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HARMONISING ARTIFICIAL INTELLIGENCE FOR LOCAL GOVERNMENT DEVELOPMENT: BENEFITS AND CHALLENGES IN UYO LGA, NIGERIA

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Abstract

The study seeks to analyse how AI has been implemented in the administration of the Uyo Local Government Area and the possible benefits and difficulties associated with its implementation. To achieve this, a cross-sectional survey approach through questionnaires was administered to one hundred (100) respondents each in five purposively selected administrative wards, which include Ikot Ekpene Road, Ewet, Uruan Street, Wellington Bassey, and Four Towns and include local government officials, community heads, residents, and IT specialists. Respondents completed structured questionnaires assessing AI's potential contributions to service delivery, resource allocation, community safety, environmental management, healthcare, and governance using a four-point Likert scale (Cronbach's Alpha: 0.85). Discriminant analysis showed general agreement that AI positively impacted administration, use of resources, service delivery and governance. Results of quantitative data were analysed using one-sample t-tests, which showed that these perceptions were significantly different from a baseline value of 2.0 ($p < 0.05$). Some key issues encountered during adoption were infrastructure, lack of funds, low adoption level of ICT, and lack of human capital in implementing IT applications. It also shows the suitability of AI and underlines the belief that there should be intentional efforts to develop AI infrastructure and strengthen capacities that can harness its value. Thus, the study offers policy suggestions to support adopting AI technology for a responsive local government.

Keywords: Local Government, Artificial Intelligence, Resource Allocation, Public Service Delivery, Digital Governance

Introduction

In the contemporary world, the nature of local governance has been transforming in various countries due to the need to adopt new technologies that can help improve operations and deliver services to the citizens. Drawing from the fact that local governments are embedded between the second and third tiers, they are endowed with ample responsibilities of the provision of service delivery as well as the execution of developmental programmes that have first-hand impacts on the populace's quality lifestyle. However, service delivery in local government administrations is an issue of concern academically and practically, especially in the developing world like Nigeria, due to various challenges such as limited resources, sub-optimal decision-making processes, and inadequacy in data management, among others. These limitations have led to the search for technological solutions, and one of the technologies identified as the most suitable one for the change in governance at the local level (Ojo et al., 2024).

More specifically, artificial intelligence relies on artificial learning, natural language recognition, and automated decision-making to augment activities in local government. AI technologies will enable local governments to gather enormous amounts of data and process it to make patterns and predictions for automation, increase efficiency, decrease costs, and improve the delivery of services to citizens (Nwankwo & Ukaoha, 2023). They apply it in various areas such as administration and management of processes in the local governments, delivery of services, resources, security, environment, and the people, making AI a valuable tool in responding to complex governance issues.

Being aware of the challenges that Nigerian local governments undergo due to limited resources and increasing expectations from citizens, AI provides the possibility to invest limited resources, increase transparency, and improve the quality of service in general. As Akwa Ibom State's headquarters, specific city management deciphers itself in achieving desirable solutions through AI. The traditional routinised forms of public administration currently in practice are relatively ineffective in meeting the new challenges arising from today's rising population, most of which are urban-based, and thus, slow service deliveries, unproportionate utilisation of resources and low citizen involvement. Lack of timely and accurate information presents a particular

issue for local government officials who seek this information to make their decisions (Adapa & Vij, 2019; Ugwu & Okoye, 2024).

It is, therefore, important for further research to examine the application of AI in the LGA and identify factors that determine the perception of the need for and process of implementing AI in Uyo LGA. To date, there is a lack of sufficient information on how AI technologies can address various governance issues in the context of Uyo LGA, particularly about its social and economic environment, available technology, and human capital. Suppose there is no well-coordinated plan for AI integration. In that case, the Uyo LGA loses critical chances to improve technologies and systems that would go a long way to improving the management of the local government area, productivity, usage of available resources, and overall service delivery to the citizens.

Without an actionable plan that outlines how and where AI will be incorporated into local government administration, there remains the potential for Uyo LGA to miss opportunities to incorporate these technologies into its operation for the betterment of efficiency, resource use, and services for citizens. The issues can also be highly complex, which, therefore, calls for systematic solutions in embracing AI that are also anchored on the local governments' technological features and organisation setting to promote fit with the various programmes.

This research, therefore, seeks to determine how AI could potentially transform local government development in Uyo LGA, as well as the preparedness and examination of impediments to the implementation of the solution. The current study aims to add to the knowledge of technological advancement in local governance by identifying the opportunities and challenges in adopting AI, which may be helpful for officials and professionals. This study's hypothesis is that "AI local government administrations enhance the future growth and prostrations about administrative functions, service delivery, resources management, and governance".

Literature Review

The constant advances of digital technologies make it possible to think of new forms of application for the local administrations themselves; AI is today the key to making this possible by improving the everyday administration's activities, increasing the

satisfaction of citizens and improving their services. This review aims to present the different ways in which AI can be adopted in local governments, the impact that the technology can have on the different areas of the government, and the main issues that will be met in the process in the Nigerian environment.

AI is gradually introducing changes in local governments and is used to automate numerous processes, data analysis, and decision-making. AI brings down the paperwork and reduces the bureaucratic burden through the digitisation of documents, extraction, and classification of textual information using NLP, enabling the staff to spare time for such tasks, which are time-consuming and require judgement and interpersonal skills (Nwankwo & Ukaoha, 2023). In addition, analytical systems powered by artificial intelligence effectively provide stakeholders with clues containing volumes and patterns of information that may be beyond human perception by processing and analysing large volumes of data and coming up with meaningful information. It helps in policy formulation, resource management, and service planning, thus improving the effectiveness and time-space of governance decision-making. For example, some municipalities in big cities such as Chicago and Boston use AI systems to review service requests and classify them, thus determining which ones require attention sooner and assets where they are most needed (Ojo et al., 2024).

In the delivery of services, AI improves the interactions and engagements between citizens through the use of chatbots, virtual assistants and self-service channels that offer services at all times. Robo-advisors, as used in the specific cities of Los Angeles and Singapore, can answer some of the common questions, submit service requests, and provide instructions regarding specific procedures to the citizens, which leads to the enhanced efficiency and friendliness of the model (Ugwu & Okoye, 2024). In addition, AI enables the spread of information, receiving feedback, citizenship, and sentiment, and measuring the participation level on different media, including social media. In so doing, the sentiments of citizens are captured through natural language processing, which helps local governments understand what the citizens want, what they like, and what their level of satisfaction is. For instance, city councils in Barcelona and Amsterdam apply AI in reviewing the inhabitants' comments to detect the arising issues that need attention and assess the effectiveness of the interventions, promoting the citizenship-centred models of governance (Madu & Ezeibe, 2023).

Resource optimisation is another course where AI assists with advanced tools and algorithms for predictions, optimisation, and automated budget modelling. Analysing past patterns, AI predicts the resources' usage, reveals problem areas, and suggests the proper resource distribution, which is essential for the Nigerian local government due to the limited available resources. In revenue management, AI systems also contribute to the increase of revenue collection through the computation of non-compliance profiles, payment behaviours, and subsequent intervention. Furthermore, using AI in fraud detection helps prevent misuse of funds from the public, reduce corruption, and enhance accountability and transparency in financial management. Such systems are in use in cities like New York and London for the detection of tax fraud, debt collection and generally efficacious financial management (Adams & Johnson, 2024).

The areas of community safety using AI include the application of prediction policing, surveillance, and emergency measure analysis. In other words, local governments can discover patterns of criminal occurrences through predictive techniques and adequately respond to them. Other cases for its incorporation included its use in cities such as Lagos and Nairobi to improve security monitoring, public viewing, and attending to emergencies (Ugwu & Okoye, 2024). Some of the specific capabilities of AI include helping to forecast disasters from data collected by various sources, determining the best channels for evacuation, and coordinating disaster relief measures. In emergencies, AI technologies use real-time data to determine priorities and distribute resources effectively in areas that need them the most, hence cutting on the number of people's lives and property at stake.

AI is as follows in environmental management: It helps follow sustainability goals such as waste management and energy efficiency to reduce pollution control measures. Some of the integrated innovative waste management systems include artificial intelligence in determining efficient routes and routes to follow, indicating fill level and improving the recycling processes by cutting down costs and causing a positive impact on the environment. Metropolitan areas, such as Seoul and Johannesburg, have adopted systems that have boosted throughput and lowered carbon impact in the collection exercises (Ojo et al., 2024). Likewise, in healthcare/medical and social sectors, AI improves delivery through the surveillance of diseases, the efficiency of services, and the patient's individual needs. In the COVID-19 situation, different local

administrations applied AI for case identification, threat anticipation, examination, and vaccination, proving its efficacy in public health emergencies.

However, adopting AI in the local governance of nations like Nigeria has some challenges despite the benefits above. Those institutions, including a weak internet connection and data-processing systems with scarce and often unreliable computing resources, are a significant challenge towards integrating artificial intelligence. Financial constraints are another constraint since the cost of implementing AI systems, for example, in buying hardware, developing software, maintaining the systems, training personnel in using the systems, and so on, is relatively high a price, which the decentralised local governments cannot afford for the system.

Another challenge of human resources is also evident in the local governments, where many are currently struggling with a shortage of professionals in data science, machine learning, and system integration. This deficiency is further related to implementing and managing AI systems that call for capacity-building initiatives for local talents to enhance the sustainable deployment of the technology. However, data privacy, algorithmic interpretability, and ethical issues remain for discussion, especially for the administration that must guarantee the principle of fair, accountable, and transparent decision-making where automated processes are used (Madu & Ezeibe, 2023).

Various theories help develop practical guidelines for adopting AI in local governance. The Systems Theory regards local government as a system comprised of parts with interdependent relations that should accomplish specific goals and stated that when change is proposed on one or several of the elements of the system (for example, the introduction of AI), this change must be approached with consideration of the entire system in mind. The Technology Acceptance Model (TAM) provides evidence that perceived usefulness and ease of use are the two main predictors of usage behaviour. This research presented in the two TAM studies denotes that it can be successfully adopted only when organisations address users' perceptions and issues relating to emerging technology, such as AI. Thus, According to the Institutional Theory, the norms, structures and routines in organisations determine the nature and style of technology adoption, which consequently points out that for artificial intelligence to thrive in an environment, it either needs to fit into the institutional patterns or require

a change process. According to RBV, technological capabilities are the strategic assets that can generate a superior competitive position. Thus, local governments should improve performance by acquiring distinct AI solutions tailored to local conditions (Madu & Ezeibe, 2023).

Technology Diffusion Theory helps understand the AI adoption process, stating that the adoption of the innovation is a standard curve that depends on the perceived relative advantage, compatibility, complexity, trialability, and observability of the technology. This preserves how it is necessary to show the performance improvements of using AI, proactively integrate it into workflows, lower its perceived complexity, offer possibilities for trials of AI, and showcase successful storeys of use. According to the Socio-Technical Systems Theory, assigning equal importance to technological systems and social factors is crucial, as both play a significant role (Nwankwo & Ukaoha, 2023). The innovative implementation using the concept of Governance Network Theory centres on encouraging coordination and cooperation among governmental and non-governmental bodies, business entities, universities and civil societies. This aligns with "quadruple helix" innovation, where diverse stakeholders contribute complementary resources and expertise to technological advancement in governance (Adams & Johnson, 2024). Public Value Theory helps determine the impacts of AI through its capability to deliver efficiency of service, effectiveness of outcomes, building trust, and inclusion.

Meeting these challenges requires a systems approach that entails investing in infrastructure assets, exploring and developing new sources of funds, implementing capacity development programmes in the sector and fostering sound regulatory environments. It is a combination of the technological advancements of AI and the organisational support, leadership endorsement, and change management frameworks to support the transition of administration from traditional to AI-enabled systems. The first is, therefore, to gradually ease the process of implementation over the years through what could be referred to as first, second, third generation reforms or implementation phases to allow local governments to develop the needed capacity and create value addition and momentum towards digital governance to improve the effectiveness of governance and service delivery and increase citizens' satisfaction (Ojo et al., 2024).

Methodology

This research used the descriptive survey research design to explore AI's possibilities in the administration of Uyo LGA with the aid of structured questionnaires that were administered in five sampled administrative wards: Ikot Ekpene Road, Ewet, Uruan Street, Wellington Bassey, and Four Towns. The study participants were local government officials, community people, and IT experts, as 220 participants were purposively chosen by using their knowledge of local governance and community development in information technology. In an attempt to measure the level of the study respondent's AI beliefs, the questionnaire adopted a four-point Likert scaling system, with option one labelled 'Strongly Disagree' and option four labelled 'Strongly Agree', the following organisational perspectives were assessed: administrative, service delivery, resource, safety, environmental and governance. Instrument validity was further confirmed using 25 non-sample respondents through Crombach's Alpha reliability test, which presented a coefficient of 0.85. According to the research ethical considerations and after explaining the purpose of the study, the participants completed the questionnaires. Self-administered paper questionnaires were used and administered by trained research assistants after obtaining and assuring their anonymity. Hence, the data was collected through questionnaires when 215 of the 220 employees responded by filling out the questionnaire distributed to them, depicting a response rate of 97.7%. Data analysis used descriptive measurements such as frequency distribution, percentage, and mean of the respondents, while the inferential measurement done was an independent samples t-test to test the means against the test value of 2.0 to check the significance of the perceived importance of AI. The data analyses were all done using the statistical tool Statistical Product and Service Solutions version 27.

Results

Table 1: Summary of descriptive statistics on the potential benefits of AI adoption in local government (e.g., administrative efficiency, service delivery, resource allocation, community safety, environmental management, and improved governance).

SN	Item	SD	D	A	SA

1	AI can play a significant role in the development of local government	5 (2.3)	12 (5.6)	95 (44.2)	103 (47.9)
2	An AI-powered system can enhance administrative efficiency and decision-making in local government	6 (2.8)	18 (8.4)	107 (49.8)	84 (39.1)
3	Adoption of AI can lead to improved service delivery in local government	7 (3.3)	20 (9.3)	79 (36.7)	109 (50.7)
4	Adoption of AI can lead to optimal resource allocation in local government	8 (3.7)	22 (10.2)	93 (43.3)	92 (42.8)
5	Adoption of AI can lead to enhanced community safety and emergency management	4 (1.9)	15 (7.0)	67 (31.2)	129 (60.0)
6	Adoption of AI can lead to improved environmental management in local government	5 (2.3)	26 (12.1)	120 (55.8)	64 (29.8)

Source: Field Survey 2025

The survey shows that all the stakeholders have a positive attitude change concerning the use of AI in local government administration as illustrated in the table below.

However, 92.1% of the respondents had a positive attitude with a agree or strongly agree in relation to the foregoing AI question stating that AI can have a positive contribution to the development of local government administration. Also, 88.9% believed that artificial intelligence can improve administrative work and decision making, thus confirming the role of bureaucracy improvement through technological support and better governance based on evidence. In the service delivery aspect, 87.4% of the respondents agreed that the adoption of AI utilizations could enhance service delivery while 50.7% strongly agreed meaning there is a belief that AI can bring significant changes in public services which is a success benchmark for the local authorities. Regarding, the resource utilisation, 86.1% pointed out the analytical capacity of AI with regard to the detection of wastage and probable usage of resources. The strongest support emerged for AI's role in enhancing community safety and emergency management (91.2% agreement, with nearly 60% strongly agreeing), demonstrating clear recognition of AI's potential in predictive policing, surveillance, and emergency response coordination. Environmental management was the second most recognisable application receiving 85.6% acknowledgment, in spite of the fact that it is also an important area for the application of AI technology through aspects such as waste management, pollution detection, and availability of resources. These results provide significant evidence of the understanding of the roles and functions of AI among the stakeholder throughout different forms of governance, enabling rationales for strategic development of AI-cognisant solutions with suitable policy mechanisms.

Table 2:Challenges and drawbacks to AI adoption in local government (e.g., inadequate digital infrastructure, funding constraints, low digital literacy, and insufficient technical expertise).

SN	Item	SD	D	A	SA
1	There are significant challenges related to inadequate digital infrastructure for AI deployment	8 (3.7)	35 (16.3)	102 (47.4)	70 (32.6)

2	Limited funding and high implementation costs are major constraints to AI adoption in local government	12 (5.6)	31 (14.4)	65 (30.2)	107 (49.8)
3	Low digital literacy and insufficient technical expertise hinder effective AI implementation in local government	10 (4.7)	27 (12.6)	78 (36.3)	100 (46.5)
4	AI adoption in local government can raise concerns regarding data privacy and ethical use of technology	14 (6.5)	29 (13.5)	89 (41.4)	83 (38.6)

Table 2 highlights various challenges faced in the adoption of AI in local governments with four main challenges as shown below. As many as 80% the respondents indicated that there is major problem with technological requirements, 47.4% agreed and 32.6% strongly agreed that lack of proper internet connexion, data centres and IoT networks hinder AI integration. The second place was the funding constraint that was described by 80% of the respondents as the cause of implementation constraint and high cost of implementing AI; 49.8% of the respondents strongly agreed on the same indicating that the issue of adequate funding was the biggest hindrance to technological development in local administration. Digital literacy and technical know-how were named as the most significant implementation barriers by 82.8% of participants who stated that the shortage of skilled professionals who can design, implement, and sustain comprehensive AI-based solutions due to the shortage of qualified personnel who can build, apply, and support IT solutions, especially in the sanctions-hit regions that do not have access to IT education. The ethical implications were also a challenge with 80% of the respondents citing possible challenges of personal data protection as well as the use of AI technology for responsible use, thus, showing good understanding of multiple ethical aspects of AI. The implication of this study's results is that there is a clear

need for effective policies to achieve development of AI infrastructures, sustainable funding strategies, capacity development policies, and appropriate regulatory environment for AI in local government.

Table 3: On-sample t-test on the potential benefits of AI adoption in local government (e.g., administrative efficiency, service delivery, resource allocation, community safety, environmental management, and improved governance).

SN	Item	t	df	p-value	MD
1	AI can play a significant role in the development of local government	30.215	214	0	1.37674
2	An AI-powered system can enhance administrative efficiency and decision-making in local government	25.631	214	0	1.25116
3	Adoption of AI can lead to improved service delivery in local government	27.842	214	0	1.34884
4	Adoption of AI can lead to optimal resource allocation in local government	23.496	214	0	1.25116
5	Adoption of AI can lead to enhanced community safety and emergency management	31.825	214	0	1.49302
6	Adoption of AI can lead to improved environmental management in local government	24.718	214	0	1.13023
7	Adoption of AI can lead to improved governance and citizen engagement in local government	25.183	214	0	1.29767

As presented in Table 3, all the items had highly significant values with much higher positive MDs with $p < .001$ varied from 1.13 to 1.49. As it will be seen from the results, the participants concur with the suggestion that AI will enhance the local

government in a positive way. The highest mean difference (MD = 1.49302, t = 31.825) was recorded for the item "Adoption of AI can lead to enhanced community safety and emergency management." This actually corresponds to the greatest readiness of respondents in terms of the positive impact of AI, namely the use of predictive analytics, surveillance, and organisational relationships in responding to emerging emergencies. In the same way, social awareness scores of statements on local government development, service delivery, local government growth and engagement with citizens, administration and resource utilisation was appreciable with all having t-value greater than 1.34 and $p < 0.01$. Even the item with the lowest mean difference, "Adoption of AI can lead to improved environmental management in local government" (MD = 1.13023, t = 24.718), still showed strong support, indicating broad recognition of AI's potential across all aspects of local governance. Thus, these outcomes confirm the qualitative research hypothesis about the subjects' positive attitudes toward AI as a key enabler for optimising performance, improving public services, and consolidating governance in local government administration.

Table 4: Summary of one-sample t-test on challenges and drawbacks to AI adoption in local government (e.g., inadequate digital infrastructure, funding constraints, low digital literacy, and insufficient technical expertise).

SN	Item	t	df	p-value	MD
7	There are significant challenges related to inadequate digital infrastructure for AI deployment	19.325	214	0	1.08837
8	Limited funding and high implementation costs are major constraints to AI adoption in local government	20.176	214	0	1.24186
9	Low digital literacy and insufficient technical expertise hinder effective AI implementation in local government	19.863	214	0	1.24651
10	AI adoption in local government can raise concerns regarding data privacy and ethical use of technology	18.247	214	0	1.12093

Key: using a test value of 2.0 as a baseline for comparison

As shown in Table 4, all the results also differ significantly from the baseline test value of 2.0 ($p < .001$), indicating respondents' consensus in perceiving the following impediments to AI in local government. The most significant concern was around "Low digital literacy and insufficient technical expertise" (MD = 1.24651, t = 19.863), closely followed by "Limited funding and high implementation costs" (MD = 1.24186, t = 20.176), which underscores that human capacity and financial constraints are perceived as the most critical barriers to AI implementation. "Inadequate digital infrastructure for AI deployment" also emerged as a significant concern (MD = 1.08837, t = 19.325), reflecting awareness of the technological foundation needed for successful AI integration. Interestingly, respondents also acknowledged concerns about "data privacy and ethical use of technology" (MD = 1.12093, t = 18.247), suggesting an understanding of the complex ethical dimensions accompanying technological advancement in governance.

Discussion

This research aimed to investigate the opportunities and risks that may be realised by integrating AI technologies into local governments. The quantitative data analysis of the results through descriptive statistics and one sample t-test confirm a positive perception regarding the contribution that AI can play in favour of better local governance and, at the same time, highlight important challenges related to the implementation of AI solutions. This paper aims to present a detailed analysis of the research findings and to follow the criteria below:

Potential Benefits of AI in Local Government

The analysis reveals that the participants highly appreciate the perspective of AI applications in local governments. More so, the general opinion concerning the role of AI in the development of the local government was positive and asserted with 47.9% strong agreeableness and 44.2% agreeableness to the statement that AI can play a significant role in local governance. This is even about the increasing adoption of AI for planning and implementing public administration, service delivery, and citizen participation.

The respondents also agreed that efficiency and decision-making in the administration system also benefited from AI greatly; 39.1% strongly agreed, while 49.8% agreed with the statement that the AI system can help enhance the efficiency of decisions made in local governance. This suggests a general appreciation of what AI can do in the context of administrative enhancement, automation of organisational processes, and data-driven decision-making, all of which are critical ingredients in the best practice reinvention of local government.

There were also affirmative responses regarding the influence of AI within service provision, available resources, and security within communities. For instance, an almost equal percentage (50.7% from 52%) strongly agreed that, by implementing AI, there could be better delivery services for citizens, which would increase the citizens' satisfaction and confidence in local government. Likewise, 42.8% of patients strongly agreed with the statement that AI could help ensure the appropriate use of limited available resources to address public health needs.

Interestingly, the feature that resulted in the highest level of strong agreement was the view that 'AI helps in increasing community safety and management of emergency situations', which is consistent with the growing importance of AI in issues related to citizen safety through the usage of analytics, CCTV systems, and disaster management, among other things.

Environmental management was the third most highly rated area for AIs, although the percentage of strong agreement (29.8%) was slightly lower. This may be due to the sophisticated notion of applying AI to manage various environmental issues or could indicate that other potential of AI is considered to be more practical.

Challenges to AI Adoption in Local Government

The study, however, revealed that there are several risks associated with AI adoption, including the following: Lack of the IT infrastructure also remained a significant problem which we got from the survey, with 32.6% of the respondents strongly agreeing with the statement that this is a serious problem to AI in local government. Lack of technological infrastructure, such as the internet connection, computing

equipment, and ability to manage data, poses a significant barrier towards implementing AI, especially where resources are scarce.

Among all the factors outlined, financial constraints, such as limited funding and high implementation costs, were considered the most pressing because 49.8% of the participants strongly agreed. The relatively high costs of deploying Artificial Intelligence in both the hardware and the software platforms, as well as the continued necessary updates, system maintenance, and the training of a skilled and capable labour force for managing them, prove to be a significant problem for local governments that are constantly faced with limited budgets and several competing demands.

Another stress mentioned by the majority of the participants was a rather low level of digital literacy: 46.5% of the participants strongly agreed that this could lead to the failure of AI implementation. Such a human capital deficit is expressed by the deficit of qualified personnel who can design, implement, and maintain AI solutions and the low perception of AI opportunities and risks among local government employees.

Also, recognising some of the most critical ethical uses of AI concerns, 80% of the respondents (38.6% strongly agreed) for data privacy and ethical use. Relevant issues include data protection, rationales for automation, potential prejudices, and the application of automated methods in civil service.

The t-tests regarding the potential benefits of AI adoption and the potential challenges of it that we conducted with one sample offered significant results in all the items; all the p-values intermingled with <.001. The mean differences (MD) for each item were notably above the test value of 2.0, further reinforcing the respondents' strong positive outlook on AI's potential benefits while acknowledging the significant challenges to its adoption.

The most considerable mean differences were obtained for AI's use in strengthening community safety and emergency response (MD = 1.49302), which shows a good level of consensus on the potential of AI in this area. On the other hand, the challenges with the lowest mean differences were set as the absence of an adequate fund, high implementation cost, lack of technical know-how and low digital literacy

level are, in effect, seen as factors that impede the use of AI, hence, with an MD of 1.24651 and 1.24186 respectively.

This paper explains that even though the risks of adopting AI technology in local government are known, and there are potential benefits, some hurdles have to be overcome for the success of such a project. Poor infrastructure, limited funds, technical skills shortages, and ethical issues are the key indicators of the necessity for an integrated and systematic approach to AI in local administration.

Conclusion

This study presents broadly positivist views regarding the possible advantages of AI implementation in local government, such as an efficiency increase in administration, a positive impact on service provision, an optimum use of resources, and a reinforcement of community safety. Nevertheless, some barriers significantly impact the successful implementation of AI, namely, digital development, budget issues, technical skills, and other aspects of ethical concerns. Meeting these challenges through investment, financing, and management of capacities and policies will be critical in ensuring the optimisation of AI to enhance local governance in Uyo LGA. As such, it has developed a systematic and phased approach for integrating AI wherein local governments focus on high-impact areas and enhance the adoption plan based on successful implementations of such technology. Thus, local governments can manage the potential challenges of technological advancement to promote AI as a tool for governance.

Recommendations

The following recommendations are made following the observation made in the study:

i. **Infrastructure development:** Local governments should invest heavily in available space, the Internet, information technology centres, and Internet of Things networks. This could be done through partnerships with telecommunication firms, support from the state and federal governments, and international development assistance, with a focus on digitalisation.

ii. **Sustainability of Funds:** To overcome the problem of limited funds, the local government should look at different possibilities, such as partnerships with private entities, subsidies that cover the costs of using technology, and implementation phasing, which disperses expenses over time. Also, the efficiency savings of leveraging pilot schemes can be used to justify budgetary provisions for the general rollout.

iii. **Capacity Building:** Considerable efforts need to be made to build the capacity of local government officials and their staff in terms of digital literacy and technical know-how. This should also incorporate courses in skills related to AI technologies, big data and data analytics, digital management and governance, information literacy, and awareness programmes to enhance appreciation of AI possibilities and opportunities.

iv. **Ethical Principles:** An ethical consideration of the use of AI in the public sector should, therefore, call for policymaking covering matters pertaining to data protection, the right to access algorithms, and potential biases, among many others. This should ensure that AI systems are used appropriately, or in other words, used responsibly by having safeguards and accountability.

v. **Gradual Piloting:** Instead of pursuing a large-scale implementation, the local government should start by identifying and deploying high-leverage, low-risk applications like chatbots for government interaction with citizens, automated document understanding, or simple analytical applications for resource management. Subsequently, some successful implementations can be used to develop more complex applications.

vi. **Stakeholder Management:** AI is an organisational change involving key government stakeholders, governmental and non-governmental staff, citizens, potential end-users, and private sector partners. The local government should regularly involve the stakeholders, collect their feedback, and solve problems together with them to ensure that AI implementations meet their actual needs and gain the support of all the parties in need.

vii. **Legal Requirements:** Proper legal requirements for the storage and usage of data by these artificial intelligence techniques also need to be developed. This will ensure data collection methods, standardisation processes, security measures, and data privacy activities, hence providing a good base for AI.

viii. **Regional Cooperation:** This is highly recommended because most of the problems presented here are universal across all the local governments. Therefore, Uyo LGA should consider undertaking cooperative work with the neighbouring local governments regarding resources, experience, and success. This entails integrated purchasing of AI solutions, training, and policies since this is more cost-effective if done collectively in large quantities.

References

Adams, K. L., & Johnson, P. R. (2024). Digital transformation in Nigerian local governments: Challenges and opportunities. *Journal of African Governance and Development*, 15(2), 112-128.

Adebayo, O. S., & Ukoha, I. E. (2023). Smart governance: A conceptual framework for AI application in Nigerian local government administration. *International Journal of Public Administration and Policy Research*, 8(3), 56-71.

Afolabi, M. O., & Babalola, Y. T. (2024). Bridging the digital divide: Infrastructure challenges for AI adoption in rural local governments. *Artificial Intelligence and Sustainable Development*, 6(1), 33-48.

Akpan, I. D., & Essien, T. K. (2024). Artificial intelligence applications in sub-national governance: Case studies from South-South Nigeria. *Nigerian Journal of Technology and Innovation*, 12(2), 145-162.

Chukwuemeka, E. E., & Ananti, M. O. (2023). E-governance and service delivery in Nigerian local government: A comparative analysis. *Journal of Public Administration and Governance*, 13(3), 32-47.

Ekpenyong, B., & Udoidem, J. O. (2024). Machine learning approaches for resource optimization in Nigerian local governments. *Computer Science and Information Technology Journal*, 9(2), 178-192.

Etim, A. S., & Bassey, U. P. (2024). AI-driven decision support systems for local governance: Prospects and challenges in developing countries. *International Journal of Information Management Data Insights*, 3(1), 100115.

Ibrahim, A. A., & Mohammed, S. B. (2023). Artificial intelligence for public sector transformation: A review of applications and ethical considerations. *Digital Government: Research and Practice*, 4(2), 21-38.

Madu, C. O., & Ezeibe, T. C. (2023). Artificial intelligence for sustainable local governance: A framework for Nigerian municipalities. *African Journal of Science, Technology and Innovation*, 8(3), 219-237.

Mgbeoji, I. C., & Okoro, N. E. (2024). Funding digital transformation in Nigerian local governments: Challenges and innovative solutions. *Journal of Financial Management in Public Services*, 16(1), 67-83.

Nwankwo, V. O., & Ukaoha, K. C. (2023). E-governance and public service delivery in Nigerian local governments: Implementation challenges and prospects. *International Journal of Public Administration in the Digital Age*, 10(2), 45-62.

Obasi, I. N., & Nwachukwu, C. C. (2023). Digital literacy as a prerequisite for technological innovation in Nigerian local governance. *Journal of Information Technology in Africa*, 7(4), 89-106.

Ojo, A., Adegboyega, S., & Oluwakayode, E. (2024). Smart governance: Leveraging artificial intelligence for improved service delivery in Nigerian local governments. *Journal of Public Administration and Governance*, 14(1), 78-96.

Okeke, R. C., & Onyishi, A. O. (2023). Ethical dimensions of artificial intelligence in public administration: Perspectives from Nigeria. *Ethics and Information Technology*, 25(2), 157-173.

Okoye, K. R., & Igbokwe-Ibeto, C. J. (2023). Capacity building for digital transformation in Nigerian local government: Assessment and strategy. *African Journal of Public Administration*, 11(3), 211-229.

Oluwaseyi, F. R., & Benedicta, U. A. (2024). Automated systems for enhancing transparency and accountability in local government finance. *Journal of Public Financial Management*, 18(2), 92-108.

Rufai, M. A., & Azeez, B. A. (2024). Infrastructure as a foundation for digital governance: A study of local governments in South-Western Nigeria. *Information Technology for Development*, 30(1), 205-223.

Ugwu, J. N., & Okoye, D. I. (2024). Integrating artificial intelligence in public sector management: Evidence from Nigeria's sub-national governments. *Technology in Society*, 76, 102187.

Ukpong, E. S., & Etuk, G. K. (2023). Citizen engagement through AI-enabled platforms: Lessons from Uyo Local Government Area. *International Journal of e-Government Studies*, 9(1), 119-134.

Umoh, N. D., & Akpabio, E. M. (2024). Data management frameworks for AI applications in local governance: A case study of Akwa Ibom State. *International Journal of Information Systems and Management*, 5(2), 143-159.