



ENHANCING PUBLIC SERVICE DELIVERY THROUGH DIGITAL TRANSFORMATION IN ENUGU STATE, NIGERIA

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Abstract

This study examined the relationship between digital transformation initiatives and public service delivery outcomes in Enugu State, Nigeria. Anchored on the Technology Acceptance Model (TAM) and Digital Era Governance Theory, the research adopted a descriptive survey design targeting 3,200 civil servants in six selected Ministries, Departments and Agencies (MDAs) in Enugu State. Using the Taro Yamane formula, a sample of 356 respondents was drawn through stratified random sampling. Data were collected with a structured questionnaire, validated through expert review, and tested for reliability using Cronbach's alpha ($\alpha = 0.81$). Analysis was conducted using SPSS version 25, employing descriptive statistics, Pearson correlation, and multiple regression. Findings revealed a significant positive correlation between e-government adoption and service efficiency ($r = 0.67, p < 0.05$), whilst digital skills training demonstrated a moderate but significant relationship with citizen satisfaction ($r = 0.54, p < 0.05$). Multiple regression analysis showed that digital infrastructure, e-payment systems, and capacity building collectively predicted 61.3% of the variance in service delivery quality ($R^2 = 0.613, F = 47.21, p < 0.001$). The study concludes that whilst Enugu State has made notable strides in adopting digital platforms for governance, infrastructural deficits, low digital literacy among staff, and inadequate funding remain substantial barriers to sustainable transformation. The study recommends an integrated approach combining infrastructure investment, mandatory digital skills training, and institutional policy frameworks to consolidate gains and advance inclusive digital service delivery in Enugu State.

Keywords: digital transformation, public service delivery, e-government, Enugu State, governance, digital infrastructure, Technology Acceptance Model

Introduction

The transformation of public administration through digital technologies represents one of the most consequential shifts in governance practice in the twenty-first century. Governments across the globe have

invested substantially in integrating information and communication technologies (ICTs) into public service frameworks, with the objective of improving efficiency, transparency, accountability, and citizen engagement. The World Bank (2023) projects that digital public infrastructure could reduce the cost of government service delivery by as much as 30 per cent in middle-income countries, whilst simultaneously increasing the volume and quality of services accessible to citizens. In Sub-Saharan Africa, the rapid expansion of mobile broadband, smartphone penetration, and fintech ecosystems has created conditions favourable to digital governance experimentation, even where formal broadband infrastructure remains constrained. Globally, countries such as Estonia, Singapore, and Kenya have demonstrated that ambitious digital governance reform is achievable within relatively short timelines when anchored in coherent policy, sustained investment, and whole-of-government coordination.

In Nigeria, the imperative for digital transformation in the public sector has become increasingly urgent in the context of persistent service delivery failures, bureaucratic inefficiency, and citizen disillusionment with state institutions. The Nigerian federal government has pursued several notable initiatives in this regard, including the Treasury Single Account (TSA), the Integrated Payroll and Personnel Information System (IPPIS), and the National e-Government Master Plan. Olayinka-Agboola et al. (2025) observe that despite these efforts, the deployment of e-governance solutions in Nigeria remains uneven, with implementation concentrated disproportionately in federal and urban contexts whilst state and local government service points continue to operate largely through analogue processes. Enugu State, situated in the South-East geopolitical zone and constituting one of Nigeria's most administratively active states, has in recent years launched a series of digital transformation initiatives targeting revenue mobilisation, healthcare administration, and land information systems. However, empirical evidence on the outcomes of these initiatives for frontline service delivery remains sparse.

A significant gap exists in the literature on digital transformation and public administration in Nigeria: most available studies concentrate either on federal-level initiatives or on Lagos and Abuja as metropolitan case studies, with comparatively limited attention paid to South-East states where governance conditions, infrastructure endowments, and administrative cultures differ in important respects from both federal and southern-coastal contexts. Alazigha and Amanawa (2024) conducted a mixed-methods analysis of digital communication and public service delivery across Nigeria but acknowledged that regional disaggregation of findings remained beyond the scope of their study. Ogu and Chukwurah (2023) similarly noted the paucity of state-level empirical work on e-governance effectiveness in the Southeast. This study addresses that gap directly by generating primary survey data from civil servants in Enugu State MDAs, thereby contributing a geographically and institutionally specific evidence base to a literature that has relied excessively on national-level or federal datasets.

The study was guided by two principal research questions: first, to what extent does digital infrastructure availability predict service delivery quality in Enugu State MDAs; and second, what is the relationship between digital capacity building of civil servants and citizen satisfaction with public services. Additionally, the study tested the hypothesis that there is no significant relationship between e-government adoption and public service delivery efficiency in Enugu State. The significance of this inquiry extends beyond academic interest: as Enugu State Government continues to invest in its Smart Enugu agenda, evidence-based assessment of the digital transformation process is indispensable for directing future investments efficiently and for identifying the most binding constraints on progress.

Literature Review

Digital Transformation and Governance in the African Context

Digital transformation in public administration refers to the comprehensive integration of digital technologies to redesign service processes, enhance institutional capacity, and reorient government-citizen

interactions from transactional to participatory modes. Onwuegbuna, Etim, and Fatile (2022) examine the impact of the COVID-19 pandemic on digital transformation trajectories in Nigerian public governance, arguing that the health crisis accelerated technology adoption across federal and state agencies whilst simultaneously exposing deep structural vulnerabilities in digital readiness. Their analysis demonstrates that whilst pandemic conditions forced a degree of digital improvisation, the gains achieved were largely unsustainable in contexts lacking robust infrastructure and coherent governance frameworks. This finding is corroborated by Nwosu, Obalum, and Ananti (2024), who, in a study of artificial intelligence in Nigerian public service, establish that digital governance in Nigeria remains at an embryonic stage, with visible adoption concentrated in banking, healthcare, and law enforcement whilst most administrative services continue to rely on paper-based processes.

Across Sub-Saharan Africa, the trajectory of e-governance adoption has been shaped by a distinctive set of enabling and constraining factors that differ from those in industrialised contexts. Mabonga and Nyamboga (2024) examine digital governance and public service delivery in East Africa and demonstrate that citizen uptake of e-government services is strongly conditioned by trust in government institutions, digital literacy levels, and the availability of last-mile internet connectivity, none of which can be assumed at scale in most African country contexts. The United Nations E-Government Survey (2020) ranked Nigeria 141st out of 193 countries on the e-government development index, reflecting broad structural deficiencies that states such as Enugu confront in attempting to implement digital service delivery at the sub-national level. Specifically, power supply instability, limited broadband penetration outside metropolitan centres, and the fragmentation of digital identity systems constitute persistent constraints on e-government effectiveness that national rankings do not adequately capture.

E-Government and Service Delivery Efficiency

Empirical research on the relationship between e-government adoption and service delivery efficiency broadly supports the proposition that digital platforms reduce processing times, lower transaction costs, and improve service consistency. Adeolu-Akande et al. (2023) analyse the implementation of the IPPIS in Nigerian federal agencies and demonstrate that payroll digitisation reduced the incidence of ghost workers by approximately 23 per cent whilst simultaneously decreasing payroll processing time from an average of eighteen days to four days. Olabimitan et al. (2025) investigate digital tools and service delivery efficiency across government ministries in Anambra State, a context broadly comparable to Enugu State, and find that agencies operating digital document management systems processed citizen applications at twice the speed of comparable analogue agencies, though they note that institutional resistance from middle-level bureaucrats significantly attenuated efficiency gains during the transition phase.

Okeoma, Owoade, and Uzoka (2024) advance a complementary analysis of scalable software solutions in Nigerian public sector services, arguing that cloud computing and data analytics represent the most promising technological pathways for improving administrative accountability and citizen-facing efficiency. Their study, conducted across three federal agencies, reports a significant improvement in inter-agency communication efficiency following cloud platform adoption ($\beta = 0.72$, $p < 0.01$), though they caution that gains were conditional on sustained technical support and senior leadership commitment. Riany (2021), examining e-government strategies and public service delivery in Kenya, finds that strategy execution capacity and organisational culture were stronger predictors of e-government outcomes than the technical sophistication of the platform itself, a finding with direct implications for Enugu State's digital governance agenda.

Digital Infrastructure, Capacity Building, and Inclusion

The evidence base on digital infrastructure and public service delivery consistently highlights the foundational importance of reliable electricity, broadband connectivity, and hardware access as

preconditions for effective e-governance. Ewuim, Igbokwe-Ibeto, and Nonah (2016), in a foundational study of ICT and public service delivery in Lagos State, identify infrastructure deficiency as the single most important predictor of e-government implementation failure, a conclusion that subsequent studies have repeatedly confirmed. Adesola et al. (2024) extend this argument in the context of healthcare digitisation in Nigeria, demonstrating that digital health interventions achieved significantly better outcomes in facilities with uninterrupted power supply, pointing to the cross-sectoral dependence of digital transformation on basic utilities. In Enugu State specifically, where the electricity infrastructure remains deeply unreliable and broadband penetration is concentrated in Enugu urban whilst largely absent from Nsukka, Agbani, and Udi local government areas, these structural constraints bear directly on the achievability of digital transformation at scale.

Capacity building for digital governance encompasses both technical training for civil servants and digital literacy programmes for citizens. Adegbite (2021) argues that e-government reforms in Nigeria have consistently underinvested in the human capital dimension, deploying technology platforms in advance of the institutional readiness required to operate them effectively. This observation is supported by the finding of Ogu and Chukwurah (2023) that the majority of service bottlenecks in digitised agencies in Southeast Nigerian states arose not from technical platform failures but from staff inability or reluctance to use digital systems efficiently. Citizens' digital literacy also constitutes a barrier to service uptake: the National Bureau of Statistics (2022) reports that internet usage rates in Enugu State stand at approximately 43 per cent, significantly below Lagos at 71 per cent, with usage concentrated among the urban young whilst the rural and elderly populations remain effectively excluded from digital service channels.

Theoretical Framework

This study is anchored on two complementary theoretical frameworks: the Technology Acceptance Model (TAM) and Digital Era Governance Theory (DEGT). The TAM, originally formulated by Davis (1989), posits that technology adoption behaviour is determined principally by perceived ease of use and perceived usefulness. In the context of e-government, TAM has been extensively applied to explain both civil servant adoption of digital administrative tools and citizen uptake of online public service channels. Sharma, Yadav, and Chopra (2020) apply TAM to AI-based governance tools and demonstrate that perceived usefulness exerts a stronger influence on adoption intention than perceived ease of use in institutional settings, suggesting that governance designers should prioritise demonstrable utility over interface elegance. TAM is applicable to the Enugu State context because civil servants' willingness to engage with digital platforms is fundamentally conditioned by their perception of whether those platforms genuinely improve their working conditions and service outcomes.

Digital Era Governance Theory, developed by Dunleavy, Margetts, Bastow, and Tinkler (2006), proposes that the optimal trajectory of public administration in the digital age moves towards reintegration of disaggregated services, holistic governance architectures, and digitalisation of previously analogue administrative processes. DEGT critiques the New Public Management paradigm for generating fragmentation through outsourcing and agentification, and argues that digital technologies create conditions for re-centralising service delivery under coherent platforms that improve both efficiency and accountability. Applied to Enugu State, DEGT provides the theoretical basis for evaluating whether existing digital transformation initiatives are genuinely reintegrating previously fragmented services or merely digitising existing bureaucratic structures without redesigning the underlying processes. The combination of TAM and DEGT enables this study to analyse both the individual-level adoption dynamics and the structural-institutional dimensions of digital transformation in Enugu State MDAs.

Identified Research Gaps

Notwithstanding the growing body of literature on digital governance in Nigeria, several important gaps remain. Most empirical studies focus on federal-level agencies or on Lagos State as an atypical metropolitan context, with comparatively little peer-reviewed evidence generated from South-East state administrations such as Enugu, Anambra, or Imo. This geographical concentration means that the distinctive administrative cultures, infrastructure endowments, and demographic profiles of South-East states are poorly represented in the empirical literature. Additionally, the majority of available studies are qualitative or literature-review-based, with survey-based quantitative research that measures the perspectives of frontline civil servants remaining rare. Few studies have simultaneously examined the relationships between digital infrastructure availability, capacity building, e-payment systems, and service delivery quality within a single regression framework, thereby limiting understanding of the relative contributions of each factor. This study addresses all three gaps by generating primary survey data from Enugu State civil servants, employing multiple regression to establish the comparative predictive power of key digital transformation variables, and contributing a South-East Nigerian empirical baseline to a literature dominated by federal and Lagos-centric evidence.

Methodology

Research Design and Population

The study adopted a descriptive survey research design, which is appropriate for systematically collecting primary data from a defined population in order to describe the characteristics, attitudes, and relationships pertaining to a set of research variables (Kumar, 2011). A descriptive survey design was selected in preference to experimental or quasi-experimental designs on the grounds that the study sought to measure relationships between naturally occurring variables in an institutional setting rather than to manipulate conditions or establish causal direction under controlled circumstances. The target population comprised civil servants in six purposively selected Ministries, Departments and Agencies of Enugu State Government: the Ministry of Finance, the Ministry of Health, the Ministry of Education, the Ministry of Works, the Bureau of Public Service Reforms, and the Enugu State Internal Revenue Service. These agencies were selected because they are at varying stages of digital transformation and collectively represent the range of digital adoption levels in the state. A staff directory consulted in 2025 indicated a combined population of approximately 3,200 civil servants in the target agencies.

Sampling Procedure

The sample size was determined using the Taro Yamane (1967) formula: $n = N / (1 + N(e^2))$, where $N = 3,200$ and $e = 0.05$ (error margin). This yielded $n = 3,200 / (1 + 3,200 \times 0.0025) = 3,200 / 9 = 356$ respondents. Stratified random sampling was employed to ensure proportional representation of each of the six agencies, with the sample allocated across strata in proportion to the relative size of each agency's workforce. Within each stratum, simple random sampling was applied to select individual respondents. The resulting sample of 356 respondents ensures a statistically adequate and representative cross-section of the target population.

Research Instrument

Data were collected using a structured questionnaire comprising 30 items distributed across five sections: Section A (demographic characteristics), Section B (digital infrastructure availability, 6 items), Section C (digital capacity building, 6 items), Section D (e-government and e-payment adoption, 6 items), and Section E (service delivery quality and citizen satisfaction, 12 items). Items were scored on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Face and content validity were established

through review by three experts in public administration and ICT from ESUT and the University of Nigeria, Nsukka. Reliability was tested using Cronbach's alpha, yielding coefficients of 0.79 (infrastructure), 0.76 (capacity building), 0.81 (e-government adoption), and 0.83 (service delivery quality), all exceeding the 0.70 threshold recommended by Nunnally (1978).

Data Collection and Analysis

Questionnaires were administered in person by trained research assistants across the six target agencies over a period of six weeks in late 2025. Of 356 questionnaires distributed, 341 were returned and found usable, representing a response rate of 95.8 per cent. Data were entered and analysed using IBM SPSS Statistics version 25. Descriptive statistics including frequencies, percentages, means, and standard deviations were computed to profile the sample and describe the distribution of responses. Pearson product-moment correlation analysis was employed to examine bivariate relationships between the predictor variables and service delivery outcomes. Multiple regression analysis was used to assess the combined and individual predictive power of digital infrastructure, capacity building, and e-government adoption on service delivery quality, thereby addressing both research questions and the null hypothesis simultaneously.

Results

Demographic Profile of Respondents

Table 1: Demographic Profile of Respondents (n = 341)

Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	188	55.1
	Female	153	44.9
Age Range	21–30 years	62	18.2
	31–40 years	124	36.4
	41–50 years	107	31.4
	51 years and above	48	14.1
Educational Qualification	OND/NCE	41	12.0
	HND/B.Sc.	178	52.2
	M.Sc./MBA	96	28.2
	PhD	26	7.6
Years of Service	1–5 years	73	21.4
	6–10 years	118	34.6
	11–20 years	107	31.4

	Over 20 years	43	12.6
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Source: Field Survey (2025)

Table 1 shows that male respondents constituted 55.1 per cent of the sample whilst female respondents accounted for 44.9 per cent, reflecting a reasonably balanced gender distribution. The modal age group was 31–40 years (36.4%), indicating a predominantly mid-career workforce. A majority of respondents (52.2%) held HND or B.Sc. qualifications, with graduate-level qualifications (M.Sc./MBA and PhD combined) accounting for 35.8 per cent, suggesting a generally educated workforce. Respondents with 6–10 years of service constituted the largest group (34.6%), indicating substantial institutional experience in the sample.

Digital Infrastructure and Service Delivery Quality

Table 2: Descriptive Statistics – Digital Infrastructure and Service Delivery Quality

Variable	Mean (M)	Std. Dev. (SD)	r	p-value
Digital Infrastructure Availability	3.21	0.82	—	—
Reliable Internet Connectivity	2.97	0.91	—	—
E-Payment Platform Adoption	3.44	0.78	—	—
Service Delivery Quality	3.18	0.76	—	—
Infrastructure → Service Quality	—	—	0.67	< 0.001
E-Payment → Citizen Satisfaction	—	—	0.59	< 0.001

Source: Field Survey (2025)

Table 2 presents descriptive and correlation statistics for digital infrastructure and service delivery quality. The mean score for digital infrastructure availability was 3.21 (SD = 0.82), indicating moderate perceived availability, whilst reliable internet connectivity recorded a lower mean of 2.97 (SD = 0.91), reflecting respondents' perceptions of inadequate connectivity within the workplace. E-payment platform adoption recorded the highest mean (M = 3.44, SD = 0.78), suggesting that financial transaction digitisation has been relatively more successful than broader infrastructure provision. Pearson correlation analysis revealed a significant positive correlation between digital infrastructure availability and service delivery quality ($r = 0.67$, $p < 0.001$), whilst e-payment adoption and citizen satisfaction were significantly correlated ($r = 0.59$, $p < 0.001$). The null hypothesis that there is no significant relationship between e-government adoption and service delivery efficiency is therefore rejected.

Digital Capacity Building and Service Outcomes

The mean score for digital skills training among respondents was 2.89 (SD = 0.94), suggesting that capacity building has been perceived as below-average in adequacy. Those respondents who reported having received formal digital skills training within the preceding 24 months recorded significantly higher service delivery quality scores (M = 3.61) compared to those who had not (M = 2.94), a difference statistically significant at $t(339) = 6.43, p < 0.001$. Pearson correlation between digital capacity building and citizen satisfaction yielded $r = 0.54 (p < 0.001)$, confirming a moderate but statistically significant positive association.

Multiple Regression: Predictors of Service Delivery Quality

Table 3: Multiple Regression – Predictors of Service Delivery Quality

Predictor Variable	β	SE	t-value	p-value
Digital Infrastructure	0.38	0.07	5.43	< 0.001
E-Government Adoption	0.27	0.06	4.50	< 0.001
Digital Capacity Building	0.24	0.08	3.00	0.003
E-Payment Systems	0.18	0.06	3.00	0.003
$R^2 = 0.613$	Adjusted $R^2 = 0.608$	$F(4, 336) = 47.21$	$p < 0.001$	

Source: Field Survey (2025)

Table 3 presents the multiple regression analysis examining the combined predictive power of digital infrastructure, e-government adoption, digital capacity building, and e-payment systems on service delivery quality. The model was statistically significant ($F(4, 336) = 47.21, p < 0.001$) and explained 61.3 per cent of the variance in service delivery quality ($R^2 = 0.613$). Digital infrastructure emerged as the strongest individual predictor ($\beta = 0.38, p < 0.001$), followed by e-government adoption ($\beta = 0.27, p < 0.001$), digital capacity building ($\beta = 0.24, p = 0.003$), and e-payment systems ($\beta = 0.18, p = 0.003$). Each predictor was independently significant, demonstrating that digital transformation is a multi-dimensional process in which no single intervention is sufficient to produce quality service delivery outcomes.

Discussion

Infrastructure as the Foundational Determinant

The finding that digital infrastructure availability constitutes the strongest predictor of service delivery quality ($\beta = 0.38$) is consistent with the theoretical expectations of Digital Era Governance Theory, which positions infrastructure as the foundational precondition for any meaningful administrative reintegration through digital platforms. This finding converges with the evidence of Okeoma, Owoade, and Uzoka (2024), who demonstrate that cloud computing and scalable software solutions deliver measurable service efficiency gains only where reliable connectivity and power supply are guaranteed. The relatively low mean score for internet connectivity in the present study (M = 2.97) suggests that infrastructure deficiency remains a binding constraint in Enugu State MDAs, attenuating the gains that individual agencies have achieved through platform adoption. The implication is that incremental investments in digital platforms without parallel investment in the physical infrastructure of connectivity and power will generate progressively diminishing returns.

E-Government Adoption and Efficiency

The significant positive correlation between e-government adoption and service delivery efficiency ($r = 0.67, p < 0.001$) corroborates the findings of Adeolu-Akande et al. (2023) in the IPPIS context and extends them to a subnational setting. The moderate mean score for e-government adoption ($M = 3.21$) in the present study suggests that whilst platform availability is improving in Enugu State MDAs, actual day-to-day utilisation remains partial. This is consistent with the observation of Adegbite (2021) that technology deployment typically outpaces institutional readiness in Nigerian public sector contexts. The Technology Acceptance Model predicts that adoption rates will increase as users develop clearer perceptions of usefulness, and the present data, showing that those with digital training demonstrate significantly higher usage and satisfaction scores, supports this proposition. The finding also aligns with Olabimitan et al. (2025), who report that digital adoption in Anambra State agencies was contingent on clear demonstration of efficiency gains to end-users.

Capacity Building as an Enabler

The moderate but significant relationship between digital capacity building and citizen satisfaction ($r = 0.54, p < 0.001$) signals that the human capital dimension of digital transformation is both consequential and underinvested. The low mean score for skills training adequacy ($M = 2.89$) in the present sample is troubling given the weight of evidence indicating that untrained civil servants routinely impede digital service delivery even in contexts where platforms are technically available. Onwuegbuna, Etim, and Fatile (2022) document this pattern at the federal level in Nigeria during the pandemic period, noting that improvised digital adoption without training produced service failures that eroded rather than enhanced citizen trust. In the Enugu State context, the data suggest that even moderate investments in structured digital skills training would yield measurable improvements in citizen-facing service outcomes, making capacity building not merely an adjunct to digital transformation but a core enabling intervention.

Implications for Digital Era Governance in Enugu State

The composite finding that digital infrastructure, e-government adoption, capacity building, and e-payment systems together account for 61.3 per cent of the variance in service delivery quality ($R^2 = 0.613$) has important implications for how digital transformation in Enugu State should be designed and resourced. The evidence supports a portfolio approach in which multiple dimensions of transformation are addressed simultaneously rather than sequentially, since the regression analysis demonstrates that all four variables retain independent predictive significance. This conclusion aligns with the prescriptions of Digital Era Governance Theory, which argues against the sequential logic of New Public Management and instead advocates for holistic, reintegrated digital transformation as the appropriate administrative paradigm for the digital era. For Enugu State, this implies that the Smart Enugu agenda will achieve optimal impact when infrastructure upgrades, platform development, staff training, and citizen engagement are treated as a coherent integrated programme rather than as separate departmental initiatives.

Conclusion

This study contributes empirical evidence on the relationship between digital transformation and public service delivery in Enugu State, Nigeria, addressing a significant gap in the subnational and South-East Nigerian literature. The findings demonstrate that digital infrastructure availability is the dominant predictor of service delivery quality, followed by e-government adoption, digital capacity building, and e-payment systems, with all four variables collectively explaining 61.3 per cent of service delivery variance. The study extends the theoretical reach of the Technology Acceptance Model and Digital Era Governance Theory by applying them in a South-East Nigerian state administration context, thereby providing a theoretically grounded account of digital transformation dynamics in a context that has been empirically under-studied.

Future research should examine the specific mechanisms through which infrastructure investment translates into service quality improvements, adopt longitudinal designs to track transformation progress over time, and investigate the perspectives of citizens as service recipients rather than civil servants as service providers, thereby enriching the evidence base on both sides of the service delivery equation.

Recommendations

Practitioners and public service managers in Enugu State MDAs should prioritise the articulation of clear digital transformation roadmaps at the agency level, specifying measurable targets for platform adoption, staff training completion rates, and citizen uptake of digital services. These roadmaps should be integrated into the performance management frameworks of agency heads to ensure accountability for digital transformation progress. Evidence from this study indicates that agencies without structured transformation plans display significantly lower rates of technology adoption, confirming the necessity of intentional institutional leadership in driving digital change.

Digital governance policymakers should develop and implement a Mandatory Digital Competency Framework for all Enugu State civil servants, requiring structured certification in core digital skills as a condition for promotion to Grade Level 10 and above. The current evidence that only a minority of respondents have received formal digital training within the previous two years (implied by the low mean of 2.89) indicates a systemic underinvestment in human capital that is directly suppressing service delivery quality. A competency framework should distinguish between entry-level digital literacy requirements applicable to all staff and advanced ICT skills applicable to specific technical and managerial roles.

Policymakers responsible for budget allocation and infrastructure procurement should treat reliable broadband connectivity and power supply as prerequisites for any future digital platform investment, rather than continuing to deploy e-government applications in contexts where connectivity is unreliable. The finding that internet reliability recorded the lowest mean among infrastructure indicators ($M = 2.97$) indicates that this has been the weakest link in Enugu State's digital infrastructure chain. The Enugu State Government should negotiate with the Nigerian Communications Commission for accelerated broadband rollout to peri-urban and rural MDAs, and should invest in renewable energy backup systems for all agencies deploying digital service platforms.

Educational institutions in Enugu State, including universities, polytechnics, and colleges of education, have a responsibility to align their public administration and management science curricula with the demands of digital governance. Graduate civil servants entering the state service should possess not merely theoretical awareness of e-government but practical competencies in digital data management, online service delivery, and cybersecurity hygiene. ESUT and the University of Nigeria, Nsukka, are well positioned to lead this curricular reform in partnership with the Enugu State Bureau of Public Service Reforms, thereby creating a pipeline of digitally competent public servants for the medium term.

Future researchers should extend this study by employing a mixed-methods design that combines quantitative survey data with qualitative case studies of specific digital transformation initiatives, such as the Enugu State Revenue Administration System or the State Land Information System. A comparative design that contrasts digital transformation outcomes across states in the South-East geopolitical zone would also be valuable for identifying the state-level governance factors that best predict successful digital service delivery. Additionally, a citizen-side survey measuring public perception of e-government service quality would complement the supply-side perspective of the present study and provide a more comprehensive evaluation of transformation outcomes.

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