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Artificial Intelligence and Public Administration, In Nigeria: Challenges and Vulnerabilities

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Abstract

The new wave of technology is the newbie “Artificial Intelligence” that is felt in every sphere of human life. It is evident that Artificial Intelligence and e-governance are increasingly recognized as essential pivotal tools for enhancing public administration in countries like Nigeria. This paper relies on secondary data, while examining the integration of AI and Nigeria's public administration framework alongside e-governance, focusing on how the efficacy of government and service delivery can significantly increase. AI has created a viable platform through which Nigeria stands to gain efficiency, transparency, time management, etc. All these can be achieved as a result of automated routine processes, real-time data analysis for decision making, personalized services offered to citizens, and enhanced government responsiveness. However, the adoption of AI in Nigeria is saddled with lots of challenges which include skill gaps, unreliable internet and electricity supply, shortage of professionals capable of managing AI applications and technologies, etc. This paper highlights current AI applications in Nigeria's e-governance such as biometric verification in elections and AI-powered chat box in tax administration alongside divulging infrastructural deficit such as unreliable internet and electricity supply. It also spells out recommendations that will significantly overcome the existing challenges and cut down its vulnerabilities to the barest minimum in order to harness the full potential of AI in Nigeria

Keywords: Artificial Intelligence, Public Administration, E-Governance, Efficiency, Transparency.

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Introduction

Sophistication in Artificial Intelligence (AI) has garnered interest from researchers and practitioners, unveiling a wide array of opportunities for its application in administrative processes and e-governance. However, the impact of AI's use in public administration processes shows that the benefits gotten therein require in-depth addressing of key challenges, including data privacy concerns, inadequate data, algorithmic biases, etc. AI encompasses a wide array of technologies such as machine learning, which allows systems to improve their performance based on experience; natural language processing (NLP), which enables machines to understand and generate human language; and robotics, which automates physical tasks that were traditionally performed by humans (Russell and Norvig, 2016). Public administration, which refers to all the activities that come under government affairs, and AI technologies are supplementary and central components that can fundamentally alter the landscape of governance. For instance, machine learning can be used to analyze trends in public data, providing insight to both government and citizens. Natural language processing facilitates better communication between government agencies and citizens via AI-driven chatbots and virtual assistants that can handle a wide range of tasks. Robotics, on the other hand, can streamline operations in areas like document management and public service delivery, thus enabling efficient use of resources. E-governance, which refers to the use of Information and Communication Technology (ICT) in governance operations to improve service delivery and transparency, has been a pivotal point of public administration reform in Nigeria for over two decades. The implementation of e-governance initiatives in Nigeria has been driven by the need to address serious issues such as inefficiency, corruption, and the gap between government and citizens' expectations (Aldow, 2004). According to Heeks (2002), these initiatives include digitalization of government records, introduction of online platforms, etc. To facilitate feedback and public engagement, however, all these have been encountered with some achieving a level of significant achievement while others have failed due to challenges that abound. For instance, in Nigeria these challenges range from digital illiteracy, lack of infrastructure such as limited electricity and weak internet services. All these challenges have also been a significant barrier to the full potential of AI within the domain of public administration in Nigeria.

The integration of AI into e-governance represents the next phase of evolution of public administration in Nigeria and will offer full potential to overcome some of the aforementioned

challenges. The effectiveness of e-governance by automating tasks, enabling sophisticated data analysis, and improving public service delivery through the use of AI platforms, transparency, accountability, quality of service, and efficiency will be evident in the Nigerian administrative system.

This paper therefore seeks:

- (i) To examine the potential benefits of Artificial Intelligence (AI) to public administration in Nigeria.
- (ii) To analyze existing case studies of AI applications in public service delivery in Nigeria.
- (iii) To highlight key challenges hampering the full adoption of AI in the public sector of Nigeria.
- (iv) To propose strategic recommendations that will enhance AI integration in e-governance and public administration in Nigeria.

Theoretical Framework

The theoretical framework of this paper can be examined through the lens of Modernization Theory, which offers an insight into the implications of technological shift. The theory posits that adoption of modern technologies is essential and effective for development and governance. This theory suggests that the integration of AI into public administration is a necessary step for Nigeria to modernize its governance systems as well as its modus operandi (Inglehart and Welzel, 2005). Standing from this perspective, the adoption of AI won't be seen or used as a tool but as a catalyst to enlarge the coast of socio-economic development. This will go a long way to enable efficient administrative process in governance which will lead to economic growth, social development and political stability.

Furthermore, there will be an increasingly creation of jobs, foreign direct investment influx etc. while addressing issues such as bureaucratic redtapism, corruption, inefficiency, lack of transparency etc..

The potential of AI to transform public administrative processes including e-governance is supported by empirical evidence from other countries like USA, UK, China, Estonia, Singapore etc that have successfully integrated AI into their public system administration. Modernization theory which greatly supports the use of modern and sophisticated technologies like AI being

integrated into governance will not only change how government services are delivered but will alter the relationship between the state, citizens, and other stakeholders. For instance, the full adoption of AI could lead to the centralization of decision making processes with government, as AI systems often require and depend on large-scale data collection and analysis. On the other hand, the use of AI could also decentralize certain aspect of government by enabling localized and personalized delivery, thereby increasing citizen engagement and participation.

Methodology

This study employs a systematic qualitative research method, primarily utilizing secondary data collection and analysis to explore Artificial Intelligence (AI) and public administration while examining the challenges and vulnerabilities that abounds. Relevant literature, academic journals and the internet were used and reviewed to provide a comprehensive understanding of the subject.

Discussion

Artificial intelligence has emerge as a transformative force across various sectors, including public administration, where it is increasingly being integrated into e-governance system to revolutionize the way government operate and interact with citizens. In recent times, the adoption of Artificial Intelligence (AI) in public administration is gradually gaining traction, primarily driven by the Nigerian government's commitment to heavily leverage digital technologies for improved governance. The National Information Technology Development Agency (NITDA) has been at the forefront of these efforts while spearheading initiatives aimed at incorporating AI into various aspects of public administration. However, despite the recognized potential of AI to enhance efficiency and transparency of governmental activities, its full implementation within the Nigerian context is still at its nascent stage. The country's journey towards integrating AI into its e-governance frameworks has experienced promising developments and substantial challenges that need to be addressed for the realization of the technology's full potential. The theoretical relevance of Artificial Intelligence in public administration lies in its capacity to redefine traditional paradigms of governance, ethics, and decision making.

To explore the current state of AI integration into e-governance in Nigeria, it is paramount to examine specific case studies where AI technologies have been implemented with varying degrees of success. One of the prominent examples is the use of biometric technology by the Independent

National Electoral Commission (INEC) for voters' registration and verification. This application has been transformative, enhancing credibility and transparency in the electoral process in Nigeria. Utilizing AI-powered biometric systems, INEC has significantly improved the accuracy of voter data, thereby reducing duplication of registrations and minimizing electoral fraud. It has furthermore facilitated more efficient and reliable voter verification on election days, contributing to credible and smoother elections (INEC, 2019). All these successes underscore the potential of AI to address longstanding challenges in Nigeria's electoral system, thereby strengthening democratic processes.

Another noteworthy case study is the deployment of AI-driven chatbots by the Federal Inland Revenue Service (FIRS) to assist taxpayers in navigating the complexities of the taxation system. These chatbots utilize natural language processing and machine learning algorithms that are capable of responding to inquiries, providing information on tax regulations, filing procedures, and others etc. Moreover, the use of AI chatbot has contested frequently asked questions, allowing FIRS staff to focus on more complex tasks that require human judgment, which has significantly improved efficiency of the service and reduced wait time for taxpayers and increasing compliance rate of citizens fulfilling their obligations (FIRS, 2020). Ammani et al (2021) pointed out that, telemedicine platforms and AI-powered diagnostic tools have been tested in different parts of Nigeria, enhancing healthcare in remote areas. Nigerian hospitals have implemented AI technologies such as DeepMind's eyes disease detection system.

Adebayo and Adebisi (2021) explored the impact of AI in Nigerian public administration, particularly in automating government activities for faster responses and better compliance. Transparency in government is a cornerstone of good governance and a critical pillar in combating corruption, which is a pervasive issue in Nigeria. AI offers powerful tools that can enhance transparency by enabling real-time monitoring and analysis of government activities, thereby reducing corruption. One of the key ways that AI can improve transparency is through the detection of anomalies in financial transactions through machine learning that can analyze large data sets to identify unusual patterns or spending trends that indicate fraud or corruption. By providing real-time alerts, AI can enable government auditors and anti-corruption agencies to intervene promptly and prevent further financial malfeasance (Sharma et al., 2017). On the other hand, AI can be instrumental in enhancing the integrity of public procurement processes by creating more

transparent and accountable contracting systems. AI can monitor procurement processes with real-time access to government spending, project implementation, and to analyze submitted government contract while detecting irregularities or signs of collusion among bidders. By automating the evaluation of bids and ensuring that the procurement process is conducted in a fair and transparent manner, generally, AI reduces the tendency of favouritism which stems from corruption that have plagued public procurement in Nigeria, which strengthens e-governance in Nigeria.

AI enhance citizen engagement which is the fundamental aspect of democratic governance which ensures that government policies and services are aligned with the needs and preferences of the public. Through the use of AI-powered platforms such as chatbots and virtual assistants, guidance and accurate information on government services are disseminated. These platforms can be integrated into government official websites, mobile apps and social media platforms, allowing citizens to access information 24 hours a day. Furthermore, AI chatbot can translate information into multiple local languages and accessibility for people with disabilities, health care services. Even commercial banks are not left out, as these provide convenience and reduce physical presence in government offices. This not only improves convenience and accessibility but reduces workload on government employees, allowing them to focus on more complex tasks (Davenport and Ronanki, 2018). Since Nigeria as a country is made up of diverse ethnic groups with some knowing just their native tongue, AI-powered platforms make it easier for semi-literate and illiterate to interact with government services using their native languages. This inclusivity ensures that all citizens, regardless of their literacy level or language proficiency, have equal access to government services and can participate in governance processes. While the potential benefits of AI are significant, the challenges must be carefully managed to harness its full potential in public administration in Nigeria. The ethical challenges surrounding Artificial intelligence in public administration have become a major concern among government scholars. Sun and Medaglia (2010) argued that, opacity of algorithmic models often obscures accountability lines, complicating citizen's ability to contest administrative decisions.

Some of the challenges and vulnerabilities are discussed below:

Skill gap: This is the most significant challenge to the successful deployment of AI to the Nigerian public sector. AI is a highly specialized field that requires the knowledge and management of AI

platforms. This creates a demand for skills in areas like data science, software engineering, etc. Nigerian educational institutions lack the capacity to produce graduates with these skills, leading to a significant gap between the demand for AI expertise and available supply (UNESCO, 2021). This skill gap is further exacerbated by the “brain drain” phenomenon, where highly intelligent leave Nigeria often for more developed countries. This phenomenon reduces the talent pool available to support AI initiatives in the country. However, this challenge can be mitigated through investing in education and training programmes that can build local capacity in AI while partnering with international organizations and private sector to bridge these gaps.

Infrastructure deficiencies: The successful deployment of AI in public administration heavily relies on robust and reliable technological infrastructure. Unfortunately, inadequate and unreliable electricity supply and internet connectivity remain critical challenges in Nigeria. The infrastructure is often inadequate to support the widespread use of AI, especially in rural and remote areas of the country. Access to internet and electrical supply is limited, which hampers the effective operation of AI systems (World Bank, 2020). Furthermore, the lack of adequate data centers and cloud services in the country can also impede the procurement and deployment of AI solutions. The large volume of data required for AI applications may not be readily available to scale up AI operations across different sectors of public administration.

Ethical and legal concerns: Another challenge that needs to be carefully addressed is ethical and legal concerns surrounding AI. One of the key ethical challenges associated with AI is the issue of privacy and data security. Generally, AI systems require access to vast amounts of personal data to function effectively, which raises concerns on how data is collected, stored, and used. There is risk that AI systems could be used in ways that violate individuals’ privacy or expose sensitive information to unauthorized access (Ekekwe, 2019). Moreover, AI systems can also perpetuate existing biases, particularly if the algorithms used to develop these systems are biased or based on incomplete data (Binns, 2018). These could lead to discriminatory outcomes in areas such as social welfare, law enforcement, etc. where AI driven decisions may disproportionately affect vulnerable groups. To mitigate these challenges and vulnerabilities, it is essential to establish a robust legal framework that governs the use of AI in public administration which will go a long way to ensure that technology deployment is both ethical and equitable for all.

Conclusion

Succinctly, the integration of AI into every sectors of public administration in Nigeria presents a significant opportunity to transform public administration in Nigeria. However, realizing this potential requires cautious consideration of the challenges and vulnerabilities associated with AI as well as strategic investments in professional skills, infrastructure, legal and regulatory frameworks.

Recommendation

To fully realize the benefits of AI in public administration in Nigeria, Nigerian policymakers and key stakeholders should consider the following recommendations:

1. There should be strategic implementation towards human capital development involving comprehensive training programs to equip the public sector employees with the skills necessary to manage and utilize AI technologies effectively.
2. There should be investment in digital infrastructure such as reliable internet connectivity, stable electricity supply, and secure data centers to support the deployment of AI solutions in the public sector. These investments should reach every region, including remote areas, to ensure equitable access to e-governance services.
3. There should be an establishment and enforcement of a robust legal and regulatory framework that address the ethical, legal and social challenges posed by AI. This framework should include a logarithmic transparency, data protection, liability, for AI decisions etc.
4. There should be an encourage collaboration between public (government) and private sector to drive innovation in AI and e-governance. Public-private partnership can leverage the expertise and resources of both sectors to develop AI solutions that are tailored to the unique Nigerian challenges and priorities.
5. Government and its agencies should foster public awareness and engagement about AI and its implication for governance in Nigeria. These campaigns should be launched towards building public trust in AI technologies, by propagating transparency, accountability, and equity and citizen participation in the deployment of AI in public administration in Nigeria.

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