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Artificial intelligence in public service and governance in Nigeria

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Abstract
Purpose: This study explores the current state of artificial intelligence implementation in Nigeria's public service and the potential benefits, challenges, and strategic steps needed to harness AI for improved governance and service delivery.
Methods: The research design was qualitative. The data were collected using secondary data collection, in which a thorough literature review of academic articles, books, and reports related to AI was consulted. This study applied a thematic research approach to clarify the underlying issues, beliefs, and experiences related to artificial intelligence in governance and public services. The study was also anchored to content analysis.
Results: The findings revealed that AI application in Nigeria's public service is still in its early stages, with promising developments in areas such as e-governance, healthcare, banking sector, real estate business, and law enforcement/security outfits. There is a need for the government in Nigeria to invest significantly in infrastructural advancement and human capital development, which in turn will close the skill gaps, infrastructural deficits, and lapses that crop up from the unawareness of Artificial Intelligence in the technological advancement of Nigeria.
Limitations: This study examined the current state of AI in Nigeria's public services and governance by identifying the key barriers that affect the adoption and implementation of AI. The study made progressive recommendations that integrated the application of artificial intelligence in public services and governance in Nigeria.
Contributions: This study provides a comprehensive understanding of how AI can be adopted in Nigeria's unique environment.
Findings: This study did not receive any funding from any agency or organization.
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1. Introduction

Artificial Intelligence (AI) is increasingly becoming a transformative force across various sectors globally, and its application in public service and governance is gaining significant attention in Nigeria, a nation characterized by a rapidly growing population and complex socioeconomic challenges. The integration of AI into public services and governance holds the potential to address key issues such as ineffectiveness, inefficiency, corruption, and service delivery gaps.

AI technologies can enhance decision-making processes, improve the management of public resources, and provide innovative solutions to challenges faced by government agencies. Automating routine administrative tasks to enhance sophisticated data analysis and predictive modeling. AI offers

opportunities to improve the effectiveness and responsiveness of governance structures. The United Nations Development Programme (UNDP) champions AI to accelerate progress towards sustainable development while steadfastly promoting human rights. This involves the ethical, transparent, and sustainable development and utilization of AI technologies to ensure that their deployment strengthens local AI ecosystems and advances human dignity, quality, and justice for all. Advancements in information technology influence social conditions, such as medical service systems, educational service systems, government administration, and various other aspects of life (Putri, Syamsu, & Triono, 2024). Digital technology advancement has enormous potential to improve human well-being and increase economic development and productivity (Yulianita, Subardin, & Zulfikri, 2024). AI as a digital technology has great potential to solve problems associated with ineffectiveness and inaptitude in public service and governance.

However, the adoption of AI, especially in Nigerian public service and governance, is not without challenges; issues such as infrastructure deficits, limited digital literacy, and concerns about data privacy and security need to be carefully managed. Additionally, the ethical implications of AI use, including potential biases and their impact on employment, require thoughtful considerations.

This topic explores the current state of AI implementation in Nigeria's public service, its potential benefits and challenges, and the strategic steps needed to harness AI for improved governance and service delivery. It aims to provide insights into how AI can be a catalyst for positive change in Nigeria's public sector, while also addressing the hurdles that must be overcome to ensure its effectiveness and equitable deployment.

2. Literature review

2.1 Conceptual Review

2.1.1 Artificial Intelligence (AI)

An overview of AI refers to the simulation of human intelligence processes using machines, particularly computer systems. These procedures included learning (acquiring information and rules of application), reasoning (using rules to reach approximate or definite conclusions), and self-correction. AI technologies encompass a range of tools and systems including machine learning, natural language processing, robotics, and expert systems. McCarthy, Minsky, Rochester, and Shannon (2006), renowned American computer scientists coined the term Artificial Intelligence (AI) in 1956 and described it as "the science and engineering of making intelligent machines like the intelligent computer programs". Since then, the term has been associated with diverse meanings and interpretations. First, it refers to the theory and development of computer systems with the capacity to execute tasks (such as decision-making, visual perception, speech recognition, and translation between languages) demanding human intelligence (Oxford Dictionary, cited in ClaimVantage (2017)). Artificial Intelligence (AI) has emerged as a pivotal technological force in the 21st century, poised to profoundly impact international relations (Amaresh, 2020). The Organisation for Economic Cooperation and Development (OECD) sees AI as "a machine-based system that can for a given set of human-defined objectives make predictions, recommendations, or decisions influencing real or virtual environments. AI systems are designed to operate with varying levels of autonomy" (OECD (2019) as quoted in Gwagwa, Kraemer-Mbula, Rizk, Rutenberg, and De Beer (2020). Frankenfield (2022) describes AI as the simulation of human intelligence in machines that are designed to think/act like humans and imitate their actions. AI has also been used for machines programmed to demonstrate qualities associated with the human mind, such as learning, problem solving, perception, reasoning, planning, control, and prediction. In the context of public sector management and governance, AI refers to the deployment of computer systems programmed to perform government tasks that require human intelligence and discernment. Artificial Intelligence can also be described from three multiple levels: As an Intelligent Entity Created by computer experts and engineers, machines designed and programmed with the capacity to carry out tasks intelligently without being explicitly instructed, and computer systems capable of thinking and acting rationally and humanely. There are three types of artificial intelligence, namely, Artificial Narrow Intelligence (ANI), an Artificial Intelligence system programmed with the specialty to solve one single problem and can execute a single task accurately; Artificial General Intelligence (AGI), a brand of Artificial Intelligence possessing the smartness of humans across the board; and Artificial

Super Intelligence (ASI)-machine consciousness exhibiting intelligence that is smarter than the best human brain in virtually every field. The European Commission emphasizes the foremost features of AI intelligence in its definition in Gwagwa et al. (2020); it describes AI as "systems that display intelligent behavior by analyzing their environment and taking actions with some degree of autonomy to achieve specific goals."

2.1.2 AI in Public Service and Governance

AI in **public services** involves the use of intelligent systems to enhance the efficiency, effectiveness, and responsiveness of government operations and services. This can include automating routine administrative tasks, improving decision making through data analytics, and providing better services to citizens through AI-driven platforms. According to Fukuyama (2013), governance is the ability to create, enforce, and deliver services. Governance, in other words, is a performing agent that carries out the wishes of the masses in the best possible way to ensure progress and sustainability, whereas AI in **Governance** refers to the integration of artificial intelligence technologies into government operations and public service delivery to ensure progress and sustainability for the populace. This includes using AI for data analysis, decision making, automating routine administrative tasks, improving public services, enhancing transparency, and combating corruption. AI can be applied in areas such as healthcare, education, security, infrastructure, and financial services to help the government operate more efficiently, make data-driven policies, and improve the quality of governance. Examples include AI tools for analyzing large datasets to optimize resource allocation, monitoring and predicting security challenges, and offering personalized public services. It also has the potential to improve electoral processes, enhance public-sector accountability, and create smart cities. However, implementing AI in governance in Nigeria faces challenges, such as infrastructure deficits, limited digital literacy, and concerns about data privacy and security. Bingham, Nabatchi, and O'Leary (2005) argue that the government involves people, who are the tool makers and the tool users that participate in the work of the government. This goes to interpret the nexus between governance and human innovations, and how best the government uses such innovations to improve the lives of citizens.

2.1.3 Potential Benefits of AI in Public Service in Nigeria

The emerging trends in organizational management are a paradigm shift towards the adoption and application of information communication technology (ICT) (Uzor, Emenike, & Nwosu, 2023). AI is core to some successful companies, with information and communications technology (ICT), and activities have generally revolutionized and brought ease. People worldwide can create, access, and share knowledge (Bryson & Winfield, 2017). AI has the potential to significantly improve public services by enhancing efficiency, accessibility, information communication technology, and decision making. The potential benefits of AI in public services are as follows.

1. Improved Efficiency

AI can automate routine tasks such as data entry, document processing, and scheduling, freeing up human resources for more complex and high-value tasks. This can reduce administrative burdens and enhance service delivery speed.

2. Data-driven Decision-Making

AI tools can analyze large datasets to help governments make informed decisions. These tools can identify patterns, predict outcomes, and provide insights into policy impacts, thereby leading to more effective governance.

3. Cost Savings

Automation and optimization through AI can help reduce operational costs in public sectors, such as healthcare, transportation, and education, by streamlining processes and minimizing human error.

4. Personalized Citizen Services
AI can enable more personalized services for citizens by using data to tailor interactions such as recommending public benefits, providing personalized education plans, or offering targeted healthcare interventions.

5. Enhanced Public Safety
AI can improve public safety through its applications in crime prevention, disaster response, and emergency management. For example, AI-powered predictive analytics can help law enforcement predict crime hotspots, and AI tools can assist in disaster relief efforts by analyzing real-time data.

6. Accessible Services
AI can improve access to public services by providing virtual assistants, chatbots, and online platforms that offer 24/7 support. These can help citizens navigate complex systems, apply for services, and find information more easily.

7. Healthcare Improvements
AI can revolutionize public healthcare services by assisting with medical diagnostics, predicting disease outbreaks, and optimizing hospital management. For example, AI systems can help identify high-risk patients or optimize resource allocation during a pandemic.

8. Environmental Protection
AI can assist in environmental monitoring and management by analyzing data from satellites, sensors, and climate models. Governments can use AI to predict natural disasters, monitor pollution, and plan sustainable development initiatives.

9. Fraud Detection and Prevention
AI can help detect and prevent fraud in areas such as tax collection, social security, and public procurement by identifying anomalies in the data and uncovering fraudulent activities.

10.Better Infrastructure Management.
AI can help manage public infrastructure, such as roads, bridges, and utilities, using predictive maintenance systems that detect potential issues before they lead to costly failures or service interruptions.

2.1.4 Potential Benefits of AI in Nigeria's Governance
AI can help free up government labor by automating repetitive tasks, resulting in increased transaction speed in the provision of government services and accurate assessment of the outcomes of policy options (Sharma, Yadav, & Chopra, 2020). AI has huge potential in different government sectors, such as education, physical infrastructure, transportation, telecommunication, data security and management, finance, healthcare, research and development, policymaking, and legal and justice systems. The authorities need to recognize the potential of AI and apply it in various sectors of the economy to improve the quality of life of citizens (Sharma et al., 2020).

AI has the potential to significantly enhance governance in Nigeria through the following mechanisms:
1. Enhancing Public Service Delivery.
AI can streamline the delivery of essential public services, reduce bureaucracy, and improve accessibility. For example:
a) Automated Platforms: AI-powered systems can handle tasks such as processing applications for social services, pensions, or driver licenses more efficiently, reducing wait times and errors.
b) 24/7 Support: AI-driven chatbots and virtual assistants can offer round-the-clock support to citizens seeking information about government services, policies, and procedures.

2. Data-Driven Decision-Making
AI can help Nigerian policymakers make more informed decisions by analyzing large amounts of data from various sectors, such as health, education, agriculture, and the economy.

a) Economic Planning: AI can analyze economic trends and predict the impact of policy decisions, enabling the government to craft more effective economic policies.
b) Public Health: AI can analyze data to identify health trends, predict disease outbreaks, and optimize healthcare resource allocation. This could improve responses to public health crises such as pandemics.

3. Fighting Corruption:

Corruption has long been a challenge in Nigerian governance, and AI can play a crucial role in combating it.

a) Fraud Detection: AI algorithms can detect patterns of fraudulent activities in government spending, tax evasion, and public procurement processes, helping reduce corruption and improve accountability.
b) Transparency Tools: AI can enhance transparency in government contracts by ensuring that procurement processes are monitored and irregularities are flagged for further investigation.

4. Election Management:

AI can support the electoral process and enhance fairness and credibility of Nigeria's elections.

a) Voter Data Management: AI can help maintain accurate voter registers and minimize duplication and errors.
b) Election Monitoring: AI-powered systems can analyze social media and other data sources to detect potential voter manipulation, misinformation, or fraud during elections.

5. Security and Public Safety

Nigeria faces various security challenges including terrorism, banditry, and kidnapping. AI can improve the ability of a country to address these issues.

a) Predictive Policing: AI can analyze crime patterns and predict potential crime hotspots, allowing law enforcement agencies to allocate resources more effectively.
b) Surveillance: AI-enhanced surveillance systems can help monitor high-risk areas, identify suspicious activities, and support counterterrorism.
c) Disaster Management: AI can be used to predict and manage natural disasters, including floods and droughts, which are common in Nigeria.

6. Improving Tax Collection

AI can be leveraged to increase government revenue by improving tax collection efficiency.

a) Tax Evasion Detection: AI can analyze financial data to detect inconsistencies and identify individuals or companies that evade taxes.
b) Automated Tax Systems: AI-powered systems can simplify the tax filing process, reduce errors, and make compliance easier for citizens and businesses.

7. Smart Infrastructure Development

AI can be used to optimize infrastructure development and urban planning in Nigeria.

a) Traffic Management: AI-powered systems can manage traffic flows and reduce congestion in major cities such as Lagos and Abuja.
b) Predictive Maintenance: AI can help predict when public infrastructure, such as roads, bridges, and utilities, need repairs, prevent costly failures, and improve service delivery.

8. Agriculture and Food Security

Agriculture remains a significant part of Nigeria's economy and AI can help improve productivity and food security.

a) Precision Agriculture: AI can help farmers make data-driven decisions about planting, irrigation, and fertilization, improve yields, and reduce waste.
b) Supply Chain Optimization: AI can streamline agricultural supply chains, reduce post-harvest losses, and ensure that food reaches markets more efficiently.

9. Education:

AI can support the educational sector by enhancing learning outcomes and administrative efficiency.

a) Personalized Learning: AI-driven learning platforms can tailor educational content to the needs of individual students, helping close learning gaps.
b) Automated Administrative Tasks: AI can reduce the administrative burden on educators by automating tasks such as grading and attendance tracking.

10.Key concepts in AI for Governance

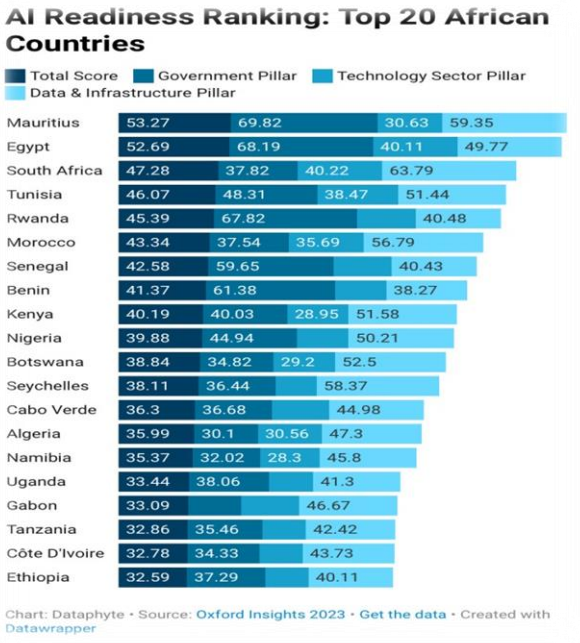
a) ***E-Government:*** The use of digital tools and systems to deliver government services and conduct government operations. AI can play a critical role in advancing e-government by enabling more sophisticated and personalized service delivery.
b) ***Smart Governance:*** The Application of technology and data-driven approaches to improving the governance process. AI can enhance smart governance by providing predictive analytics, automating processes, and enabling real-time decision making.
c) ***Digital Transformation:*** The Integration of digital technologies into all aspects of government operations. AI is a significant component of digital transformation that offers tools that can fundamentally change the delivery of public services.

2.1.5 Government AI Readiness Index

In order "to score governments on their readiness to implement AI in the delivery of public services," the Government AI Readiness Index 2022 ranked 181 countries according to "39 indicators across 10 dimensions, which make up three pillars." The pillars are:

1. *The Government pillar* - which looks out for "a strategic vision for how it develops and manages AI, supported by appropriate regulation and attention to ethical problems;
2. *The Technology Sector pillar*, which examines how the government depends on a good supply of AI tools from the country's technology sector, needs to be mature enough to supply the government with good levels of human capital as well as the skills and education of the people working in this sector.
3. *The Data & Infrastructure pillars* focus on availability, representativeness, and infrastructure.

Below is a list of the first 20 African countries showing their global ranking in the Government AI Readiness Index 2023 and their scores or degree of readiness in terms of the three pillars mentioned above.



2.2 AI in the Nigerian Context

From the above data chart of the Oxford Insights 2023 AI Readiness, which ranks countries according to three key indicators- government readiness (AI strategies) mentioned above–Nigeria is ranked 103rd among 193 countries globally, even though it intends to achieve a top 50 rank by 2030.

Nigeria, Africa's most populous nation, faces unique challenges in governance, including bureaucratic inefficiency, corruption, and limited access to public services for large segments of the population. It is a National AI Strategy for Nigeria to steer the AI revolution towards achieving national goals around job creation, social inclusion, and sustainable development. Through collaborative leadership, Nigeria seeks to pioneer ethical and inclusive AI innovations that improve welfare and expand opportunities for all citizens. AI offers a potential solution to these problems. Although its adoption in Nigeria's public service and governance is still in its nascent stage, there are also some levels of AI utilization in various institutions and sectors in Nigeria.

2.2.1 AI Systems Utilization in Nigeria

Obi, Ole, and Uzoigwe (n.d.) in their research stated that public and private entities have been using AI for institutional and business solutions, and the country has seen AI systems gain prominence in businesses as well as in corporate entities, all in the bid to increase efficiency and productivity of products and services.

Obi et al. (n.d.) went further to state examples where the AI systems are found useful, for instance in the banking industry where Ziva, an AI-powered chatbot utilized by zenith bank, also in the telecommunication industry like MTN, there is zigi, a customer care digital assistant. Lara. Ng is an AI-powered chatbot that offers individuals conversation convenience and makes transport fare estimations, whereas one uses public transport in Lagos. A popular company in this regard, named Chiniki Guard, deploys artificial intelligence security solutions for stores and supermarkets. Their primary role is to help retailers deter theft and shoplifting by analyzing the video feed from CCTV cameras using Artificial Intelligence, thereby providing security enhancement and monitoring through the use of AI. In the health sector, 24/7 Medic, a health ICT application, connects doctors with patients who need medical attention across Nigeria within a maximum waiting time of 10 min. The application facilitates the provision of auxiliary services, which include lab testing and doorstep delivery of medicines to users. There are other various ways AI is deployed in diverse applications, including in real estate, where smart houses are being operated using artificial intelligence, biometric recognition in customer electronic devices, plagiarism detection, and data analysis.

Prof Isa Ali Ibrahim Pantami, the former minister of Communications and Digital Economy, on the 13th of November, 2020, commissioned the National Centre for Artificial Intelligence and Robotics (NCAIR) along with its modern digital fabrication Lab (FabLab). The center is one of NITDA's special purpose vehicles created to promote research and development on emerging technologies and their practical application in areas of Nigeria's national interest. The facility is focused on Artificial Intelligence (AI), Robotics and Drones, the Internet of Things (IoT), and other emerging technologies aimed at transforming the Nigerian digital economy in line with the National Digital Economy Policy and Strategy (NDEPS). The Federal Government of Nigeria has set a target to produce approximately 50,000 job opportunities through Artificial Intelligence (AI) by 2030. The influence of technology and Artificial Intelligence has enveloped Nigeria and has also captivated young people to develop an interest in AI systems. The businesses are not left out; AI systems act as a catalyst for growth and development by increasing the efficiency and productivity of products and services within the economic, financial, social, and political environment.

AI has some level of operation in Nigeria's financial, political, and social environments. It also has challenges that affect the adoption and proper implementation of AI systems in public services and governance in Nigeria.

2.2.2 Challenges to AI Adoption in Nigeria

a. Infrastructural Deficit: Nigeria's digital infrastructure is underdeveloped, particularly in rural areas, which limits the deployment of AI technologies.
b. Capacity and Skill Gaps: There skilled workforce is needed to develop and manage AI systems.
c. Digital Literacy: The level of digital literacy among public servants and the general population is relatively low, which can hinder the effective use of AI systems.
d. Data Availability and Quality: AI systems rely on large datasets for training and operation. In Nigeria, the availability of accurate, reliable, and updated data is a significant challenge.
e. Ethical and legal concerns: The use of AI raises important ethical and legal questions, including issues of data privacy, algorithmic bias, and impact on employment. These concerns are particularly acute in Nigeria, where the regulatory frameworks for AI are still under development.

2.2.3 Strategic Steps for AI Implementation in Nigeria

Implementing AI in Nigeria, particularly within public services and governance, requires a well-thought-out strategy that addresses the country's unique challenges and leverages its opportunities. The following are some strategic steps to consider.

a. **Develop a national AI Strategy**
   a) Government-led initiative: Establish a national AI policy or strategy that outlines the vision, goals, and roadmap for AI implementation across sectors.
   b) AI Task Force or Agency – Creates a dedicated body to oversee AI initiatives, coordinate with various stakeholders, and ensure alignment with national priorities.
b. **Investment in Digital Infrastructure**
   a) Enhance connectivity: invest in expanding broadband and Internet access, particularly in rural areas, to support AI applications that rely on connectivity.
   b) Cloud and data centers – Develop and expand cloud computing and data storage infrastructure to support AI-driven analytics and data processing.
c. **Build Data Ecosystems:**
   a) Data collection and management implements standardized methods for data collection across public sectors to ensure the availability of high-quality relevant datasets.
   b) Open Data Initiatives promote open data policies that allow for the sharing of government data with the private sector and academic researchers, fostering innovation.
   c) Data Privacy and Security: Develop and enforce robust data protection regulations to safeguard citizens' information and build trust in AI systems.
d. **Develop Human Capital**
   a) AI Education and Training introduced AI and data science courses in educational institutions and offered training programs for public servants to develop AI literacy.
   b) Talent Retention and Development: create incentives to retain AI talent in Nigeria and encourage diaspora professionals to contribute to local AI development.
   c) Public Awareness Campaigns – educate the public on AI technologies and their implications to foster a culture of digital literacy and acceptance.
e. **Promote Research and Innovation**
   a) Support Academic Research – fund research in AI and related fields at universities and research institutions, focusing on solutions tailored to Nigeria's challenges.
   b) Innovation Hubs and Incubators establish innovation hubs that bring together start-ups, tech companies, and government agencies to collaborate in AI projects.
   c) Public-Private Partnerships: encourage partnerships between the government and the private sector to drive AI innovation and application development.
f. **Regulate and Monitor AI Applications**
   a) Ethical AI framework: develops an ethical framework to guide the development and use of AI, ensuring fairness, transparency, and accountability.
   b) Regulatory Oversight: Establish regulatory bodies to monitor AI applications, assess risks, and ensure compliance with legal and ethical standards.
   c) Impact Assessment: regularly assesses the socioeconomic and environmental impact of AI implementations to refine policies and strategies.

2.3 Empirical Review

In a study titled "Artificial Intelligence and Economic Aspects of Nigeria Public Universities by Ananyi and Nwosu (2023). This study investigated artificial intelligence and economic aspects of public universities in Nigeria. This study used a descriptive design. The population included 51 federal and 60 state universities in Nigeria. The findings reveal that utilizing artificial intelligence enhances the economic aspects of Nigerian public universities.

Agba, Agba, and Obeten (2023) in the study titled "Artificial Intelligence and Public Management and Governance in Developed and Developing Market Economies" examined the interplay between AI and public governance and management in developed and developing market economies. The study concluded that the interplay between AI and public administration has great potential, yet to be explored. They further suggested that more research should be conducted and greater support should be provided to experts and professionals who are interested in integrating AI into more functional areas of public management and governance.

Nakolisa (2023) in "Artificial Intelligence and Public Service Delivery in Africa" provided basic information about artificial intelligence to stimulate interest in AI-focused knowledge acquisition, research, development, and deployment across the African continent. This study used the latest (2022) United Nations Industrial Development Organization (UNIDO) government AI Readiness index to gauge the degree to which African governments have responded to the fast-expanding opportunities presented by Artificial Intelligence.

Hassan, Olufemi, and Oladimeji (2023) in their study titled "Assessment of Artificial Intelligence in Public Administration: Implication for Service Delivery in Lagos State Public Service". This study adopts a technology acceptance model and digital era governance theories. The study revealed that Lagos is still in the embryonic stages of the implementation and application of artificial intelligence (AI). In addition, the study encouraged collaboration with the private sector, the state government, and financial institutions to accelerate digital transformation and broadband penetration in the state.

Ugwuozor and Egenti (2024) in the research work titled "Artificial Intelligence and the Future of Work: Recent Graduates' Perspective" assess the level of fresh graduates' awareness and their level of preparedness for prospects, issues, and possible threats that AI may pose in their future work life. A total of 112 graduates from various Nigerian tertiary institutions serving the mandatory National Youth Service Corps (NYSC) were randomly selected for the survey. Descriptive statistics and a multinomial logistic model were used for data analysis. From the findings, it was revealed that most graduates are essentially ignorant or unsure of the threat of AI to their lives, especially for the foreseeable future. The study concluded that the apparent ignorance of the potential and threats of AI among graduates in Nigeria revealed a deficiency in the curricula and highlighted the need for a more robust policy response from the government.

2.4 Theoretical Framework

This study is anchored to the Technology Acceptance Model (TAM) and Governance Theory. The study combined these two theories because using TAM will enable user acceptance, whereas Governance Theory will explore the process, roles, and regulations of artificial intelligence.

The Technology Acceptance Model (TAM) was proposed by Davis in 1986 (Davis, Bagozzi, & Warshaw, 1989). It posits that users' acceptance of technology is primarily influenced by two factors: perceived usefulness (PU) and perceived ease of use (PEOU).

Application: In the context of AI in public services, TAM can be used to assess how public servants and citizens perceive the usefulness and ease of use of AI systems, which in turn affects their willingness to adopt and use these technologies.

Relevance to Nigeria: This model helps understand the factors that may facilitate or hinder the adoption of AI in Nigerian public services.

Governance Theory has key contributors such as James Rosenau and R. A. W. Rhodes, both scientists, and Elinor Ostrom, an economist known for her work on "Polycentric Governance." Their theory examines the processes, systems, and structures through which societies and organizations are managed. It often focuses on the role of public institutions' accountability and distribution of power.
Application: This theory can be used to study how AI technologies are governed by public services in Nigeria. This can provide insights into how AI impacts decision-making processes, accountability, and transparency governance.
Relevance to Nigeria: Governance theory is critical for analyzing how AI could potentially transform public service delivery and government structures in Nigeria.

3. Research Method

The research design used was qualitative. The data were collected using secondary data collection, in which a thorough literature review of academic articles, books, and reports related to AI was consulted. This study applied a thematic research approach for the purpose of clarity in understanding the underlying issues, beliefs, and experiences related to artificial intelligence in governance and public services, and anchored on content analysis.

4. Results and discussions

The research found that AI applications in Nigeria's public services are still in the early stages, with promising developments in areas such as e-governance, healthcare, and law enforcement. However, challenges, such as infrastructure deficits, skill gaps, and data privacy concerns, hinder their widespread adoption.

Interpretation: These findings suggest that while AI has the potential to transform public services in Nigeria, significant investment in infrastructure and human capital is required. The government's role in facilitating a supportive regulatory environment is critical.
Comparison with Existing Literature: Previous studies have noted the potential of AI in governance globally, but this study emphasizes the unique challenges in Nigeria, particularly related to digital infrastructure and the sociopolitical landscape.
Practical Implications: The identified barriers could lead to more efficient government operations and improved public trust in state institutions. These findings could inform policy recommendations for responsibly scaling AI adoption.

5. Conclusion

This study explored the potential of artificial intelligence (AI) in transforming public services and governance in Nigeria, highlighting the opportunities and utilization of AI systems within the social environment in Nigeria, the challenges, and the strategic steps required for the successful implementation of artificial intelligence. AI holds significant promise for enhancing efficiency, transparency, and effectiveness of public service delivery, potentially addressing many of the challenges currently faced by the Nigerian government. By automating routine tasks, improving data-driven decision-making, and expanding access to public services, AI can play a crucial role in modernizing Nigeria's public sector.

However, the study also acknowledges the substantial challenges that need to be addressed to fully realize these benefits. These challenges include infrastructural limitations, data privacy concerns, ethical considerations, and the need for skilled workforce. Additionally, the success of AI in governance depends on the development of robust policies, regulatory frameworks, and a governance model that ensures accountability and equity.

5.1 Recommendations

Based on the findings of this study, the following recommendations are proposed for the effective implementation of AI in public services and governance in Nigeria:

1. Development of a Comprehensive National AI Strategy
The Nigerian government should establish a national AI strategy that outlines clear objectives, timelines, and responsibilities. This strategy should be aligned with national development goals and should include inputs from diverse stakeholders, including government agencies, academia, the private sector, and civil society.

2. Investment in Digital Infrastructure
To support AI initiatives, there must be significant investments in improving digital infrastructure, including expanding broadband access, building data centers, and enhancing cybersecurity measures. This infrastructure is essential for the successful deployment and scaling of AI technology.

3. Enhances Data Governance and Security
Establish robust data governance frameworks that ensure data privacy, security, and ethical use. This includes implementing data protection laws, promoting transparency in data collection, and ensuring that AI systems are designed to prevent biases and discrimination.

4. Capacity Building and Education
The government should invest in education and training programs to build AI literacy and technical skills among public servants as well as the broader population. This includes integrating AI-related courses into the education system and offering specialized training for government employees.

5. Pilot AI Projects in Key Sectors
Implement pilot projects in sectors where AI can have the most immediate impact, such as healthcare, agriculture, and law enforcement. These pilots will provide valuable insights into the practical challenges and benefits of AI, helping refine strategies before scaling up.

6. Promote public–private partnerships
Encourage collaboration between the government and private sector to drive innovation and share resources. Public-private partnerships can facilitate the development and deployment of AI solutions tailored to Nigeria's specific needs.

7. Foster a Culture of Innovation and Research.
Support research and development in AI by funding academic institutions and creating innovation hubs. Encouraging local innovation will ensure that AI solutions are contextually relevant and can address Nigeria's unique challenges.

8. Development of Ethical and Regulatory Frameworks
Create ethical guidelines and regulatory frameworks that govern the development and use of AI in public services. These frameworks should address issues such as accountability, transparency, and the potential social impacts of AI technologies.

9. *Monitoring and evaluating AI implementations*
Establish mechanisms for the ongoing monitoring and evaluation of AI projects to assess their effectiveness, identify areas for improvement, and ensure that they align with national objectives. This process should involve regular feedback from stakeholders including citizens.

10. Ensuring Inclusivity and Equity
AI implementation should be designed to be inclusive, ensuring that all citizens, regardless of their socioeconomic status, have access to the benefits of AI. Special attention should be paid to bridging the digital divide and promoting gender and diversity inclusion in AI development.

5.2 Limitation
This study examined the current state of AI in Nigeria's public services and governance by identifying the key barriers that affect the adoption and implementation of AI. The study made progressive

recommendations that integrated the application of artificial intelligence in public services and governance in Nigeria.

5.3 Suggestion

For AI to be a transformative force in Nigeria's public service and governance, it is essential that its implementation be carefully planned, ethically sound, and inclusive. By adopting a strategic approach that addresses both opportunities and challenges, Nigeria can leverage AI to improve governance, enhance public service delivery, and drive national development.

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