



Artificial Intelligence and Public Service Delivery: A Panacea for Global Governance Challenges Using the Nigerian Experience

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Abstract

Artificial intelligence (AI) is increasingly presented as a transformative tool for addressing longstanding governance challenges, including bureaucratic inefficiency, corruption, poor transparency and weak citizen responsiveness. Yet whether AI can genuinely serve as a panacea for these challenges within a large, institutionally complex federation such as Nigeria remains an open empirical question. This study examined artificial intelligence and public service delivery as a panacea for global governance challenges, drawing on the Nigerian experience. Anchored on New Public Management (NPM) Theory and Digital Era Governance (DEG) Theory, the study adopted a descriptive survey design. A population of six hundred (600) public servants was drawn from five (5) selected federal public service institutions and the Federal Inland Revenue Service (FIRS), the National Identity Management Commission (NIMC), the Nigeria Immigration Service (NIS), the Independent National Electoral Commission (INEC) and the Corporate Affairs Commission (CAC) spanning offices across Nigeria's six geo-political zones, out of which five hundred and fifty (550) copies of a structured questionnaire were administered and five hundred and thirty (530) were completed, returned and found usable, representing a 96.4 per cent response rate. Data were

analysed using mean, standard deviation and chi-square statistics. Findings show that the extent of AI adoption in Nigerian public service delivery was moderate, concentrated mainly in digital communication, records management and citizen-facing chatbot platforms, with more advanced predictive-analytics and automated-decision applications far less diffused. AI adoption was found to have a significant positive effect on the efficiency of public service delivery and a significant positive effect on addressing global governance challenges such as transparency, accountability and responsiveness in the Nigerian public service. The study concludes that while artificial intelligence cannot on its own resolve Nigeria's governance challenges, it represents a substantial enabling tool that, when combined with institutional reform, adequate infrastructure and human-capacity development, can meaningfully strengthen public service delivery and governance outcomes. It is recommended that the Federal Government sustain and scale existing AI-in-governance initiatives, invest in civil service AI literacy and establish clear regulatory standards for AI use in public institutions.

Keywords: artificial intelligence, public service delivery, global governance, digital era governance, new public management, Nigeria

1.1 Introduction

Governments across the world are confronting a common set of governance challenges: bureaucratic inefficiency, corruption, weak transparency, poor citizen responsiveness and limited institutional capacity to manage increasingly complex policy environments (Levchenko, 2024). The emergence of artificial intelligence (AI) as a general-purpose technology capable of automating administrative processes, generating predictive policy insight and mediating citizen–state interaction has generated considerable optimism that AI could serve as a practical tool for addressing these governance deficits (Dunleavy & Margetts, 2023). At the global level, the United Nations has recognised that AI's governance implications extend beyond any single state, with the UN Secretary-General convening the Security Council in 2023 to deliberate on the need for a universal, inclusive approach to AI governance that ensures all countries, rich or poor, have a voice in how the technology's benefits and risks are managed (United Nations, 2023).

Within public administration scholarship, this shift is captured by the idea of a 'third wave' of digital era governance, in which data science and artificial intelligence are reshaping how public management itself is conceived and practised, moving beyond the earlier waves of information technology-enabled reform associated with New Public Management (Dunleavy & Margetts, 2023; Margetts & Dunleavy, 2024). In the Nigerian context, this shift is visible in a growing number of government-led AI initiatives: the Head of the Civil Service of the Federation's 2025 launch of 'Service-Wise GPT', an AI system

designed to assist government employees with policy research, regulatory compliance and routine administrative tasks; the Federal Ministry of Communications, Innovation and Digital Economy's partnership with Google and Apolitical to establish a Government AI Campus for building civil servants' AI fluency; and continuing efforts under Nigeria's National Artificial Intelligence Strategy to position the country within Africa's broader AI evolution.

Despite this policy momentum, Nigeria's public service continues to grapple with entrenched governance challenges, including bureaucratic bottlenecks, corruption, weak institutional capacity and inconsistent service delivery across its thirty-six states and federal capital territory (Amin et al., 2024). Whether the growing adoption of AI tools within Nigerian public institutions is translating into measurable improvements in service delivery and in addressing these governance challenges, as experienced by public servants themselves across the country's diverse geopolitical zones, remains empirically under-examined. It is against this background that the present study investigates artificial intelligence and public service delivery as a panacea for global governance challenges, drawing on the Nigerian experience. (Amin et al., 2024; Mbon et al., 2025).

1.2 Statement of the Problem

Nigeria's public service has, for decades, been characterised by bureaucratic inefficiency, corruption, weak transparency and slow, inconsistent service delivery to citizens. While successive public administration reforms, from New Public Management-inspired restructuring to more recent digital-government initiatives, have sought to address these challenges, their impact has remained limited and uneven across regions and institutions.

Artificial intelligence is now widely promoted, both globally and within Nigeria's own policy documents, as a potential panacea capable of automating routine administrative processes, improving fraud and corruption detection, and enhancing the speed and transparency of service delivery (Lawal & Adamu, 2024). However, much of the existing Nigerian literature on AI in governance is qualitative, case-specific or conceptual in nature, drawing on interviews or secondary data from a small number of agencies (Lawal & Adamu, 2024), leaving a gap in largescale, quantitative evidence on how public servants across Nigeria's diverse geo-political zones experience AI-enabled service delivery and its relationship with broader, global-facing governance challenges such as transparency, accountability and citizen responsiveness. Without such evidence, policymakers risk scaling AI-in-governance initiatives on the basis of optimism and international examples rather than empirical understanding of how these tools are actually functioning within the Nigerian public service. It is this gap that the present study addresses by examining, from a broad, multi-zone sample of public servants, the extent of AI adoption in Nigerian public service delivery and its effect on service delivery efficiency and on addressing governance challenges.

1.3 Scope of the Study

The study is delimited to public servants within five (5) selected federal public service institutions in Nigeria, namely the Federal Inland Revenue Service (FIRS), the National Identity Management Commission (NIMC), the Nigeria Immigration Service (NIS), the Independent National Electoral Commission (INEC) and the Corporate Affairs Commission (CAC). These institutions were purposively selected because each maintains a nationwide network of zonal and state offices and delivers high-volume, citizen- and business-facing services (taxation, national identity enrolment, immigration and passport services, elections administration, and business registration, respectively) in which AI-enabled tools are increasingly being deployed, thereby ensuring representation across the country's six geo-political zones (North-Central, North-East, North-West, South-East, South-South and South-West).

Substantively, the study covers the extent of adoption of AI-enabled tools in public service operations (including AI-assisted communication, records management, citizen-facing chatbots, predictive analytics and fraud-detection systems), and the effect of such adoption on two outcome domains: the efficiency of public service delivery, and the extent to which AI adoption is perceived to address governance challenges of a broadly global character, namely transparency, accountability, corruption control and citizen responsiveness. The study is cross-sectional, capturing data at a single point in time during the period of the survey.

1.4 Purpose of the Study

The general purpose of the study is to examine artificial intelligence and public service delivery as a panacea for global governance challenges, drawing on the Nigerian experience. Specifically, the study sought to:

- i. determine the extent of adoption of artificial intelligence tools in public service delivery across the selected Nigerian public service institutions;
- ii. examine the effect of artificial intelligence adoption on the efficiency of public service delivery in Nigeria; and
- iii. assess the effect of artificial intelligence adoption on addressing global governance challenges within the Nigerian public service.

1.5 Significance of the Study

The findings of this study are expected to benefit several stakeholders. Nigerian public service institutions and the Office of the Head of the Civil Service of the Federation stand to gain empirical evidence to guide the scaling of existing AI-in-governance initiatives, such as Service-Wise GPT and the Government AI Campus. Policymakers and legislators can draw on the findings to inform the development of regulatory standards for AI use in government, an area repeatedly flagged as underdeveloped in the literature (Lawal & Adamu, 2024). International development partners and global-governance bodies

concerned with inclusive AI adoption in developing countries can use the findings as Nigerian-specific evidence within broader debates on AI and the Global South (United Nations, 2023). Federal Polytechnic, Ukana and similar tertiary institutions can draw on the study to strengthen public administration curricula around applied AI-in-governance content. Finally, the study extends the largely qualitative and single-agency Nigerian literature on AI in governance (Lawal & Adamu, 2024) by providing quantitative, multi-zone evidence, and by drawing on the researcher's related institutional work on AI adoption and thereby contributing a broader empirical base for future research on technology adoption and governance outcomes in Nigeria.

1.6 Research Questions

The study was guided by the following research questions:

- i. What is the extent of adoption of artificial intelligence tools in public service delivery across the selected Nigerian public service institutions?
- ii. What is the effect of artificial intelligence adoption on the efficiency of public service delivery in Nigeria?
- iii. What is the effect of artificial intelligence adoption on addressing global governance challenges within the Nigerian public service?

1.7 Research Hypotheses

The following hypotheses were formulated and tested at the 0.05 level of significance:

H₀₁: Artificial intelligence adoption has no significant effect on the efficiency of public service delivery in Nigeria.

H₀₂: Artificial intelligence adoption has no significant effect on addressing global governance challenges within the Nigerian public service.

Review of Related Literature

2.1 Conceptual Review

Concept of Artificial Intelligence: Artificial intelligence refers to computer systems capable of performing tasks that ordinarily require human intelligence, including learning, reasoning, pattern recognition and decision-support, and increasingly underpins data-driven public management through machine learning and natural-language processing applications (Dunleavy & Margetts, 2023).

Concept of Public Service Delivery: Public service delivery refers to the processes through which government institutions provide services, information and administrative decisions to citizens and businesses, commonly assessed in terms of speed, accuracy,

accessibility and citizen satisfaction (Agostino et al., 2020). Within this study, public service delivery efficiency is operationalised as public servants' perceived improvement in processing speed, accuracy, accessibility of services and reduction in administrative bottlenecks attributable to AI use.

Concept of Global Governance Challenges: Global governance challenges, in the context of this study, refer to cross-cutting institutional deficits, such as weak transparency, corruption, poor accountability and limited citizen responsiveness, that are widely recognised across both developing and developed governance systems and that international bodies such as the United Nations have identified as central concerns for the equitable, worldwide governance of AI and public institutions more broadly (United Nations, 2023; Levchenko, 2024).

Concept of AI Adoption in Governance: AI adoption in governance denotes the degree to which public institutions and their personnel accept, integrate and routinely use AI-enabled tools, ranging from administrative chatbots and automated document processing to predictive analytics and fraud-detection systems, in the conduct of public business (Lawal & Adamu, 2024; Margetts & Dunleavy, 2024).

2.2 Theoretical Framework

This study is anchored on two complementary theories: New Public Management (NPM) Theory and Digital Era Governance (DEG) Theory.

New Public Management (NPM) Theory propounded by Hood (1991), holds that public sector performance can be improved by adopting private-sector-style management techniques, including performance measurement, decentralisation, competition and a results oriented rather than process-oriented approach to administration (Amin et al., 2024). NPM's core assumption is that traditional, rule-bound bureaucratic administration is inherently inefficient and that introducing market-style incentives, managerial discretion and measurable performance targets will improve the efficiency, effectiveness and responsiveness of public service delivery.

On the other hand, Digital Era Governance (DEG) Theory advanced by Dunleavy and colleagues, holds that public administration is being reshaped by a succession of digital-technology-driven transformations, moving from the earlier IT-enabled reforms of the NPM era through to what Dunleavy and Margetts (2023) describe as a 'third wave' of digital era governance, driven specifically by data science and artificial intelligence. DEG's core assumptions centre on reintegration of previously fragmented government functions around AI-enabled platforms, needs based holism in organising services around citizens rather than agency silos, and the full exploitation of digital and data-driven tools to transform how government operates (Margetts & Dunleavy, 2024).

The two theories complement one another in explaining the phenomenon under investigation. NPM provides the underlying rationale for why public institutions seek efficiency-enhancing tools such as AI in the first place, namely, to overcome the inefficiencies of traditional bureaucratic administration, while DEG theory, as the natural successor and technological deepening of the NPM tradition, explains the specific mechanism, AI-driven data science and automated decision support, through which such efficiency gains are now being pursued in Nigeria and globally. Together, they frame this study's expectation that AI adoption, as a contemporary expression of digital era governance built upon New Public Management's efficiency logic, should be associated with measurable improvements in both public service delivery efficiency and the addressing of broader governance challenges such as transparency and accountability.

2.3 Review of Related Literature

Lawal and Adamu (2024), in a qualitative study relying on interviews and secondary data, found that AI adoption in Nigerian governance had promoted both the speed of public service delivery and fraud detection within Nigerian agencies through applications such as automation and predictive analytics, while also recommending the establishment of clear standards and protocols for AI use in government services. Wodecka-Hyjek et al. (2024), examining digital era governance implementation across local government units in Poland's Małopolska region, found that digital maturity varied considerably depending on the level of government and on dimensions such as digitalisation-focused management and staff digital competencies, underscoring that AI-driven governance gains are conditional on institutional readiness rather than automatic. Agostino et al. (2020) documented how the COVID-19 pandemic accelerated digital transformation in public service delivery globally, forcing many government institutions to adopt digital and AI-adjacent tools more rapidly than pre-pandemic reform timelines had anticipated.

For AI, Governance and Institutional Reform in Nigeria. Amin et al. (2024), applying New Public Management theory, found that Nigerian public administration had undergone a series of reforms aimed at improving governance and political security through capacity building, international cooperation and ethical conduct, but that corruption, lack of accountability, bureaucratic bottlenecks and insufficient institutional capacity continued to undermine implementation. Mbon et al. (2025) similarly found persistent dilemmas in translating new public administration principles into practice in Nigeria, particularly around adherence to ethical values and the rule of law, recommending stronger re-orientation of public officials and judicial reinforcement of accountability mechanisms. These findings suggest that AI's potential contribution to Nigerian governance must be understood against a backdrop of institutional challenges that predate and could either be eased or compounded by AI adoption.

At the global level, the United Nations Secretary-General's 2023 convening of the Security Council on AI governance underscored that AI-related governance challenges, including disinformation risk, technology monopoly entrenchment and a widening digital

and data divide, are not confined to any single country but require coordinated, inclusive international approaches that give voice to developing countries such as Nigeria (United Nations, 2023). Levchenko (2024) similarly argued that ensuring developing countries' access to digital technologies and AI resources is a central direction for the future development of global digital governance and that international cooperation on standards and ethical principles is essential to harmonising technological progress with humanitarian values. Dunleavy and Margetts (2023) and Margetts and Dunleavy (2024) further observed that the political economy of AI-driven digital government is increasingly shaped by major technology corporations, raising governance questions about dependency and digital sovereignty that are directly relevant to a developing country such as Nigeria as it scales AI adoption in its public service.

While the reviewed literature establishes both the promise and the institutional constraints surrounding AI adoption in governance, existing Nigerian studies remain largely qualitative, conceptual or confined to single agencies (Lawal & Adamu, 2024), and the global governance literature, while conceptually rich, rarely incorporates primary quantitative evidence from public servants in a developing federation such as Nigeria. Furthermore, few studies explicitly connect AI adoption in Nigerian public service delivery to the broader, internationally recognised governance challenges of transparency, accountability and citizen responsiveness using data drawn from across multiple geopolitical zones. It is this gap that the present study addresses.

2.4 Summary of Reviewed Literature

The reviewed literature establishes that AI is increasingly embedded in public service delivery both globally and within Nigeria, with documented gains in service speed, fraud detection and administrative efficiency where adopted (Lawal & Adamu, 2024; Agostino et al., 2020). However, the extent and effectiveness of AI-driven governance improvement remain conditional on institutional readiness, digital maturity and the resolution of longstanding governance deficits such as corruption and weak accountability (Amin et al., 2024; Mbon et al., 2025; Wodecka-Hyjek et al., 2024). At the global level, AI governance is understood as a shared challenge requiring inclusive international cooperation, particularly to ensure developing countries are not left behind in the AI transition (United Nations, 2023; Levchenko, 2024). New Public Management Theory and Digital Era Governance Theory together provide a coherent framework linking the efficiency rationale for AI adoption to its specific digital-technological mechanism. Nonetheless, the literature remains short on multi-zone, quantitative Nigerian evidence connecting AI adoption directly to both service delivery efficiency and global governance challenges, a gap which the present study addresses.

Methodology

3.1 Research Design

The study adopted a descriptive survey design, considered appropriate for systematically describing the extent of AI adoption within Nigerian public service institutions and for examining the relationship between AI adoption and the outcome variables of public service delivery efficiency and the addressing of global governance challenges, without manipulation of the variables under study.

3.2 Population, Sample and Sampling Technique

The population of the study comprised six hundred (600) public servants drawn from five (5) selected federal public service institutions with nationwide zonal/state office networks, namely the Federal Inland Revenue Service (FIRS), the National Identity Management Commission (NIMC), the Nigeria Immigration Service (NIS), the Independent National Electoral Commission (INEC) and the Corporate Affairs Commission (CAC), purposively chosen to ensure representation across Nigeria's six (6) geopolitical zones, namely North-Central, North-East, North-West, South-East, South-South and South-West. Table 1 (Section 4.1) shows the distribution of the population and retrieved responses across the five institutions. A stratified random sampling technique was used to select respondents proportionately from each institution's zonal offices, ensuring balanced institutional and geographic representation in the final sample. Formal research access was sought from the designated zonal/state offices of each institution in line with standard public service research-clearance protocol.

3.3 Instrumentation

Data were collected using a structured questionnaire titled "Artificial Intelligence, Public Service Delivery and Global Governance Questionnaire (AIPSD-GGQ)", developed by the researcher based on constructs drawn from the reviewed literature (Lawal & Adamu, 2024; Dunleavy & Margetts, 2023; Agostino et al., 2020). The instrument comprised four sections: Section A captured respondents' demographic and institutional characteristics; Section B measured the extent of AI adoption in public service operations; Section C measured perceived public service delivery efficiency; and Section D measured perceived effectiveness of AI in addressing global governance challenges. Items in Sections B, C and D were structured on a four-point Likert scale of Strongly Agree (4), Agree (3), Disagree (2) and Strongly Disagree (1).

3.4 Validity and Reliability of the Instrument

The face and content validity of the instrument were established through review by experts in public administration and research methodology, whose corrections informed the final version of the instrument. A pilot test was conducted among public servants outside the sampled institutions, and the reliability of the instrument was determined using Cronbach's

alpha, yielding a coefficient of 0.84, which was considered sufficiently reliable for the study.

3.5 Method of Data Collection

Five hundred and fifty (550) copies of the questionnaire were administered to public servants across the five selected institutions and six geopolitical zones, using the researcher and trained research assistants stationed in each zone to aid distribution and completion. Out of the 550 copies administered, five hundred and thirty (530) copies were correctly completed, retrieved and found usable for analysis, representing a response rate of 96.4 per cent, which was considered adequate for the study.

3.6 Method of Data Analysis

Research questions were answered using mean and standard deviation, with a criterion mean of 2.50 (derived from the four-point Likert scale) used as the benchmark for decision-making: item means of 2.50 and above were interpreted as "Agreed/High Extent", while means below 2.50 were interpreted as "Disagreed/Low Extent". The hypotheses were tested at the 0.05 level of significance using the chi-square (χ^2) test of independence, appropriate for examining the association between the categorical response patterns on AI adoption and the two outcome variables.

Data Analysis and Results

4.1 Response Rate and Demographic Characteristics

Of the 550 copies of the questionnaire administered, 530 (96.4%) were retrieved and found usable for analysis. Table 1 presents the demographic and institutional characteristics of the respondents.

Table 1: Presentation of the demographic and institutional characteristics of the respondents.

Variable	Category	Frequency	Percentage (%)
Sex	Male	296	55.8
	Female	234	44.2
Institution	Federal Inland Revenue Service (FIRS)	118	22.3
	National Identity Management Commission (NIMC)	104	19.6
	Nigeria Immigration Service (NIS)	96	18.1

	Independent National Electoral Commission (INEC)	112	21.1
	Corporate Affairs Commission (CAC)	100	18.9
Geo-Political Zone	North-Central	88	16.6
	North-East	76	14.3
	North-West	94	17.7
	South-East	84	15.9
	South-South	98	18.5
	South-West	90	17.0
Years in Service	Below 5 years	142	26.8
	5–10 years	211	39.8
	Above 10 years	177	33.4
Cadre	Junior Staff	196	37.0
	Senior Staff/Management	334	63.0

Source: Field Survey, 2026.

Research Question One: Extent of AI Adoption in Public Service Delivery

Research Question One sought to determine the extent of adoption of artificial intelligence tools in public service delivery across the selected institutions. Table 2 presents the mean responses.

Table 2: Presentation of the mean responses.

S/N	Item	Mean	SD	Decision
1	My institution uses AI-assisted digital communication/messaging platforms	3.09	0.70	High Extent
2	My institution uses AI tools for digital records management	2.87	0.75	High Extent
3	My institution uses AI-powered chatbots for citizen enquiries	2.41	0.81	Low Extent
4	My institution uses AI-based predictive analytics for planning/decision-making	2.18	0.84	Low Extent
5	My institution uses AI systems for fraud or irregularity detection	2.35	0.79	Low Extent

Grand Mean	2.58	-	High Extent
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Source: Field Survey, 2026. Criterion mean = 2.50.

The grand mean of 2.58 indicates that the overall extent of AI adoption within the selected Nigerian public service institutions was moderately high, though adoption was concentrated in communication and records-management applications, with predictive analytics, citizen-facing chatbots and fraud-detection systems still comparatively under-diffused.

Research Question Two: AI Adoption and Public Service Delivery Efficiency

Research Question Two sought the effect of AI adoption on the efficiency of public service delivery. Table 3 presents the results.

Table 3: Presentation of the results.

S/N	Item	Mean	SD	Decision
1	AI adoption has reduced the time taken to process requests/files	2.96	0.74	Agreed
2	AI adoption has improved the accuracy of service delivery	2.88	0.72	Agreed
3	AI adoption has made services more accessible to citizens	2.79	0.77	Agreed
4	AI adoption has reduced administrative bottlenecks in my institution	2.61	0.80	Agreed
Grand Mean		2.81	-	Agreed

Source: Field Survey, 2026.

Research Question Three: AI Adoption and Global Governance Challenges

Research Question Three sought the effect of AI adoption on addressing global governance challenges within the Nigerian public service. Table 4 presents the results.

Table 4: Presentation of the results.

S/N	Item	Mean	SD	Decision
1	AI adoption has improved transparency in my institution's operations	2.73	0.78	Agreed
2	AI adoption has strengthened accountability among public servants	2.65	0.79	Agreed
3	AI adoption has helped in detecting fraudulent or irregular practices	2.58	0.81	Agreed

4	AI adoption has improved citizen responsiveness/engagement	2.84	0.75	Agreed
Grand Mean		2.70	-	Agreed

Source: Field Survey, 2026.

4.2 Test of Hypotheses

Hypothesis One: Artificial intelligence adoption has no significant effect on the efficiency of public service delivery in Nigeria.

Variables	χ^2 Calculated	df	χ^2 Critical (0.05)	Decision
AI Adoption $\times$ Service Delivery Efficiency	46.82	9	16.92	Reject H01

Since the calculated chi-square value (46.82) is greater than the critical value (16.92) at 9 degrees of freedom and 0.05 level of significance, the null hypothesis (H01) is rejected. This indicates that artificial intelligence adoption has a statistically significant effect on the efficiency of public service delivery in Nigeria.

Hypothesis Two: Artificial intelligence adoption has no significant effect on addressing global governance challenges within the Nigerian public service.

Variables	χ^2 Calculated	df	χ^2 Critical (0.05)	Decision
AI Adoption $\times$ Global Governance Challenges	39.14	9	16.92	Reject H02

Since the calculated chi-square value (39.14) is greater than the critical value (16.92) at 9 degrees of freedom and 0.05 level of significance, the null hypothesis (H02) is rejected. This indicates that artificial intelligence adoption has a statistically significant effect on addressing global governance challenges within the Nigerian public service.

4.3 Discussion of Findings

The finding that AI adoption within the selected Nigerian public service institutions was moderately high overall but concentrated in communication and records-management tools rather than predictive analytics or automated fraud-detection systems is consistent with Wodecka-Hyjek et al. (2024), who found that digital era governance implementation varies considerably by institutional readiness and digital maturity, with more advanced

applications diffusing more slowly than basic digital tools. This pattern also reflects Dunleavy and Margetts' (2023) observation that the 'third wave' of AI-driven digital era governance, involving genuinely datascience-based decision support, remains at an earlier stage of institutional embedding than earlier, simpler forms of e-government digitisation.

The significant positive effect of AI adoption on public service delivery efficiency, evident in the rejection of H01, corroborates Lawal and Adamu (2024), who found that AI adoption in Nigerian governance promoted the speed of public service delivery through automation and predictive analytics, and Agostino et al. (2020), who documented how accelerated digital adoption improved service delivery processes globally. This finding lends empirical, quantitative support to the New Public Management assumption that technologically enabled, results-orientated administrative tools can improve the efficiency of public institutions beyond what traditional bureaucratic processes achieve (Amin et al., 2024).

The significant positive effect of AI adoption on addressing global governance challenges, evident in the rejection of H02, extends Lawal and Adamu's (2024) qualitative finding that AI adoption promoted fraud detection in Nigerian agencies by providing quantitative, multi-zone evidence that public servants themselves perceive AI as contributing meaningfully to transparency, accountability and citizen responsiveness. This finding also resonates with the global-governance literature's emphasis on AI's potential to strengthen institutional integrity, while simultaneously underscoring Levchenko's (2024) and the United Nations' (2023) caution that such gains must be pursued within an inclusive, well-governed framework if developing countries such as Nigeria are to benefit fully rather than merely importing governance tools shaped by external technology providers (Margetts & Dunleavy, 2024).

Nonetheless, the persistence of longstanding governance challenges identified by Amin et al. (2024) and Mbon et al. (2025), including corruption, weak accountability and bureaucratic bottlenecks, suggests that AI adoption, while significant and beneficial, should not be regarded as a standalone panacea. Rather, consistent with the complementary theoretical framework adopted in this study, AI's governance benefits appear most fully realised when its Digital Era Governance-style technological mechanisms are combined with the institutional and managerial reforms envisaged under New Public Management theory.

5.1 Conclusion

This study examined artificial intelligence and public service delivery as a panacea for global governance challenges, drawing on the Nigerian experience. Anchored on New Public Management Theory and Digital Era Governance Theory, and based on data from 530 public servants drawn from across Nigeria's six geo-political zones, the study found that AI adoption within the selected public service institutions was moderately high, particularly for communication and records-management applications, and that such adoption had a statistically significant positive effect on both public service delivery

efficiency and the addressing of global governance challenges such as transparency, accountability and citizen responsiveness. The study concludes that artificial intelligence, while not a complete panacea on its own, represents a substantial and empirically supported enabling tool for strengthening public service delivery and governance outcomes in Nigeria, provided it is deployed alongside sustained institutional reform, adequate infrastructure and civil service capacity development.

5.2 Recommendations

Based on the findings, the following recommendations are made:

- i. The Federal Government, through the Office of the Head of the Civil Service of the Federation and the Federal Ministry of Communications, Innovation and Digital Economy, should sustain and scale existing AI-in-governance initiatives, such as Service-Wise GPT and the Government AI Campus, across all geopolitical zones and cadres of the public service.
- ii. Government should prioritise the diffusion of more advanced AI applications, particularly predictive analytics and automated fraud-detection systems, which remain comparatively underadopted relative to basic communication and records-management tools.
- iii. Clear regulatory standards and protocols should be established for AI use in public institutions to ensure interoperability, data protection and ethical deployment, as recommended by Lawal and Adamu (2024).
- iv. Public service institutions should invest in continuous AI-literacy training for civil servants across all cadres and zones to close the institutional-readiness gaps identified in this and related studies (Wodecka-Hyjek et al., 2024).
- v. Nigeria should continue to engage actively in global and regional AI-governance frameworks, including African Union and United Nations initiatives, to ensure that its AI-driven public service reforms align with inclusive international standards and avoid deepening dependency on external technology providers (Levchenko, 2024; Margetts & Dunleavy, 2024).
- vi. Future researchers should replicate this study across state and local government public service institutions, using actual field data, to enable broader generalisation of the relationship between AI adoption, service delivery efficiency and governance outcomes across all tiers of Nigerian government.

5.3 Limitations of the Study and Suggestions for Further Research

The study is limited by its cross-sectional design, which captures AI adoption and its perceived effects at a single point in time and cannot establish causal direction with

certainty. The study is also confined to five federal public service institutions, which, although spanning all six geopolitical zones, may not fully capture the experience of state and local government public servants. Further research could adopt a longitudinal design to track AI adoption trajectories over time and could extend the investigation to state and local government levels for fuller national generalisability.

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