

**Volume 2, Issue 2**

**Research Article**

**Date of Submission:** 14 August, 2026

**Date of Acceptance:** 09 September, 2026

**Date of Publication:** 20 September, 2026

## **The Impact of Artificial Intelligence on Public Sector Administration: Examining Opportunities and Challenges**

**Boniface Umoh E\*** 

Department of Accounting, Faculty of Financial Studies Institute of Management and Technology (IMT) Enugu, Nigeria

### **\*Corresponding Author:**

Boniface Umoh E, Department of Accounting, Faculty of Financial Studies Institute of Management and Technology (IMT) Enugu, Nigeria.

**Citation:** Boniface, U. E. The Impact of Artificial Intelligence on Public Sector Administration: Examining Opportunities and Challenges. *Adv Brain-Computer Interfaces Neural Integr*, 2(2), 01-17.

### **Abstract**

In a time of swift technological development, artificial intelligence (AI) has become a disruptive force that is changing institutions and sectors all over the world, including public administration. Specifically, the study examines the impact of AI on planning, organizing, and controlling government operations within selected ministries—the Ministry of Education, Ministry of Health, and Ministry of Work and Infrastructure in Nigeria. The study adopts a descriptive survey design, utilizing structured questionnaires to collect data from a sample size of 334 respondents drawn from a population of 2,043. Data analysis involved descriptive statistics, visual charts, and inferential analysis using regression at a 0.05 level of significance, aided by the Statistical Package for Social Sciences (SPSS) Version 25. The empirical results were further supported using SWOT assessment. The findings reveal that AI significantly impacts the planning ( $p\text{-value} = 0.000 < 0.05$ ) and organizing ( $p\text{-value} = 0.003 < 0.05$ ) of government operations in the selected ministries, but has no significant impact on control mechanisms ( $p\text{-value} = 0.065 > 0.05$ ). The study concludes that AI has a notable influence on public administration, particularly in enhancing the efficiency and performance of administrative functions, thereby reducing some operational costs. It recommends that public administrators continue to enhance their AI expertise and capabilities to maximize its benefits; employ multidisciplinary specialists and equipping public officials to manage AI's development and application effectively. This study provides valuable insights for policymakers, administrators, and governments seeking to modernize governance structures globally.

**Keywords:** Artificial Intelligence, Planning, Organizing, Controlling, Public Sector Administration, Opportunities, Challenges

### **Introduction**

Globally, artificial intelligence (AI) is becoming a disruptive force that is changing sectors and how businesses function. In the public sector, AI's potential to enhance public administration is profound, offering tools to improve decision-making, streamline processes, and deliver citizen-centric services. From automating administrative tasks to enabling predictive analytics for effective policy formulation, AI has become a cornerstone of modern governance across the world. For instance, countries like Estonia and Singapore have leveraged AI to digitize government services, reduce bureaucratic inefficiencies, and foster transparency.

In Africa, AI is being more widely used in public administration as governments realize how it may help with local issues like resource mismanagement, corruption, and ineffective service delivery. Regional initiatives, such as the African Union's Agenda 2063, emphasize the importance of digital transformation, with AI being a critical enabler. However, limited infrastructure, policy gaps, and skill deficits remain significant hurdles to achieving the full potential of AI in the region.

Locally, in nations like Nigeria, although it is still in its early phases, the application of AI to public administration offers exciting prospects for public sector reform. AI-driven innovations have been introduced to improve processes such as identity management, tax collection, and public health monitoring. For example, tools like facial recognition systems and chatbots are being explored to enhance citizen engagement and reduce administrative bottlenecks. However, the country faces difficulties relating to data privacy issues, funding constraints, and resistance to change.

Creating systems that can replicate human intellect is the goal of the computer science field of artificial intelligence (AI). and problem-solving skills. These systems do this by processing large amounts of data, learning from the past, and making adjustments to streamline and improve future operations [1]. A typical computer programme would require human intervention to correct errors and enhance workflows. Artificial Intelligence (AI) is defined by the American Heritage Science Dictionary (2020) as a machine's capacity to carry out tasks that are traditionally associated with intelligence [2]. The activities include creativity, logical deduction and inference, the capacity to draw conclusions from contradicting or insufficient information or from prior experience, and language comprehension.

Artificial intelligence (AI) is said to have improved public administration, management and instruction efficacy [3]. This is because it provides benefits for task responsibility that are comfortably competitive. Artificial intelligence (AI) technologies can help online instruction and learning more effectively by automating tedious administrative tasks, personalising and energising the learning process, and conducting adaptive assessments [4]. Thus, any instructor, administrator, or scholar who is not aware of the applications of artificial intelligence will find it difficult to keep up with modern technology [5]. Artificial intelligence (AI) is the application of human-like reasoning by a machine or computer programme to accomplish a task [6].

According to Dalia, et al. (2021) a few instances of artificial intelligence in use are chatbots, digital assistants, social media, text editors, auto-correct, maps and navigation, face recognition, text editors, and e-payments [7]. Additional uses include organising, addressing issues, and acting sensibly. The aim to imbue artificial intelligence systems with human-like cognitive functions, such as the ability to reason, discern meaning, make generalisations, or gain experience, is another use for the term [8].

Google's data indicates that in 2022, searches from Nigeria pertaining to the term "Artificial Intelligence (AI)" increased by an astounding 100%. Worldwide requests for regulation of AI use have been bolstered by the need to learn more, and Nigeria is not an exception. Artificial intelligence systems have been implemented worldwide in a variety of areas, including public administration, business administration, finance, real estate, automotive, space exploration, weaponry and defence, agriculture, and education [9].

While AI will undoubtedly replace certain individuals within organisations, labour demand will also increase as a result of technology advancements. Although artificial intelligence is said to boost productivity and consequently leads to unemployment, there are opposing effects as well, such as increasing consumer demand, market repercussions, rising demand for completely new skills, or possibly the creation of new jobs necessary for entirely new goods and services [10]. This study intends to shed important light on how artificial intelligence is affecting public administration in this setting, with a particular emphasis on the Ministry of Education, Ministry of Health and Ministry of Work and Infrastructure.

The selection of the Ministry of Education, Ministry of Health, and Ministry of Work and Infrastructure as focal points for this study is strategic and underscores the diverse ways in which Artificial Intelligence (AI) can revolutionize public administration in critical sectors of governance. These ministries were chosen due to their significant roles in societal development and their unique challenges that AI can address. By focusing on these three ministries, this study aims to provide a comprehensive understanding of how AI is reshaping public administration in sectors that directly impact citizens' lives.

### **Statement of the Problem**

While there are revolutionary possibilities associated with the incorporation of artificial intelligence (AI) into public administration, there are also significant obstacles that must be considered. One of the most urgent concerns, aside from the fear of becoming overly dependent on AI, is the possibility of large job losses as automation replaces human labor, which would result in lower employee wages. Wide-ranging effects on labor markets and the socioeconomic stability of impacted people and communities result from this substitution effect.

While the benefits of AI—such as improved efficiency and decision-making—are undeniable, there is an urgent need to assess its holistic impact through the lens of public values. The challenge lies in ensuring that AI systems are designed and implemented in ways that align with the principles of justice, accountability, and inclusivity. This underscores the critical importance of balancing innovation with the ethical and societal implications of AI, making the need for this study both timely and essential.

One of the biggest issues facing AI in public administration is the discrimination issue. The use of AI in public administration is called into question by discriminatory frameworks and methodologies, which may take many different forms, starting with big data, which is the main source of AI. Because AI systems are "educated" by data, biased data

might provide unfair results. Ignoring discriminatory issues in large data sets might lead to injustice and bias against particular populations. Some people think that artificial intelligence acts impartially since it is emotionless. To this end, the purpose of this study is to explore the impact of artificial intelligence on public administration.

### Objectives of the Study

- To determine the impact of artificial intelligence on planning government operations of selected Ministries.
- To ascertain the impact of artificial intelligence on organizing government operations of selected Ministries.
- To investigate the impact of artificial intelligence on controlling government operations of selected Ministries.

### Research Questions

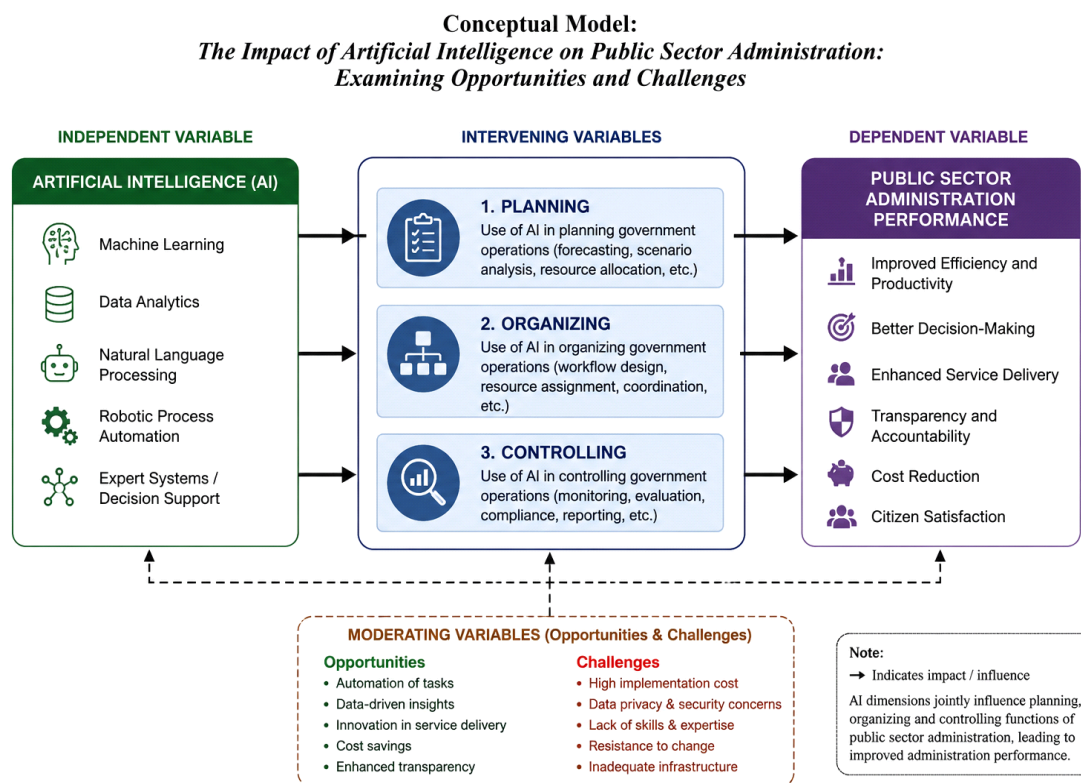
- How does artificial intelligence impact on planning government operations of selected Ministries?
- In what way does artificial intelligence impact on organizing government operations of selected Ministries?
- To what extent has artificial intelligence impacted on controlling government operations of selected Ministries?

### Research Hypotheses

- Ho1: Artificial intelligence has no significant impact on planning government operations of selected Ministries.
- Ho2: Artificial intelligence has no significant impact on organizing government operations of selected Ministries.
- Ho3: Artificial intelligence has no significant impact on controlling government operations of selected Ministries.

## Review of Related Literature

### Conceptual Literature



**Figure 1: Author’s Conceptual Model, 2026**

### Artificial Intelligence (AI)

Artificial intelligence (AI) refers to a computer’s ability to do tasks that were previously unachievable without human intellect [11]. The term first came into use in the 1950s. Applications of AI include automobile self-driving robotics, ChatGPT as well as AI chatbots, and artificially generated images [12]. Artificial intelligence is the process for developing an electronic device, a computer-controlled robot, or an application of programming operate intellectually like a human [13]. It simulates how the human mind solves issues and makes decisions by using computers and other gadgets [14].

Artificial intelligence (AI) is defined by Nwakunor (2021) as computer-controlled robots with intelligence comparable to that of humans [15]. These robots, which are controlled electronically by a computer, mimic the capabilities of the human mind. Artificial intelligence (AI) is defined by Liu (2016) as intelligent robots or systems that mimic human cognitive processes and advance the study of human intelligence [16].

According to the OECD (2019), an artificial intelligence (AI) system is a machine-based technology that may affect the outside world by generating a result (such as recommendations, evaluations, or forecasts) for a particular set of goals

[17]. It makes use of tools and potentially human-based data and inputs in order to: (i) observe virtual and/or real-world environments; (ii) use analysis, either manually or automatically (for example, using artificial intelligence), to abstract those interpretations into modeling; and (iii) use model inference to provide possible results. Different levels of autonomy are built into AI systems [18]. The aim of artificial intelligence (AI) is to have computer systems behave and think like humans. The general public generally understands artificial intelligence (AI) to be the ability of computers or robots to think and behave like people. Therefore, the ability of devices or software to successfully mimic human cognition or conduct is the essential tenet of artificial intelligence [5]. Timms (2016) argues that it may be a systemic fantasy to use artificial intelligence on home computers [19].

The capacity to successfully adjust to environmental changes is known as artificial intelligence, either through self-modification or by using technology to alter the environment [20]. It includes researching how to teach computers to do jobs that people are now better at. A computer program's or machine's capacity for thought and adaptation is known as artificial intelligence. Additionally, the goal of this field of study is to raise computer intelligence. They operate on their own initiative without guidance [21].

The three types of artificial intelligence (AI) that Kaplan and Haenlein (2018) identified are: analytical AI, which integrates cognitive and emotional intelligence components, understands human feelings, and arrives at decisions according to past experience; redefined AI, which illustrates characteristics of all three classifications of intelligence (cognitive, emotional, and social) and has the ability of consciousness of oneself and nervousness in interactions with others [22]. This can be achieved by focusing on different types of AI systems (human-inspired, humanised, analytical, and artificial intelligence), or by observing artificial intelligence by means of a series of phases of evolution (invented narrow, invented general, and invented super intelligence).

### **Public Administration**

The term "public administration" describes the methods, strategies, and values applied in the management of public sector entities, such as governmental and non-profit institutions [23]. The methods for enhancing the efficacy and efficiency of public services, guaranteeing accountability and transparency, and advancing the public interest are also included in the field of public management. Conversely, governance describes the procedures, frameworks, and management techniques employed to oversee and control the activities of a community, institution, or group. Transparency, accountability, involvement, and the rule of law are attributes of good governance. It is crucial for guaranteeing the effective, prudent, and efficient use of public resources as well as the representation of community interests and goals in public policy [24,25].

### **Planning, Organizing, and Controlling as a Functions of Public Administration**

Traditionally, public administration was responsible for planning, organizing, directing, controlling, and budgeting [26]. Civil servants in Nigeria carry out each of these duties. Mapping the organization's trajectory from its current condition to the ideal state for the future requires planning. Task division, departmentalization, personnel, and organisational linkages are all part of organising function. Coordinated efforts between all organisational components are the aim. Strong people skills and the capacity to inspire others are prerequisites for becoming a director. Controlling is the process of assessing quality across the board and identifying any real or potential plan deviations. This guarantees excellent performance to provide outcomes that meet expectations and preserve a tidy and trouble-free atmosphere. Examining an organization's anticipated revenue and expenses associated with allocating cash for expenditures over a certain period of time in the future is part of the budgeting process. Therefore, it allows a company to ascertain if its projected income and costs will allow it to maintain its intended level of operation [27].

Apart from these broad functions, they also carry out particular obligations, which encompass [28].

- Help in the creation of policies. Politicians and political officers are the only ones who can formulate policies. However, they might not be able to accomplish this without the help of civil officials, who often supply the data and information required to influence political masters' policy decisions. Civil servants visit the field to gather data, assess it, and present other policy options along with reasons in favour of each. The final decision and choice of policies do not belong to government personnel.
- The application of policy. The main responsibility of civil officials is to obey orders and directions from the government without raising any issues. Civil workers are essentially the ones who implement official policy. Additionally, they must carry out their duty to the best of their administrative and technical abilities.
- Help draft legislation. In a democratic system of government, the legislative branch submits bills to the executive branch for consideration. Before the law is presented to parliament for discussion, it is the responsibility of government workers to prepare it and include all the required elements. Once a legislation is enacted with the president's approval, public officials have an additional responsibility to determine the operationalization procedures.
- Offering services and facilities for society. Some social services are provided by civil personnel as part of their official duties. For example, government servants' salaries include those of water companies, the Power Holding Company of Nigeria (PHCN), railway workers, street sweepers, and road maintenance personnel.
- The continuity of the government. In the past, especially during the several coup d'états that Nigeria saw, civil officials have consistently been crucial to preserving the stability of the government.

| Aspect                                 | Positive Impact                                                                   | Negative Impact                                                                                |
|----------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| <b>Efficiency and Productivity</b>     | Saves time and workload by automating repetitive processes.                       | Risk of over-reliance on AI, potentially leading to skill degradation among employees.         |
| <b>Decision-Making</b>                 | Provides data-driven insights for informed and timely policy decisions.           | Poor-quality data or biased algorithms may lead to flawed decision-making.                     |
| <b>Transparency and Accountability</b> | Enhances monitoring of processes, reducing corruption and fostering public trust. | Lack of explainability in AI decisions (black-box problem) may undermine accountability.       |
| <b>Citizen Engagement</b>              | Improves communication with citizens through AI-powered tools like chatbots.      | Inefficient AI tools may frustrate users if they fail to provide accurate or timely responses. |
| <b>Cost Management</b>                 | Reduces operational costs by automating processes and optimizing resource use.    | High initial implementation and maintenance costs may strain public budgets.                   |
| <b>Service Delivery</b>                | Enhances public service delivery through personalization and faster processing.   | Risk of digital exclusion for populations without access to necessary technology or skills.    |
| <b>Policy Implementation</b>           | Predictive analytics help in proactive planning and resource allocation.          | Over-reliance on AI may reduce adaptability in unforeseen circumstances.                       |
| <b>Workforce Dynamics</b>              | Frees employees to focus on higher-value, strategic activities.                   | Potential displacement of workers due to automation, causing unemployment concerns.            |
| <b>Crisis Management</b>               | Provides real-time analysis and support for effective response to emergencies.    | Dependence on AI systems may be problematic if systems fail during critical moments.           |
| <b>Infrastructure Development</b>      | Enables predictive maintenance and optimization of public infrastructure.         | Integration challenges with legacy systems may delay deployment and reduce efficiency.         |

Source: Author's Adoption, 2026

**Table 1: The Impact of Artificial Intelligence on Public Administration in the Public Sector**

| Opportunity                                      | Description                                                                                                 | Example                                                                   |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| <b>Enhanced Decision-Making</b>                  | Data-driven insights from AI provide well-informed and timely decisions in policy formulation.              | Predictive analytics for resource allocation in healthcare or education.  |
| <b>Automation of Administrative Tasks</b>        | AI automates repetitive processes, reducing workload and increasing efficiency in public service delivery.  | Automating payroll systems or processing tax returns.                     |
| <b>Improved Citizen Engagement</b>               | AI enhances communication between governments and citizens through tools like chatbots and virtual agents.  | Chatbots providing 24/7 responses to citizen inquiries.                   |
| <b>Predictive Policy Implementation</b>          | AI helps forecast the outcomes of policy decisions and enables proactive responses to emerging challenges.  | Predicting traffic patterns to optimize urban infrastructure development. |
| <b>Increased Transparency and Accountability</b> | AI-powered tools can keep an eye on government operations, lowering corruption and boosting public trust.   | Blockchain-based systems for public contract management.                  |
| <b>Efficient Resource Management</b>             | AI optimizes the allocation and utilization of resources to address pressing public sector needs.           | AI-driven systems for efficient distribution of healthcare supplies.      |
| <b>Enhanced Workforce Productivity</b>           | AI enables public sector workers to concentrate on higher-value activities by automating repetitive jobs.   | AI tools for document analysis in legal or regulatory compliance.         |
| <b>Better Crisis Management</b>                  | AI aids in real-time analysis and management of emergencies, ensuring quicker and more effective responses. | AI applications in disaster response and pandemic management.             |
| <b>Streamlined Public Service Delivery</b>       | AI improves access to and delivery of public services, ensuring faster and more reliable outcomes.          | AI-driven platforms for renewing driver's licenses or passports online.   |
| <b>Cost Reduction</b>                            | By reducing inefficiencies, AI helps governments cut costs and redirect resources to critical areas.        | Automating administrative workflows to reduce operational expenses.       |

Source: Author's Adoption, 2026

**Table 2: Opportunities of Artificial Intelligence in Public Administration in the Public Sector**

| Challenge                                 | Description                                                                                                                            | Example                                                                           |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>High Implementation Costs</b>          | For many governments, the expense of creating, purchasing, and maintaining AI systems might be unaffordable.                           | Budget constraints in adopting AI-powered infrastructure in developing countries. |
| <b>Data Privacy and Security Concerns</b> | Due to their reliance on enormous volumes of data, AI systems raise issues around data breaches and the exploitation of personal data. | Unauthorized access to citizen health records in AI-based healthcare systems.     |
| <b>Lack of Skilled Workforce</b>          | Institutions in the public sector frequently lack the technical know-how required to deploy and oversee AI systems.                    | Shortages of AI professionals for system maintenance and development.             |
| <b>Resistance to Change</b>               | AI adoption may be resisted by stakeholders and employees out of mistrust for AI's potential or fear of losing their jobs.             | Government staff opposing automation of traditional administrative roles.         |
| <b>Bias and Ethical Concerns</b>          | Training data may introduce biases into AI systems, producing unfair or discriminating results.                                        | Biased AI decision-making in recruitment or public benefits allocation.           |
| <b>Legal &amp; Regulatory Challenges</b>  | The rapid pace of AI development has outstripped the creation of comprehensive laws and ethical guidelines.                            | Absence of clear regulations for AI use in surveillance and data collection.      |
| <b>Digital Infrastructure Deficiency</b>  | Poor internet connectivity and outdated IT infrastructure hinder AI adoption in some regions.                                          | Limited AI deployment in rural areas lacking reliable power and connectivity.     |
| <b>Transparency and Explainability</b>    | AI systems frequently operate as "black boxes," making it challenging to comprehend or defend their choices.                           | Difficulty explaining how an AI model decides on eligibility for public welfare.  |
| <b>Dependence on Quality Data</b>         | AI effectiveness depends on access to accurate and up-to-date data, which can be a challenge in the public sector.                     | Inconsistent data collection methods affecting AI outcomes in census management.  |
| <b>Unemployment Concerns</b>              | Automation of tasks through AI may lead to displacement of workers in certain sectors.                                                 | Job losses among clerical staff due to AI-driven automation of routine tasks.     |
| <b>Ethical Use of Surveillance Tools</b>  | AI-driven surveillance systems can infringe on citizens' privacy and civil liberties.                                                  | The employment of face recognition technology in public places is controversial.  |
| <b>Integration Challenges</b>             | It can be difficult and time-consuming to integrate AI systems with current infrastructure and procedures.                             | Delays in linking AI tools with legacy systems in public service agencies.        |

Source: Author's Adoption, 2026

**Table 3: Challenges of Artificial Intelligence in Public Administration in the Public Sector**

## Theoretical Literature

| Components                | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Origin / Proponent</b> | The study was anchored on the Technology Acceptance Model developed by Fred Davis in 1989. The model was developed from the Theory of Reasoned Action propounded by Icek Ajzen and Martin Fishbein in 1980.                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Basic Assumptions</b>  | The theory assumes that individuals' acceptance and use of technology are influenced mainly by two factors: perceived usefulness and perceived ease of use. According to Davis (1989), users are more likely to adopt a technology when they believe that it will improve their job performance and when they find it easy to use. The Theory of Reasoned Action further assumes that behavioural intention is influenced by attitude toward behaviour and subjective norms. Thus, an individual's intention to use artificial intelligence in public administration depends on beliefs, attitudes, social influence, and expected outcomes. |
| <b>Key Focus</b>          | The major focus of the theory is to explain and predict users' acceptance, adoption, and utilization of technology. The theory emphasizes how technological systems influence users' attitudes and behaviours in organizational settings. In public administration, the theory focuses on how government employees perceive and adopt artificial intelligence systems in planning, organizing, and controlling government operations.                                                                                                                                                                                                        |
| <b>Critics</b>            | Several scholars criticized TAM for being too simplistic and failing to consider social, organizational, cultural, and environmental factors affecting technology adoption. Critics also argued that the model focuses mainly on individual perceptions while neglecting external variables such as infrastructure, policy framework, organizational support, and technological readiness. Others maintained that the model does not adequately explain long-term technology usage behaviour.                                                                                                                                                |

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strengths</b>                    | The theory is widely accepted because of its simplicity, predictability, and strong explanatory power in technology adoption studies. It provides a clear understanding of why individuals accept or reject technological innovations. The model has also been validated across different sectors and technological environments. Furthermore, it is flexible and can be applied in examining adoption of emerging technologies such as artificial intelligence, e-governance, and digital systems in public organizations.                                                                                                               |
| <b>Weaknesses</b>                   | The model pays limited attention to social and institutional influences that may affect technology adoption. It also overlooks factors such as organizational culture, government policy, financial constraints, cybersecurity concerns, and resistance to change. In addition, TAM assumes that users behave rationally at all times, which may not always apply in real-life administrative settings.                                                                                                                                                                                                                                   |
| <b>Relevance to the Study</b>       | The theory is relevant to this study because it explains how artificial intelligence can be accepted and utilized in public sector administration. The theory helps to explain how perceived usefulness and ease of use influence the adoption of AI technologies in planning, organizing, and controlling government operations in selected ministries. It also explains how factors such as technological infrastructure, internet facilities, power supply, self-efficacy, and perceived cost affect AI implementation in the Nigerian public sector.                                                                                  |
| <b>Implication to Present Study</b> | The implication of the theory to the present study is that successful adoption of artificial intelligence in public administration depends on the extent to which public servants perceive AI systems as useful, efficient, and easy to operate. The theory therefore provides a foundation for examining how AI influences planning, organizing, and controlling functions in selected ministries. It also implies that government agencies must provide adequate infrastructure, training, technical support, and enabling policies to encourage effective adoption and utilization of AI technologies in public sector administration. |

Source: Author's Applications from Existing Theories (2026)

**Table 4: Theoretical Literature Review**

## Empirical Literature

| Author(s) / Year        | Key Focus / Objective                                                                                            | Countries / Sample                            | Methodology                                                                           | Main Findings                                                                                                                      | Implications of Findings                                                                        | Relevance to Present Study                                                                                                    |
|-------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Ihejirika et al. (2023) | Examined how AI is transforming Nigeria's educational system and its role in monitoring and assessing schooling. | Nigeria                                       | Secondary data and literature review approach                                         | The study found that the digital divide affects individuals in rural areas and communities with poor socioeconomic infrastructure. | AI adoption is constrained by inadequate infrastructure and unequal access to technology.       | It highlights infrastructural and technological challenges that may affect AI implementation in public sector administration. |
| Ogwo et al. (2023)      | Investigated the application of AI and its perceived effects in Nigerian university libraries.                   | Nigeria                                       | Literature-based research approach                                                    | AI improves productivity, customer satisfaction, accessibility of information, collaboration, and operational efficiency.          | AI enhances institutional performance and service delivery.                                     | It supports the argument that AI can improve administrative efficiency in public sector ministries.                           |
| Agba et al. (2023)      | Examined the relationship between AI and public governance in industrialised and emerging economies.             | Industrialised and emerging economies         | Qualitative research design using secondary sources                                   | The study found that AI improves governance, policymaking, public financial management, security management, and data processing.  | AI has significant potential for improving government performance and governance systems.       | It directly relates AI to public administration and governance functions.                                                     |
| Ananyi and Nwosu (2023) | Explored AI and the economics of Nigerian public universities.                                                   | Nigeria; 51 Federal and 60 State Universities | Descriptive research design using questionnaires and one-sample t-test with SPSS 23.0 | The findings showed that AI adoption improves the financial performance of public universities.                                    | AI adoption contributes positively to institutional effectiveness and quality service delivery. | It demonstrates how AI adoption can enhance performance in public institutions.                                               |

|                              |                                                                                                      |                                                                    |                                                                                        |                                                                                                                                     |                                                                                            |                                                                                                        |
|------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Plantinga (2022)</b>      | Assessed digital discretion and public administration in Africa with implications for AI employment. | Africa                                                             | Qualitative research method                                                            | The study found that civil servants play an important role in regulating and managing AI-powered services.                          | Effective AI implementation requires ethical, professional, and democratic considerations. | It explains the role of public administrators in AI governance and implementation.                     |
| <b>Mehmet et al. (2022)</b>  | Focused on the use of AI in public administration and policy.                                        | Not specifically stated                                            | Conceptual and interdisciplinary review approach                                       | The study revealed that AI is a rapidly developing interdisciplinary field relevant to governance, law, ethics, and administration. | AI requires proper regulation and policy integration in governance systems.                | It links AI adoption with policymaking and administrative functions in government.                     |
| <b>Akosile et al. (2022)</b> | Analysed the effect of AI on employment and work using Interswitch Nigeria Limited as a case study.  | Nigeria; 262 employees of Interswitch Nigeria Limited              | Survey research design using questionnaires and Pearson correlation analysis with SPSS | Findings indicated a strong positive relationship between automation, upskilling, job performance, and job enhancement.             | AI adoption improves employee productivity and work efficiency.                            | It supports the view that AI can improve organizational performance in public administration.          |
| <b>João et al. (2019)</b>    | Examined the effects of AI on public administration through a literature review.                     | International studies from ISI Web of Science and Scopus databases | Systematic literature review                                                           | AI significantly influence jobs in the public sector, requiring workforce retraining and redeployment.                              | Public organizations need capacity building and retraining to adapt to AI systems.         | It highlights workforce implications of AI adoption in public administration.                          |
| <b>Odoh et al. (2018)</b>    | Investigated AI and accounting practices among accounting firms in South East Nigeria.               | Nigeria; 185 managers and accountants in Anambra and Enugu States  | Descriptive using questionnaire and linear regression analysis                         | The study found that intelligent agents and expert systems positively affect accounting performance.                                | AI adoption improves operational efficiency and task performance.                          | It demonstrates how AI enhances administrative and operational functions in organizations.             |
| <b>Georgios (2017)</b>       | Investigated the use of AI in predicting urban transport zones with high crime rates.                | Urban transport sectors                                            | AI and geographic information system analytical approach                               | The study showed high forecast accuracy in identifying high-crime-risk transport zones.                                             | AI can improve safety management and decision-making in public administration.             | It illustrates the usefulness of AI in planning, monitoring, and controlling public sector operations. |

Source: Author's Compilation from Existing Empirical Literature, 2026

**Table 5: Summary of the Reviewed Empirical Studies**

### Gap in Literature

Most of the reviewed studies focused largely on education, libraries, accounting practices, governance, and employment-related issues, with limited attention given to specific government ministries in Nigeria. This study fills the identified gap by specifically examining the impact of artificial intelligence on public sector administration in selected ministries, namely the Ministry of Education, Ministry of Health, and Ministry of Works and Infrastructure. The study also extends the discussion to recent developments in AI adoption while examining both the opportunities and challenges associated with its implementation in public administration. Furthermore, unlike previous studies, this research integrates SWOT evaluations to provide a broader understanding of the strategic factors influencing AI adoption in the Nigerian public sector.

### Material and Methods

#### • Research Design

Descriptive research methodology was employed in this study. Descriptive study is defined as that which outlines the features of a certain event. It gives a broad perspective of a situation or a group of participants. The study area was three selected Ministries in Nigeria precisely Ministry of Education, Ministry of Health and Ministry of Work and Infrastructure.

#### • Source of Data

Primary source was the main sources from which the study's data were gathered. The questionnaire tools were utilised to collect the primary data for the study and distributed with the assistance of trained assistant while personal interviews with a variety of civil service employees regarding the topic matter were also used to enhance this.

#### • Population, Sample Size Determination and Sampling Technique

The employees of the Ministries of Work and Infrastructure, Health, and Education make up the population being studied. As a result, Table 6 displays the population distribution.

| Name of Ministry                     | Population | Percentage (%) |
|--------------------------------------|------------|----------------|
| Ministry of Education                |            |                |
| Management staff                     | 37         | 1.81           |
| Senior staff                         | 216        | 10.57          |
| Subordinate/junior staff             | 480        | 23.50          |
| Total                                | 733        | 35.88          |
| Ministry of Health                   |            |                |
| Management staff                     | 28         | 1.37           |
| Senior staff                         | 291        | 14.24          |
| Subordinate/junior staff             | 755        | 36.96          |
| Total                                | 1074       | 52.57          |
| Ministry of Works and Infrastructure |            |                |
| Management staff                     | 17         | 0.83           |
| Senior staff                         | 62         | 3.04           |
| Subordinate/junior staff             | 157        | 7.68           |
| Total                                | 236        | 11.55          |
| Grand total                          | 2043       | 100.00         |

Source: Extract from Civil Service Commission 2026.

**Table 6: Population Distribution**

In order to get the sample size from a population of 2043 respondents, the statistical formula from Yamani (1964) was apply.

$$n = \frac{N}{1 + N(e)^2}$$

n = Sample; N = Population; e = Limit of tolerance error (0.05); 1 = constant. The formula's translation is displayed below.

$$n = \frac{2043}{1 + 2043(0.05)^2}$$

$$n = \frac{2043}{1 + 5.1075}$$

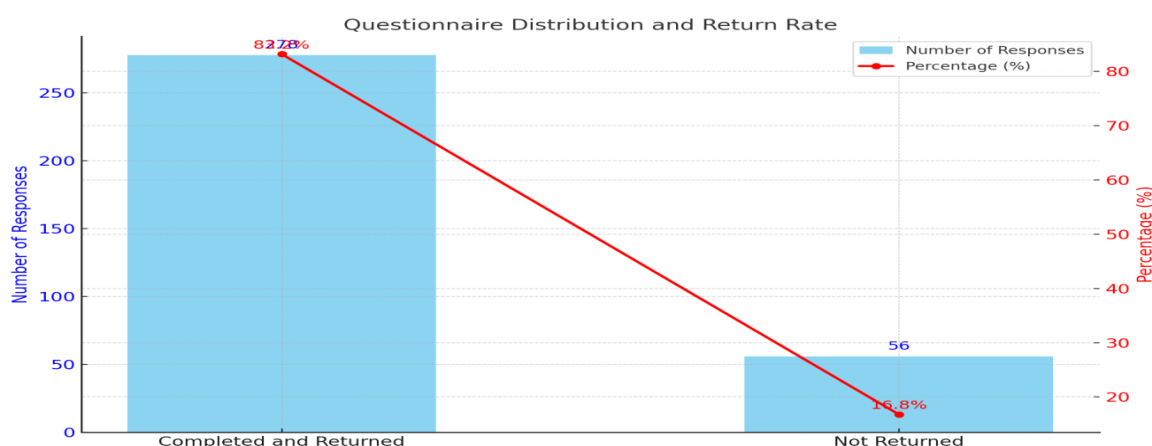
$$n = 334.51 \approx 335 \text{ respondents}$$

The basic random sampling technique was used to from the selected Ministries and their sample size.

### Method of Data Collection and Analysis

Simple percentages for the variables were used in the descriptive analysis. The fundamental percentage approach was employed to analyse the data. Utilizing the Statistical Package for Social Sciences (SPSS) Version 25, the hypotheses were evaluated using regression analysis at the 5% level of significance. Regression analysis was utilized because of its ease of use and potential to lower residual squares.

### Results and Discussion



**Figure 2: Bar and Line graph Chart showing Demographic Data of the Respondents**

Figure 2 above shows that 83.2% completed and returned their questionnaire while 16.8% did not return their questions. The study base the analysis on returned copies of the questionnaire.

| Variables                  | Response Label  | Frequency  | Percentage (%) |
|----------------------------|-----------------|------------|----------------|
| Gender                     | Male            | 167        | 60.1           |
|                            | Female          | 111        | 39.9           |
|                            | <b>Total</b>    | <b>278</b> | <b>100</b>     |
| Age                        | 18- 25          | 27         | 9.7            |
|                            | 26 -33          | 112        | 40.3           |
|                            | 34 -41          | 67         | 24.1           |
|                            | 42- 49          | 50         | 18.0           |
|                            | 50 and above    | 22         | 7.9            |
|                            | <b>Total</b>    | <b>278</b> | <b>100</b>     |
| Marital status             | Single          | 123        | 44.2           |
|                            | Married         | 150        | 54.0           |
|                            | Divorced        | 5          | 1.8            |
|                            | <b>Total</b>    | <b>278</b> | <b>100</b>     |
| Education Qualification    | SSCE O'Level    | 20         | 7.2            |
|                            | OND polytechnic | 80         | 28.8           |
|                            | HND/B.Sc        | 105        | 37.7           |
|                            | MA/M.Sc.        | 68         | 24.5           |
|                            | ACCA/ACA        | 5          | 1.8            |
|                            | <b>Total</b>    | <b>278</b> | <b>100</b>     |
| Year of Working Experience | 1-5             | 100        | 36.0           |
|                            | 6-10            | 90         | 32.3           |
|                            | 11 and Above    | 88         | 31.7           |
|                            | <b>Total</b>    | <b>278</b> | <b>100</b>     |

**Source:** Author's Field Survey, 2026

**Table 7: Respondents' Socio-Demographic Information**

With a majority of respondents being male (60.1%), this suggests potential gender disparities in the sector or demographic group being studied. It may imply that male perspectives dominate, which could influence the study's findings on AI adoption and public administration practices. The largest age group is 26–33 years (40.3%), indicating a workforce that is relatively young and potentially more adaptable to technological innovations like AI. However, the presence of older age groups (e.g., 34–41 and 42–49) suggests a need for inclusive training to bridge any generational gaps in technology usage.

The predominance of married respondents (54.0%) implies a stable demographic group, which may reflect a more settled and committed workforce. Single respondents (44.2%) could represent younger employees, possibly with a higher affinity for technological adaptation. A significant portion of respondents holds HND/B.Sc. (37.7%) and MA/M. Sc. (24.5%), indicating a highly educated workforce. This suggests a favorable environment for AI adoption, as higher education levels often correlate with a better understanding of technology. However, the small percentage with professional qualifications (ACCA/ACA) may indicate gaps in advanced technical expertise.

The distribution across 1–5 years (36.0%), 6–10 years (32.3%), and 11 years and above (31.7%) shows a balanced workforce in terms of experience. This implies that while newer employees may bring fresh perspectives on AI, experienced staff might require additional training to adapt to technological changes. The demographic diversity of respondents suggests varying levels of readiness and potential barriers to AI adoption in public administration. Policymakers and organizational leaders must ensure tailored strategies that address gender, age, educational background, and experience-related factors to maximize the benefits of AI while minimizing resistance and skill gaps.

| S/N      | Frequencies/<br>Percentages                                                     | VHE          | HE           | U           | LE        | VLE       | Total       |
|----------|---------------------------------------------------------------------------------|--------------|--------------|-------------|-----------|-----------|-------------|
|          |                                                                                 | F<br>%       | F<br>%       | F<br>%      | F<br>%    | F<br>%    |             |
| <b>1</b> | AI provides better planning and accessibility of government tasks.              | 159<br>57.2% | 96<br>34.5%  | 20<br>7.2%  | 3<br>1.1% | 0<br>0.0% | 278<br>100% |
| <b>2</b> | AI enhanced government future development estimation based on time series data. | 102<br>36.7% | 127<br>45.7% | 40<br>14.4% | 6<br>2.2% | 3<br>1.1% | 278<br>100% |

|   |                                                                                                           |              |              |             |             |             |             |
|---|-----------------------------------------------------------------------------------------------------------|--------------|--------------|-------------|-------------|-------------|-------------|
| 3 | Government use of AI technology improves planning while also improving citizen services.                  | 115<br>41.4% | 59<br>21.2%  | 24<br>8.6%  | 27<br>9.7%  | 53<br>19.1% | 278<br>100% |
| 4 | AI technology assists governments in planning and providing more practical and efficient public services. | 76<br>27.3%  | 155<br>55.8% | 39<br>14.0% | 6<br>2.2%   | 2<br>0.7%   | 278<br>100% |
| 5 | AI gives the government sector a strong analytical basis on which to make strategic choices.              | 100<br>36.0% | 59<br>21.2%  | 34<br>12.2% | 30<br>10.8% | 55<br>19.8% | 278<br>100% |

Source: Author's Field Survey, 2026

**Table 8: Responses on Impact of Artificial Intelligence on Planning Government Operations**

Table 8 showed respondents' opinion on the impact of artificial intelligence on planning government operations of selected Ministries. Findings revealed 57.2% of the respondents agreed to very high extent that AI provides better planning and accessibility of government tasks, 34.5% agreed to high extent, 7.2% neutral, low extent were 1.1% and very low extent were none. The table also showed that 36.7% of the respondents agree to very high extent that AI enhanced government future development estimation based on time series data, 45.7% agreed to high extent, 14.4% neutral, low extent were 2.2% and very low extent were 1.1%.. Furthermore, the table also showed that 41.4% of the respondents agree to very high extent that Government use of AI technology improves planning while also improving citizen services, 21.2% agreed to high extent, 8.6% neutral, low extent were 9.7% and very low extent were 19.1%.. In addition, the table also showed that 27.3% of the respondents agreed to very high extent that AI technology assists governments in planning and providing more practical and efficient public services, 55.8% agreed to high extent, 14.0% neutral, low extent were 2.2% and very low extent were 0.7%.. The description survey also revealed 36.0% of the respondents agreed to very high extent that AI gives the government sector a strong analytical basis on which to make strategic choices, 21.2% agreed to high extent, 12.2% neutral, low extent were 10.8% and very low extent were 19.8%.

| S/N | Frequencies/<br>Percentages                                                                                                              | VHE          | HE           | U           | LE         | VLE        | Total       |
|-----|------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-------------|------------|------------|-------------|
|     |                                                                                                                                          | F<br>%       | F<br>%       | F<br>%      | F<br>%     | F<br>%     |             |
| 6   | AI work technology helps public administrators do jobs at a pace and scale that is unsurpassed by humans.                                | 130<br>46.8% | 114<br>41.0% | 28<br>10.1% | 6<br>2.1%  | 0<br>0.0%  | 278<br>100% |
| 7   | AI makes it easier to organise public service and frees up workers to focus on higher-value tasks.                                       | 79<br>28.4%  | 133<br>47.8% | 62<br>22.3% | 4<br>1.5%  | 0<br>0.0%  | 278<br>100% |
| 8   | AI promotes innovation in the provision of public services.                                                                              | 129<br>46.4% | 113<br>40.7% | 28<br>10.1% | 4<br>1.4%  | 4<br>1.4%  | 278<br>100% |
| 9   | The application of AI helps the government organizations to comprehend vast, complex data volumes.                                       | 100<br>36.0% | 130<br>46.8% | 34<br>12.2% | 12<br>4.3% | 2<br>0.7%  | 278<br>100% |
| 10  | AI-driven chatbots have helped government agencies to serve her citizens better reducing wait times and improving customer satisfaction. | 54<br>19.4%  | 108<br>38.8% | 74<br>26.6% | 21<br>7.6% | 21<br>7.6% | 278<br>100% |

Source: Author's Field Survey, 2026

**Table 9: Responses on Impact of Artificial Intelligence on Organizing Government Operations**

Table 9 showed respondents' opinion on impact of artificial intelligence on organizing government operations of selected Ministries and it showed that 46.8% of the respondents agree to very high extent that AI work technology helps public administrators do jobs at a pace and scale that is unsurpassed by humansm, 41.0% agreed to high extent, 10.1% neutral, low extent were 2.1% and very low extent were 0.0%. The table further revealed that 28.4% of the respondents agree to very high extent that AI makes it easier to organise public service and frees up workers to focus on higher-value tasks, 47.8% agreed to high extent, 22.3% neutral, low extent were 1.5% and very low extent were none. The table also showed that 46.4% of the respondents agree to very high extent that AI promotes innovation in the provision of public services, 40.7% agreed to high extent, 10.1% neutral, low extent and very low extent were 1.4% respectively. Further, the table also showed that 36.0% of the respondents agreed to very high extent that the application of AI helps the government organizations to comprehend vast, complex data volumes, 46.8% agreed to high extent, 12.2% neutral, low extent were 4.3% and very low extent were 0.7%.. AI-driven chatbots have helped government agencies to serve her citizens better reducing wait times and improving customer satisfaction 19.4% of the respondents agreed to very high extent, 38.8% agreed to high extent, 26.6% neutral, 7.6% were low extent were and very low extent respectively.

| S/N | Frequencies/<br>Percentages                                                                                 | VHE          | HE           | U           | LE         | VLE         | Total       |
|-----|-------------------------------------------------------------------------------------------------------------|--------------|--------------|-------------|------------|-------------|-------------|
|     |                                                                                                             | F<br>%       | F<br>%       | F<br>%      | F<br>%     | F<br>%      |             |
| 11  | AI in public administration improves decision-making and streamlines workflows.                             | 133<br>47.8% | 111<br>39.9% | 22<br>7.9%  | 6<br>2.2%  | 6<br>2.2%   | 278<br>100% |
| 12  | AI is utilised to improve efficient communication and optimise government procedures.                       | 82<br>29.5%  | 139<br>50.0% | 46<br>16.5% | 9<br>3.2%  | 2<br>0.7%   | 278<br>100% |
| 13  | Government employs AI to manage government operations and increase quality of public services.              | 106<br>38.1% | 101<br>36.3% | 50<br>18.0% | 11<br>4.0% | 10<br>3.6%  | 278<br>100% |
| 14  | AI gives the government the backing and guidance it needs to allow for flexibility and experimentation.     | 93<br>33.5%  | 105<br>37.7% | 48<br>17.3% | 6<br>2.2%  | 26<br>9.3%  | 278<br>100% |
| 15  | Artificial Intelligence helps government operations detect, manage, and prevent fraud in the public sector. | 88<br>31.7%  | 79<br>28.4%  | 63<br>22.7% | 20<br>7.2% | 28<br>10.0% | 278<br>100% |

Source: Author's Field Survey, 2026

**Table 10: Responses on Impact of Artificial Intelligence on Controlling Government Operations**

Table 10 showed respondents' opinion on impact of artificial intelligence on controlling government operations of selected Ministries. The report revealed 47.8% of the respondents agreed to very high extent that AI in public administration improves decision-making and streamlines workflows, 39.9% agreed to high extent, 7.9% neutral, 2.2% were to low extent were and very low extent respectively It equally shown on the table that 29.5% of the respondents agree to very high extent that AI is utilised to improve efficient communication and optimise government procedures, 50.0% agreed to high extent, 16.5% neutral, low extent were 3.2% and very low extent were 0.7%. The table also showed that 38.1% of the respondents agreed to very high extent that Government employs AI to manage government operations and increase quality of public services, 36.3% agreed to high extent, 18.0% neutral, 4.0% low extent and very low extent were 3.6%. Additional, the table also showed that 33.5% of the respondents agreed to very high extent that AI gives the government the backing and guidance it needs to allow for flexibility and experimentation, 37.7% agreed to high extent, 17.3% neutral, low extent were 2.2% and very low extent were 9.3%.. Artificial Intelligence helps government operations detect, manage, and prevent fraud in the public sector 31.7% of the respondents agreed to very high extent, 28.4% agreed to high extent, 22.7% neutral, 7.2% were low extent were and very low extent were 10.0%.

| Model Summary <sup>b</sup>                            |                    |                |                   |                            |                   |          |          |     |                   |               |
|-------------------------------------------------------|--------------------|----------------|-------------------|----------------------------|-------------------|----------|----------|-----|-------------------|---------------|
| Model                                                 | R                  | R Square       | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |          |     |                   | Durbin-Watson |
|                                                       |                    |                |                   |                            | R Square Change   | F Change | df1      | df2 | Sig. F Change     |               |
| 1                                                     | 1.000 <sup>a</sup> | .999           | .999              | 2.4764                     | .999              | 3168.407 | 1        | 3   | .000              | 1.804         |
| a. Predictors: (Constant), Artificial intelligence    |                    |                |                   |                            |                   |          |          |     |                   |               |
| b. Dependent Variable: Planning government operations |                    |                |                   |                            |                   |          |          |     |                   |               |
| ANOVA <sup>a</sup>                                    |                    |                |                   |                            |                   |          |          |     |                   |               |
| Model                                                 |                    | Sum of Squares |                   | df                         | Mean Square       |          | F        |     | Sig.              |               |
| 1                                                     | Regression         | 19430.802      |                   | 1                          | 19430.802         |          | 3168.407 |     | .000 <sup>b</sup> |               |
|                                                       | Residual           | 18.398         |                   | 3                          | 6.133             |          |          |     |                   |               |
|                                                       | Total              | 19449.200      |                   | 4                          |                   |          |          |     |                   |               |
| a. Dependent Variable: Planning government operations |                    |                |                   |                            |                   |          |          |     |                   |               |
| b. Predictors: (Constant), Artificial intelligence    |                    |                |                   |                            |                   |          |          |     |                   |               |

Source: SPSS Output, (2026)

**Table 11: Result of Tested Hypothesis One**

The findings presented in Table 11 indicate a robust correlation ( $R=1.000$ ) between artificial intelligence and the planning of government activities of certain ministries. The percentage of the dependent variable's variation that can be anticipated based on the independent variable is known as the R-Square. According to this figure, there is a 99.9% difference between artificial intelligence and government operation planning; additional factors not included in the model account for the 0.1% of variation in government operation planning. This demonstrates the model's significant explanatory ability. Using the adjusted R-Squared ( $R^2$ ) instrument, the coefficient of determination which quantifies the independent variable's control power over the dependent was computed. The result was 0.999. This means that artificial intelligence has significant effects on how differently government activities are planned. This represents a 99.9% accuracy level. This is significant since it is above normal. Auto-correlation is based on the supposition that a subsequent value of the random variable ( $u$ ) is momentarily independent. Durbin Watson (DW) statistics are usually used to determine auto-correlation, which usually means that a sizable amount of the dependent variable's variance

cannot be explained. A value of 2 is acceptable since the Durbin Watson Statistic has an acceptable range of 0.2 to 2. Because it falls inside this range, the Durbin-Watson Statistic of 1.804 indicates that the model is dependable and autocorrelation-free. We determine that there is positive serial autocorrelation in the model.

The fact that the regression sum of squares 19430.802 is more than the residual sum of squares 18.398 indicates that the model adequately captures the volatility of the dependent variable. This implies that the model was not created by accident. The Mean Square Regression 19430.802 is divided by the Mean Square Residual 6.133 to arrive at the F-value,  $F=3168.0407$ . The null hypothesis must be refuted since the model in this table is statistically significant ( $\text{Sig} = 0.000$ ) according to the results. Consequently, at  $F(1.276)=3168.407$ , artificial intelligence significantly influences how some Ministries organize their government operations. The previously stated table further illustrated the extent to which artificial intelligence has made a substantial contribution to the planning of government operations for certain Ministries ( $\beta = 1.000$ ;  $t=56.289$ ;  $p<0.05$ ).

| Model Summary <sup>b</sup>                              |                   |                |                   |                            |                   |                   |     |     |               |               |
|---------------------------------------------------------|-------------------|----------------|-------------------|----------------------------|-------------------|-------------------|-----|-----|---------------|---------------|
| Model                                                   | R                 | R Square       | Adjusted R Square | Std. Error of the Estimate | Change Statistics |                   |     |     |               | Durbin-Watson |
|                                                         |                   |                |                   |                            | R Square Change   | F Change          | df1 | df2 | Sig. F Change |               |
| 1                                                       | .980 <sup>a</sup> | .961           | .948              | 15.9149                    | .961              | 73.788            | 1   | 3   | .003          | 2.662         |
| a. Predictors: (Constant), Artificial intelligence      |                   |                |                   |                            |                   |                   |     |     |               |               |
| b. Dependent Variable: Organizing government operations |                   |                |                   |                            |                   |                   |     |     |               |               |
| ANOVA <sup>a</sup>                                      |                   |                |                   |                            |                   |                   |     |     |               |               |
| Model                                                   |                   | Sum of Squares | df                | Mean Square                | F                 | Sig.              |     |     |               |               |
| 1                                                       | Regression        | 18689.351      | 1                 | 18689.351                  | 73.788            | .003 <sup>b</sup> |     |     |               |               |
|                                                         | Residual          | 759.849        | 3                 | 253.283                    |                   |                   |     |     |               |               |
|                                                         | Total             | 19449.200      | 4                 |                            |                   |                   |     |     |               |               |
| a. Dependent Variable: Organizing government operations |                   |                |                   |                            |                   |                   |     |     |               |               |
| b. Predictors: (Constant), Artificial intelligence      |                   |                |                   |                            |                   |                   |     |     |               |               |

Source: SPSS Output, (2026)

**Table 12: Result of Tested Hypothesis Two**

Table 12 showed there is a very strong relationship between Artificial intelligence and organizing government operations at  $R=0.980$ . R-Square shows 96.1% between Artificial intelligence and organizing government operations of selected Ministries while the remaining 3.9% variations in Artificial intelligence of selected Ministries are caused by other factors not included in this model. This indicates a strong explanatory power of the model. The results of the modified R-Squared ( $R^2$ ) yield of 0.948 indicate that organizing government operations has a considerable impact on artificial intelligence variations, with a magnitude of around 94.8%. Given that it is above average, this is noteworthy. Because the Durbin-Watson Statistic of 2.662 is outside of the permitted range, it indicates that the model is not dependable and autocorrelation-free. We deduce that there is negative serial autocorrelation in the model.

The model explains a larger percentage of the variance in the dependent variable, suggesting that it is not the product of chance, since the regression sum of squares, 18689.351, is bigger than the residual sum of squares, 759.849. By dividing the mean square regression (18689.351) by the mean square residual (253.283), the F-value, or  $F=73.788$ , is determined. Based on the data, the model in this table is statistically significant ( $\text{Sig} = 0.003$ ), hence the null hypothesis should be rejected. Thus, at  $F(1.276) = 73.788$ , artificial intelligence has a major impact on how certain Ministries organize their government activities. Therefore, the alternative theory is approved. Additionally, the aforementioned table demonstrated the considerable contribution of artificial intelligence to the organization of government activities and their significance level ( $\beta = 0.980$ ;  $t=8.590$ ;  $p<0.05$ ).

**Decision:** The model is statically significant since the p-value, or significance value, of 0.003 is less than 0.05. As a result, the alternative hypothesis is accepted and the null hypothesis is rejected. Thus, we draw the conclusion that the way selected ministries are organised for government operations are significantly impacted by artificial intelligence.

| Model Summary <sup>b</sup>                               |                   |                |                   |                            |                   |          |                   |      |               |                 |
|----------------------------------------------------------|-------------------|----------------|-------------------|----------------------------|-------------------|----------|-------------------|------|---------------|-----------------|
| Model                                                    | R                 | R Square       | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |                   |      |               | Durbin - Watson |
|                                                          |                   |                |                   |                            | R Square Change   | F Change | df 1              | df 2 | Sig. F Change |                 |
| 1                                                        | .855 <sub>a</sub> | .732           | .642              | 41.7206                    | .732              | 8.174    | 1                 | 3    | .065          | 2.478           |
| a. Predictors: (Constant), Artificial intelligence       |                   |                |                   |                            |                   |          |                   |      |               |                 |
| b. Dependent Variable: Controlling government operations |                   |                |                   |                            |                   |          |                   |      |               |                 |
| ANOVA <sup>a</sup>                                       |                   |                |                   |                            |                   |          |                   |      |               |                 |
| Model                                                    |                   | Sum of Squares | df                | Mean Square                | F                 |          | Sig.              |      |               |                 |
| 1                                                        | Regression        | 14227.371      | 1                 | 14227.371                  | 8.174             |          | .065 <sup>b</sup> |      |               |                 |
|                                                          | Residual          | 5221.829       | 3                 | 1740.610                   |                   |          |                   |      |               |                 |
|                                                          | Total             | 19449.200      | 4                 |                            |                   |          |                   |      |               |                 |
| a. Dependent Variable: Controlling government operations |                   |                |                   |                            |                   |          |                   |      |               |                 |
| b. Predictors: (Constant), Artificial intelligence       |                   |                |                   |                            |                   |          |                   |      |               |                 |

Source: SPSS Output, (2026)

**Table 13: Result of Tested Hypothesis Three**

From table 13, it shown that artificial intelligence and controlling the activities of selected ministries are closely related. at  $R = 0.855$ . The R-Square indicates 73.2% between controlling government operations of selected Ministries and Artificial intelligence while Other factors not included by this model account for the remaining 26.8% of differences in government operations control. This demonstrates the model's significant explanatory ability. With an adjusted R-Squared ( $R^2_{adj}$ ) of 0.642, it can be concluded that managing government activities of certain Ministries has a considerable impact on artificial intelligence fluctuations, with a magnitude of around 64.2%. Given that it is above average, this is noteworthy. The model is unreliable and not free from autocorrelation, as shown by the Durbin-Watson Statistic of 2.478, which is outside of the allowed range. The model exhibits negative serial autocorrelation, we conclude.

The model explains a larger percentage of the variation in the dependent variable, suggesting that the fluctuation is not the product of chance, as evidenced by the fact that the regression sum of squares, 14227.371, is bigger than the residual sum of squares, 5221.829. By dividing the mean square regression (14227.371) by the mean square residual (1740.610), the F-value, docile  $F=8.174$ , is determined. The model in this table is statistically significant (Sig = 0.065) according to the results, hence the null hypothesis should be refuted. Thus, at  $F(1,276) = 8.174$ , artificial intelligence has a major impact on managing the government activities of certain Ministries. The alternative hypothesis is therefore disproved. Additionally, the preceding table demonstrated that artificial intelligence has no beneficial influence on the degree of significance ( $\beta = 0.855$ ;  $t=2.859$ ;  $p<0.05$ ) of regulating government activities of certain Ministries.

Decision: Since the significance value (p-value) of 0.065 is more than 0.05, the model is statically insignificant. Therefore, the null hypothesis is accepted and the alternative hypothesis is rejected. We therefore conclude that Artificial intelligence has no significant impact on controlling government operations of selected Ministries.

### Discussion of Findings

The first hypothesis demonstrated that AI significantly affects the planning of government operations in certain Ministries since the model is statistically significant with an importance value (p-value) of  $0.000 < 0.05$ . Agba et al. (2023) found that artificial intelligence (AI) has the potential to improve government performance in a number of areas, such as politics, intergovernmental relations, policymaking, social service delivery, public financial management, public security management, information processing, and data management. Additionally, Akosile et al. (2022) concurred that automation and upskilling, compensation and benefits, work performance, and job improvement are strongly and favorably correlated [24,28].

The second hypothesis demonstrated that artificial intelligence significantly affects how some Ministries organize their government activities since the model is statistically significant with an importance value (p-value) of  $0.003 < 0.05$ . This is line with the findings of Mehmet et al. (2022) intelligent machines is a quickly developing field of cross-disciplinary study that spans the fields of politics, public administration, law, ethics, and computers along with engineering sciences [1]. These fields are crucial for acting as supervisors over the regulation and governance of AI. Thus, public administration and policy and artificial intelligence (AI) have a lot in common. Ananyi and Nwosu (2023) also agreed that that AI improves the financial standing of public colleges in Nigeria [29]. The study came to the conclusion that public universities might provide their stakeholders with high-quality instruction and support services if they adopted AI technologies and made efficient use of their potential.

The third hypothesis demonstrated that artificial intelligence has no discernible effect on managing the government operations of certain Ministries since the model is statistically unimportant with an importance value (p-value) of  $0.065 > 0.05$ . This is not line with the results of João et al. (2019) that found that AI will keep having a big influence on jobs in the public sector [30]. Due to the overall trend of robots replacing public occupations, the workers will need to be retrained and reemployed. According to Odoh et al. (2018), the efficiency of intelligent agents and expert systems significantly affects how successfully accounting firms in South East Nigeria carry out their accounting duties [31].

| Stakeholders                         | Implications                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Public Administrators / Management   | The findings indicate that artificial intelligence can strengthen administrative coordination, strategic planning, and operational efficiency within public institutions. The result further suggests the necessity for administrators to incorporate intelligent monitoring systems that support timely supervision, evaluation, and evidence-based decision-making. |
| Ministry of Education                | The study implies that AI technologies can support educational planning, allocation of instructional resources, and academic forecasting. However, greater attention is required in the area of monitoring educational standards, evaluating institutional performance, and ensuring accountability within the education system.                                      |
| Ministry of Health                   | The findings suggest that AI adoption may improve healthcare planning, patient data management, and allocation of medical resources. Nevertheless, limitations still exist regarding the application of AI in regulatory compliance, disease surveillance, and effective monitoring of public health programmes.                                                      |
| Ministry of Works and Infrastructure | The results reveal that AI can contribute significantly to project scheduling, infrastructure planning, and workflow management. Despite these benefits, additional technological integration is necessary to enhance quality assurance, project supervision, and control mechanisms in infrastructural development.                                                  |
| Public Sector Institutions           | The study highlights the need for institutional restructuring and digital transformation across public organizations. It further underscores the importance of establishing policies and frameworks that encourage wider adoption of AI technologies for transparency, accountability, and administrative effectiveness.                                              |
| Government                           | The findings imply that government agencies can benefit from data-driven governance through the use of AI-supported systems. This also calls for increased investment in digital infrastructure, technical capacity building, and policy development to ensure sustainable implementation of AI in governance processes.                                              |
| Nigeria's Economy                    | The adoption of AI in public administration may contribute to improved service delivery, reduction in operational inefficiencies, and increased productivity within the economy. The findings also suggest potential opportunities for employment generation and development of a digitally skilled workforce.                                                        |
| African Continent                    | The study positions Nigeria among emerging African economies adopting AI in governance and public administration. This may encourage regional cooperation, knowledge sharing, and development of continental frameworks for responsible AI utilization in governance systems.                                                                                         |
| Global Community                     | The findings contribute to international discussions on the role of AI in modern governance, particularly within developing nations. The study also provides evidence on the opportunities and challenges associated with integrating AI into public administration systems globally.                                                                                 |

Source: Author's Adoption, 2026

**Table 14: Implications of the Findings**

## SWOT Assessment of Artificial Intelligence in Public Sector Administration

| SWOT Components   | Assessment Based on Empirical Findings and Literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strengths</b>  | Artificial intelligence significantly improves planning and organizing government operations as evidenced by the very high $R^2$ values of 0.999 and 0.961 respectively. AI enhances efficiency, decision-making, forecasting, workflow coordination, information processing, data management, and service delivery. Studies by Agba et al. (2023), Ogwo et al. (2023), and Odoh et al. (2018) confirmed that AI improves institutional productivity and operational performance. AI also promotes automation, transparency, and policy implementation efficiency within government ministries. |
| <b>Weaknesses</b> | The findings showed that AI had an insignificant influence on controlling government operations with a significance level of 0.065, indicating limitations in monitoring and regulatory functions. Weak technological infrastructure, inadequate technical expertise, poor internet connectivity, cybersecurity concerns, resistance to change, and insufficient employee training remain major weaknesses. Ihejirika et al. (2023) identified digital divide and infrastructural deficiencies as major barriers to AI implementation.                                                          |

|                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Opportunities</b>                                                 | AI presents opportunities for digital transformation, smart governance, predictive analytics, improved policy formulation, automated service delivery, fraud detection, and efficient resource allocation. The findings imply that ministries can leverage AI for strategic planning and organizational restructuring. AI can also support e-governance initiatives, improve public accountability, and reduce bureaucratic delays. Studies by João et al. (2019) and Mehmet et al. (2022) indicated that AI can reshape governance and improve public administration practices globally. |
| <b>Threats</b>                                                       | Major threats include cybersecurity risks, data privacy violations, technological unemployment, ethical concerns, financial constraints, policy inconsistency, and overdependence on automated systems. Resistance from public servants and inadequate legal frameworks may also hinder implementation. According to Plantinga (2022), weak institutional regulation and poor ethical oversight threaten sustainable AI adoption in Africa's public administration system.                                                                                                                |
| <b>Source:</b> Author's Analysis Based on Empirical Findings (2026). |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**Table 15: Integrated SWOT Assessment**

## Conclusion and Recommendations

The impact of artificial intelligence on the public administration of a few ministries in Nigeria is objectively examined in this study. It is anticipated that artificial intelligence would keep having a big influence on public administration. The workforce will need to be retrained and reemployed because the general trend is for machines to replace public jobs. Thus, the study came to the following conclusions: artificial intelligence has a significant impact on the organising and planning of the government operations of a specific number of ministries while it has no significant impact on the control of the government operations of a specific number of ministries.

It offers the following recommendations based on the empirical results.

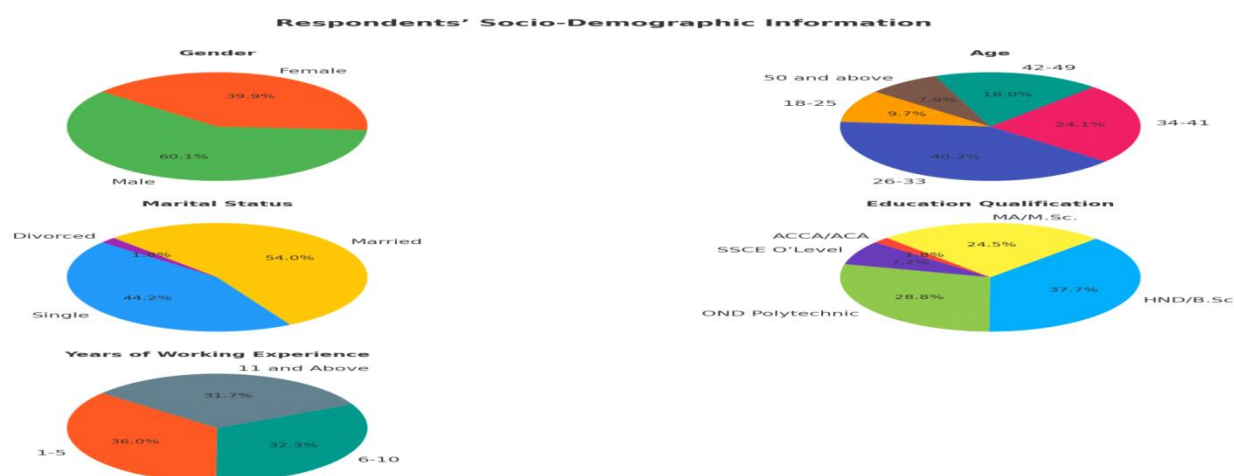
- Public administration and the public sector keep upping their artificial intelligence expertise since doing so will improve government operations planning and administrative function performance, which will reduce some administrative costs. Employing specialists from fields other than computer science and engineering is necessary, as is making sure public officials are capable of managing the development and application of AI.
- Innovation research and policy development are required on the application of AI technology to personnel hiring, monitoring, and workplace management. Along with the usage of training data sets throughout the AI life cycle in public administration, rules for tracking the origins of various AI developments should also be developed.
- Appropriate procedures for mitigating the effects of AI should exist, along with objective tactics that go beyond a strictly technical one. The participation of women and minorities in AI research and development should be guaranteed by public administration, commercial businesses, and other AI technology players.

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## Appendices



Pie Chart showing Demographic Data of the respondents