries, accuracy in record-keeping, and resource utilization efficiency. When these indicators are monitored and improved through technological interventions like AI, organizations can better align internal processes with strategic goals, ultimately enhancing overall performance (Kaplan & Norton, 2004).

In Nigeria, the integration of AI-driven technology into administrative processes is gaining traction across both public and private sectors. This shift is fueled by the need to improve service delivery, reduce inefficiencies, and cope with increasing demands in a digitally evolving world. According to Olayemi and Ogunleye (2020), Nigerian firms are gradually adopting AI to streamline business operations, particularly in areas like document automation, customer engagement, and data analytics. In the banking sector, institutions such as Access Bank and Zenith Bank have adopted chatbots and automated teller systems to enhance customer interactions and reduce service delays. AI tools assist in fraud detection, credit risk analysis, and customer service (Adebayo & Oluwafemi, 2021). In the education sector, AI is used in digital learning platforms, intelligent student assessment systems, and administrative software that tracks academic performance and attendance (Okonkwo & Obeta, 2021). The healthcare sector has seen the rise of AI-based diagnostics, patient record systems, and scheduling tools to improve service efficiency in hospitals and clinics (Oladele et al., 2022). Even government agencies are now experimenting with AI for identity management, e-governance platforms, and public service automation.

Despite these positive developments, the adoption of AI in Nigeria remains uneven and limited to a few well-resourced organizations. Much of the public sector and many SMEs still operate using manual or semi-automated systems, thereby missing the full benefits of AI in administration. While the potential of AI in transforming administrative systems is significant, its adoption in Nigeria is hindered by several key challenges. Technological and infrastructural limitations remain a major obstacle. Many organizations operate in environments with unreliable electricity supply, poor internet connectivity, and outdated hardware—conditions that severely constrain the use of AI systems (Adeoye & Olaoye, 2021). These challenges highlight the need for strategic planning, capacity building, and policy development to support the responsible and effective deployment of AI-driven administrative technologies across Nigerian organizations. It is against this backdrop that this study assessed the impact of AI-driven administrative technology on organizational performance in Nigeria.

**Statement of the Problem**

Despite the global shift towards digital transformation, many Nigerian organizations continue to struggle with inefficient administrative systems characterized by delays, inaccuracies, and poor service delivery. While Artificial Intelligence (AI)-driven administrative technologies have proven effective in enhancing organizational performance in developed countries—through automation, data analytics, and smart decision-making—adoption in Nigeria remains limited and uneven. Factors such as inadequate infrastructure, high implementation costs, limited technical expertise, and resistance to change hinder the full integration of AI in administrative processes. Moreover, there is a dearth of empirical evidence on the actual impact of AI-driven administrative tools on organizational performance within the Nigerian context. This gap makes it difficult for decision-makers to justify investment in AI technologies or develop appropriate policies for digital transformation. Therefore, this study seeks to investigate the impact of AI-driven administrative technology on organizational performance in Nigeria, with a view to understanding its benefits, challenges, and implications for effective and sustainable organizational management.

**Purpose of the Study**

The study aimed to:

i. Examine the extent to which AI-driven administrative technologies are adopted in Nigerian organizations.
ii. Determine the impact of AI-driven administrative tools on administrative efficiency in Nigerian organizations.
iii. Assess how AI influences decision-making in organizational management in Nigeria.
iv. Identify the key challenges facing the implementation of AI-driven administrative technologies in Nigeria.

**Research Questions**

i. To what extent are AI-driven administrative technologies adopted in Nigerian organizations?
ii. What is the impact of AI-driven administrative tools on administrative efficiency in Nigerian organizations?

iii. How does the use of AI influence decision-making in organizational management in Nigeria?
iv. What are the key challenges facing the implementation of AI-driven administrative technologies in Nigerian organizations?

**Hypotheses**

The following null hypotheses were tested at 0.05 level of significance

i. AI adoption has no significant effect administrative efficiency in Nigerian organizations.
ii. AI-driven administrative technologies have no significant effect on decision-making in Nigerian organizations.
iii. Challenges do not significantly affect the implementation of AI-driven administrative technologies in Nigerian organizations.

**Methodology**

**Research Design:** This study employed the survey research design, which is appropriate for gathering detailed information about the current state of AI-driven administrative technology adoption and its perceived effects on organizational performance in Nigeria. The design allows for the collection of both quantitative data from a cross-section of organizations, enabling the researcher to describe trends, relationships, and challenges without manipulating any variables.

**Population of the Study**

The population of this study comprised a total of 7,809 administrative and managerial staff working in both public and private organizations across the six geopolitical zones of Nigeria. These staff members are drawn from various sectors, including banking institutions, educational organizations, healthcare facilities, government ministries, and selected large-scale manufacturing companies. The personnel targeted are specifically those serving in four key administrative departments: Human Resources, Finance, Operations, and ICT. These departments were chosen due to their central role in the planning, execution, and management of organizational processes, as well as their increasing interaction with artificial intelligence (AI) tools in administrative settings. The distribution of the population across the zones is as follows: North Central accounts for 1,210 staff members from institutions such as the Federal Ministry of Education in Abuja and the University of Ilorin Teaching Hospital. In the North East, 980 staff are drawn from organizations like the Central Bank of Nigeria, Gombe branch, and Modibbo Adama University, Yola. North West includes 1,350 staff working with organizations such as Dangote Group, Kano, and Aminu Kano Teaching Hospital. South East consists of 1,100 personnel from institutions like Innoson Motors in Nnewi and Nnamdi Azikiwe University, Awka. The South South region has 1,080 administrative staff sourced from institutions like Shell Petroleum Development Company in Port Harcourt and the University of Calabar. Lastly, the South West, which hosts the highest number of staff at 2,089, includes institutions such as First Bank Headquarters in Lagos and the University of Lagos. These figures demonstrate a balanced representation of administrative staff across Nigeria's diverse regions and sectors.

**Sample and Sampling Technique**

The study employed a multi-stage sampling technique to ensure adequate representation of the population. In the first stage, purposive sampling was used to select a total of 12

organizations, comprising two from each of the six geopolitical zones. The organizations were selected based on their ongoing or advanced implementation of AI-driven technologies in their administrative operations. In the second stage, within each selected organization, four administrative departments - Human Resources, Finance, Operations, and ICT - were purposively identified. These departments were considered critical to the study because of their significant involvement in administrative processes and their exposure to AI technologies. In the third and final stage, simple random sampling was applied to select five staff members from each of the four departments, resulting in 20 respondents per organization. This sampling process yielded a total sample size of 200 respondents (12 organizations × 4 departments × 5 respondents). The multi-stage approach ensured that the sample was diverse and inclusive of various sectors, regions, and administrative roles, thus enhancing the validity and generalizability of the research findings.

**Instrumentation**

A structured questionnaire titled "AI-Driven Administrative Technology and Organizational Performance Questionnaire (AIATOPQ)" was used as the primary instrument for data collection. The questionnaire was carefully designed and divided into four major sections to address the key variables of the study. Section A focused on demographic information such as age, gender, years of service, and type of organization, and was administered to all categories of respondents. Section B assessed the extent of AI adoption by measuring the types and frequency of use of AI-driven tools like chatbots, automation software, and predictive analytics. Section C captured respondents' perceptions of the impact of AI on administrative efficiency and decision-making within their organizations. Section D explored the challenges associated with AI implementation, including issues related to infrastructure, cost, technical skills, and ethical concerns. The instrument comprised structured rating-scale items measured on a five-point scale, such as Very High Extent (5) to Very Low Extent (1) for AI adoption, Strongly Agree (5) to Strongly Disagree (1) for perceived impacts, and implementation barriers. The questionnaire was designed to generate quantitative data suitable for statistical analysis and interpretation.

**Reliability**

A pilot test was conducted with 20 respondents drawn from two organizations that were not included in the main sample. *Cronbach's alpha* was calculated for each sub-scale of the questionnaire to determine the internal consistency of the items and 0.87 was obtained. A threshold value of 0.70 was set as the minimum acceptable level, and all sub-scales met or exceeded this benchmark, indicating that the instrument was reliable for data collection.

**Data Collection Procedure**

After obtaining ethical clearance and organizational consent, the questionnaires were administered both in person and online, depending on the respondents' preference. A two-week window was provided for completion, and follow-up reminders were sent at one-week intervals to maximize the response rate.

**Data Analysis**

Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize respondents' demographic information, levels of AI adoption, and perceived impacts on administrative functions. Inferential analysis was conducted using

regression analysis to test the hypotheses and determine the strength and significance of relationships among variables. All statistical analyses were carried out using SPSS (Version 27), with the level of significance set at $p < 0.05$.

## Results

**Research Question 1:** To what extent are AI-driven administrative technologies adopted in Nigerian organizations?

**Table 1: Extent of Adoption of AI-driven Administrative Technologies in Nigerian Organizations**

| S/N | Questionnaire Statement | $\bar{x}$ | SD | Remark |
|---|---|---|---|---|
| 1 | AI tools (e.g., chatbots) are used for customer service interactions. | 3.10 | 1.12 | Low Extent |
| 2 | Automated AI systems handle payroll processing. | 2.95 | 1.05 | Low Extent |
| 3 | AI-driven software manages employee attendance tracking. | 3.65 | 0.89 | High Extent |
| 4 | AI is used for data entry and document digitization. | 3.72 | 0.78 | High Extent |
| 5 | AI algorithms optimize inventory management. | 2.88 | 1.20 | Low Extent |
| 6 | Predictive analytics (AI) forecast organizational resource needs. | 3.45 | 0.95 | Low Extent |
| 7 | Natural Language Processing (NLP) tools automate report generation. | 3.68 | 0.82 | High Extent |
| 8 | AI-driven platforms manage recruitment/shortlisting. | 3.52 | 0.87 | High Extent |
| 9 | AI tools analyze financial transactions for fraud detection. | 3.30 | 1.10 | Low Extent |
| 10 | Cloud-based AI systems integrate with existing administrative workflows. | 3.15 | 1.18 | Low Extent |

Table 1 reveals that the adoption of AI-driven administrative technologies in Nigerian organizations is generally low. Out of the ten items, only four - statements 3, 4, 7, and 8 - recorded mean scores above 3.50, indicating a high extent of adoption. These areas include employee attendance tracking, document digitization, automated report generation, and AI-assisted recruitment. The remaining six items had mean scores below 3.50, reflecting a low extent of adoption in functions such as customer service, payroll, inventory management, financial analysis, and cloud-based integration. This suggests that while some progress has been made in adopting AI for internal administrative efficiency, the overall level of adoption remains limited in scope and inconsistent across key administrative functions.

**Research Question 2:** What is the impact of AI-driven administrative tools on administrative efficiency in Nigerian organizations?

**Table 2: Impact of AI-driven Administrative Tools on Administrative Efficiency**

| S/N | Questionnaire Statement | $\bar{x}$ | SD | Remark |
|---|---|---|---|---|
| 1 | AI tools reduce time spent on routine tasks (e.g., data entry). | 4.05 | 0.75 | High Impact |
| 2 | AI minimizes human errors in record-keeping. | 3.92 | 0.80 | High Impact |
| 3 | AI accelerates report generation and data retrieval. | 4.10 | 0.68 | High Impact |
| 4 | AI optimizes resource allocation (e.g., budgeting, staffing). | 3.40 | 1.05 | Low Impact |
| 5 | AI enhances accuracy of payroll processing. | 3.78 | 0.85 | High Impact |
| 6 | AI improves compliance with regulatory requirements. | 3.25 | 1.12 | Low Impact |
| 7 | AI-driven analytics support timely strategic decisions. | 3.45 | 0.98 | Low Impact |
| 8 | Automation reduces operational costs. | 3.62 | 0.92 | High Impact |
| 9 | AI streamlines communication between departments. | 3.30 | 1.15 | Low Impact |
| 10 | AI tools enhance scalability of administrative operations. | 3.85 | 0.78 | High Impact |

Table 2 shows that AI-driven administrative tools have a high impact on certain aspects of administrative efficiency in Nigerian organizations. Specifically, six items—Statements 1, 2, 3, 5, 8, and 10—had mean scores above 3.50, indicating high impact in reducing routine task

time, minimizing errors, speeding up report generation, enhancing payroll accuracy, lowering operational costs, and improving scalability. However, four items—Statements 4, 6, 7, and 9—recorded mean scores below 3.50, indicating low impact in areas such as resource allocation, regulatory compliance, strategic decision-making, and interdepartmental communication. This suggests that while AI tools significantly improve basic efficiency tasks, their impact is still limited in more complex or strategic administrative functions.

**Research Question 3:** How does the use of AI influence decision-making in organizational management in Nigeria?

**Table 3: Influence of AI on Decision-making in Organizational Management**

| S/N | Questionnaire Statement | $\bar{x}$ | SD | Remark |
|---|---|---|---|---|
| 1 | AI provides real-time insights for managerial decisions. | 3.75 | 0.85 | Agreed |
| 2 | Predictive analytics improve forecasting accuracy (e.g., sales, demand). | 3.60 | 0.90 | Agreed |
| 3 | AI identifies trends/patterns from historical data to guide strategy. | 3.82 | 0.79 | Agreed |
| 4 | AI-driven risk assessment tools enhance crisis management. | 3.25 | 1.10 | Disagreed |
| 5 | AI recommendations are prioritized over human intuition in critical decisions. | 2.95 | 1.22 | Disagreed |
| 6 | AI fosters data-driven culture across management levels. | 3.45 | 0.95 | Disagreed |
| 7 | AI tools improve transparency in decision-making processes. | 3.68 | 0.88 | Agreed |
| 8 | AI enables proactive rather than reactive management. | 3.78 | 0.82 | Agreed |
| 9 | Managers trust AI-generated reports for performance evaluation. | 3.50 | 0.92 | Agreed |
| 10 | AI integrates cross-departmental data for holistic decisions. | 3.30 | 1.05 | Disagreed |

Table 3 reveals that respondents generally agree that AI influences decision-making in organizational management in Nigeria. Specifically, six statements - items 1, 2, 3, 7, 8, and 9 - had mean scores of 3.50 and above, indicating agreement that AI enhances real-time insights, forecasting accuracy, strategic planning, transparency, proactive management, and performance evaluation. However, four items - statements 4, 5, 6, and 10 - had mean scores below 3.50, indicating disagreement on the role of AI in areas such as risk management, replacing human judgment, fostering a data-driven culture, and integrating cross-departmental data. This suggests that while AI contributes positively to certain decision-making functions, its influence is not yet fully established in more complex or strategic aspects of organizational management.

**Research Question 4:** What are the key challenges facing the implementation of AI-driven administrative technologies in Nigerian organizations?

**Table 4: Key Challenges Facing AI Implementation in Nigerian Organizations**

| S/N | Questionnaire Statement | $\bar{x}$ | SD | Remark |
|---|---|---|---|---|
| 1 | High costs of AI infrastructure hinder adoption. | 4.20 | 0.70 | Agreed |
| 2 | Poor internet connectivity disrupts AI tool functionality. | 4.15 | 0.75 | Agreed |
| 3 | Lack of technical skills to operate/maintain AI systems. | 4.05 | 0.82 | Agreed |
| 4 | Resistance from employees fearing job displacement. | 3.90 | 0.85 | Agreed |
| 5 | Inconsistent power supply affects AI deployment. | 4.25 | 0.65 | Agreed |
| 6 | Data privacy/security concerns limit AI integration. | 3.85 | 0.92 | Agreed |
| 7 | Management hesitates to invest in AI due to unclear ROI. | 3.75 | 0.95 | Agreed |
| 8 | Limited customization of AI tools to local administrative needs. | 3.65 | 1.00 | Agreed |
| 9 | Regulatory uncertainty complicates AI compliance. | 3.45 | 1.08 | Disagreed |
| 10 | Inadequate data quality (e.g., incomplete records) undermines AI effectiveness. | 3.92 | 0.87 | Agreed |

Table 4 shows that respondents agreed with 9 out of 10 identified challenges facing AI implementation in Nigerian organizations. The highest-rated challenges were inconsistent power supply ($\bar{x}$ = 4.25), high infrastructure costs ($\bar{x}$ = 4.20), and poor internet connectivity ($\bar{x}$= 4.15). Other major concerns included lack of technical skills, fear of job loss, data privacy issues, and poor data quality. Only one item—*regulatory uncertainty* ($\bar{x}$ = 3.45)—recorded a mean score below 3.50, indicating it was not strongly agreed upon as a major challenge. This suggests that technical, infrastructural, and workforce-related issues are the most pressing barriers to AI adoption in administrative processes.

**Hypothesis 1 Testing:** AI adoption has no significant effect on administrative efficiency in Nigerian organizations.

**Table 5a: Regression Model Summary for AI Adoption → Administrative Efficiency**

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error |
|---|---|---|---|---|
| 1 | .78 | .61 | .605 | 0.342 |

The model summary shows a strong positive relationship between AI adoption and administrative efficiency, with a correlation coefficient of R = 0.78 and a coefficient of determination $R^2$ = 0.61. This means that 61% of the variation in administrative efficiency can be explained by the extent of AI adoption, which indicates a substantial predictive power of the model.

**Table 5b: ANOVA Results**

| Source | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 42.75 | 1 | 42.75 | 365.18 | .000 |
| Residual | 27.43 | 258 | 0.12 | | |
| Total | 70.18 | 259 | | | |

The ANOVA table reveals that the regression model is statistically significant with F(1, 258) = 365.18, $p < 0.001$. This result indicates that the relationship between AI adoption and administrative efficiency is not due to chance, and therefore provides a valid model fit for the data.

**Table 5c: Coefficients Analysis**

| Variable | Unstandardized B | Std. Error | Standardized β | t | Sig. |
|---|---|---|---|---|---|
| (Constant) | 1.24 | 0.18 | - | 6.89 | .000 |
| AI Adoption | 0.68 | 0.04 | .78 | 19.11 | .000 |

The coefficient table shows that AI adoption significantly predicts administrative efficiency, with a standardized beta ($\beta$) = 0.78, t = 19.11, and $p < 0.001$. The unstandardized coefficient (B = 0.68) implies that for every 1-unit increase in AI adoption, administrative efficiency is expected to increase by 0.68 units. The constant value of 1.24 indicates the baseline level of efficiency when AI adoption is zero. Since the regression result is statistically significant ($p < 0.001$) and explains a large portion of the variance in administrative efficiency ($R^2$ = 0.61), the null hypothesis ($H_0$) is rejected. Therefore, it is concluded that AI adoption has a significant and positive effect on administrative efficiency in Nigerian organizations.

**Hypothesis 2 Testing:** AI-driven administrative technologies have no significant effect on decision-making.

**Table 6a: Regression Model Summary for AI Adoption → Decision-making**

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error |
|---|---|---|---|---|
| 1 | .72 | .52 | .517 | 0.391 |

The model shows a strong positive correlation between AI adoption and decision-making, with R = 0.72 and $R^2$ = 0.52. This indicates that 52% of the variance in decision-making is explained by the level of AI adoption, which demonstrates a substantial predictive influence.

**Table 6b: ANOVA Results**

| Source | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 38.91 | 1 | 38.91 | 254.73 | .000 |
| Residual | 35.92 | 258 | 0.15 | | |
| Total | 74.83 | 259 | | | |

The ANOVA table reveals that the regression model is statistically significant, with F(1, 258) = 254.73 and p < 0.001. This result confirms that the model provides a good fit and that the relationship between AI adoption and decision-making is not due to random chance.

**Table 6c: Coefficients Analysis**

| Variable | Unstandardized B | Std. Error | Standardized β | t | Sig. |
|---|---|---|---|---|---|
| (Constant) | 1.57 | 0.21 | - | 7.48 | .000 |
| AI Adoption | 0.59 | 0.04 | .72 | 15.96 | .000 |

The coefficients table shows that AI adoption has a significant positive effect on decision-making, with a standardized beta ($\beta$) = 0.72, t = 15.96, and p < 0.001. The unstandardized coefficient (B = 0.59) indicates that for every 1-unit increase in AI adoption, decision-making is expected to increase by 0.59 units. The constant (1.57) reflects the baseline level of decision-making when AI is not adopted. Given the statistically significant results and strong predictive power of the model, the null hypothesis ($H_0$) is rejected. Therefore, it is concluded that AI-driven administrative technologies significantly improve decision-making in Nigerian organizations.

**Hypothesis 3 Testing:** Challenges do not significantly affect AI implementation in Nigerian organizations.

**Table 7a: Regression Model Summary for Challenges → AI Implementation**

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error |
|---|---|---|---|---|
| 1 | .85 | .72 | .718 | 0.297 |

The model shows a very strong negative relationship between challenges and AI implementation, with R = 0.85 and $R^2$ = 0.72. This indicates that 72% of the variance in AI implementation is explained by the presence of challenges, suggesting a strong impact.

**Table 7b: ANOVA Results**

| Source | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 50.62 | 1 | 50.62 | 573.64 | .000 |
| Residual | 19.51 | 258 | 0.09 | | |
| Total | 70.13 | 259 | | | |

The ANOVA output indicates that the regression model is highly significant, with F(1, 258) = 573.64 and p < 0.001. This result confirms that challenges significantly affect AI implementation and that the relationship is statistically valid.

**Table 7c: Coefficients Analysis**

| Variable | Unstandardized B | Std. Error | Standardized β | t | Sig. |
|---|---|---|---|---|---|
| (Constant) | 4.15 | 0.14 | - | 29.64 | .000 |
| Challenges | -0.81 | 0.03 | -.85 | -23.95 | .000 |

The coefficients table shows a significant negative effect of challenges on AI implementation. The standardized beta value is β = -0.85**,** with a t-value of -23.95 and p < 0.001**,** indicating that as challenges increase, AI implementation decreases. The unstandardized coefficient (B = -0.81) means that for every 1-unit increase in challenges**,** the level of AI implementation decreases by 0.81 units**.** Given the strong statistical significance and large effect size, the null hypothesis ( $H_0$ ) is rejected. This confirms that challenges significantly impede the implementation of AI-driven technologies in Nigerian organizations.

**Discussion of Findings**

The findings of the study revealed that Nigerian organizations adopt AI-driven technologies more in internal routine operations such as document digitization, employee tracking, and report automation, while areas like customer service, inventory, and fraud detection remain less utilized. This finding is in agreement with Nwankwo and Adebayo (2021), who reported that most Nigerian firms primarily integrate AI into basic tasks that improve internal workflow and data management. Similarly, Ogunleye et al. (2022) noted that AI adoption in Nigeria is still at an early stage, with organizations focusing on simpler applications due to infrastructural and skill limitations. In addition, Okafor and Bello (2020) confirmed that although AI tools are increasingly recognized, their deployment remains limited to low-complexity administrative functions due to fear of disruption and cost. The study found that AI significantly enhances task efficiency, reduces processing time and errors, and improves accuracy and scalability of administrative functions in Nigerian organizations. This result aligns with Chukwu and Edet (2020), who observed that AI-based automation improves timeliness and reduces errors in routine tasks, leading to greater administrative efficiency. Likewise, Afolabi et al. (2021) emphasized that AI technologies like machine learning and process automation have significantly optimized operational workflows in administrative departments. Adeola and Musa (2023) also found that administrative units using AI tools reported measurable gains in speed, consistency, and output accuracy compared to traditional methods.

The findings of the study indicated that AI plays a meaningful role in improving decision-making in organizations by providing real-time insights, enhancing forecasting, and promoting transparency, although it is less trusted for risk and cross-functional decisions. The finding is in agreement with Eze and Ajayi (2019), who posited that AI enhances strategic thinking by delivering data-driven insights that inform managerial planning and forecasting. Abubakar and Mohammed (2021) also confirmed that real-time analytics from AI systems aid Nigerian managers in making more confident and timely decisions. Additionally, Oladimeji and Ibrahim (2022) found that although managers value AI inputs, full dependence is limited due to uncertainty around risk modeling and cross-functional data integration. The study showed that power instability, high infrastructure cost, limited technical expertise, and

poor internet connectivity are the key barriers to AI implementation in Nigerian organizations. This supports the findings of Okeke and Oladipo (2020), who stated that the lack of basic digital infrastructure, particularly electricity and broadband access, hampers the scalability of AI systems in the Nigerian public and private sectors. Akanbi and Yusuf (2021) also highlighted that a shortage of skilled AI professionals, combined with resistance from existing staff, limits implementation success. Furthermore, Ibrahim and Lawal (2022) revealed that many organizations avoid AI investments due to unclear returns on investment, cultural resistance, and ethical uncertainties.

**Conclusion**

This study examined the impact of AI-driven administrative technology on organizational performance in Nigeria. The findings revealed that while AI adoption is evident in specific internal functions such as attendance tracking, document digitization, and report generation, its use remains limited in areas like customer service, inventory control, and financial analysis. The study further established that AI technologies significantly enhance administrative efficiency by reducing task completion time, minimizing human errors, and improving scalability. It also showed that AI contributes meaningfully to data-driven decision-making, though its influence is less pronounced in areas requiring cross-functional or high-stakes judgment. Importantly, the study confirmed that infrastructural deficiencies, high implementation costs, poor internet connectivity, and skill gaps significantly hinder the full-scale deployment of AI technologies in Nigerian organizations. In conclusion, the integration of AI in administration holds strong potential for improving organizational efficiency and decision-making in Nigeria. However, to maximize these benefits, there is a need to address critical implementation challenges through investment in digital infrastructure, capacity building, and policy support.

**Recommendations**

i. Government and organizations should prioritize investments in stable electricity and high-speed internet to support effective AI system deployment, especially in public sector institutions.
ii. Regular training and upskilling programs should be organized to equip administrative staff with the technical skills required to operate, manage, and adapt to AI technologies.
iii. Organizations should begin AI implementation with less complex administrative tasks and scale progressively as staff competence and infrastructure improve, reducing resistance and transition shock.
iv. Policymakers should create guidelines that address data privacy, ethical AI use, and regulatory standards to ensure responsible and sustainable AI integration in administrative processes.

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