International Journal of Intellectual Discourse (IJID)
ISSN: 2636-4832 Volume 8, Issue 2. June, 2025

Public Bureaucracies in the age of Digitization: The challenges of Sustainable Service Delivery in Nigeria

Usman Abbo[1] and Aisha Balarabe[2]

[1&2] *Department of Public Administration, Faculty of Economics and Management Science, Bayero University Kano, Nigeria*

Corresponding Author: altarabee@gmail.com/shagari59@yahoo.com

Abstract

The rapid pace of digitization has transformed the way Public Bureaucracies operate, presenting both opportunities and challenges for Sustainable Service Delivery. In Nigeria, the adoption of Digital Technologies in Public Bureaucracies has been slow and uneven, hindering the effective delivery of Public Services. This study examines the challenges of sustainable service delivery in Nigerian Public Bureaucracies in the age of digitization using the Adamawa state internal revenue service as unit of analysis. The study adopts a mixed-methods approach by integrating a cross-sectional survey and phenomenological in a convergent parallel design where ten department heads, five digital staff, and 61,496 clients from Adamawa State Internal Revenue Service records make up the target population. A sample size of 196 participants is determined for the survey using Mugenda and Mugenda's (2016) formula, and five informants are chosen for key informant interviews, allowing for a thorough comprehension of the research topic through contextual and numerical insights. The findings highlight the need for a holistic approach to digitization, including investments in digital infrastructure, capacity building, and institutional reforms. The study contributes to the literature on Public Administration and digitization, providing insights for policymakers, practitioners, and scholars seeking to promote sustainable service delivery in Nigeria and beyond.

Keywords: Digitization, Public Bureaucracies, Sustainable Service Delivery**,** Nigeria

1. Introduction

The advent of digitization has revolutionized the way governments operate, interact with citizens, and deliver public services. The rapid proliferation of digital technologies, such as the internet, mobile devices, and social media, has created new opportunities for public bureaucracies to improve service delivery, enhance transparency, and increase citizen engagement. The adoption of digital technologies in public bureaucracies has been a topic of increasing interest in recent years. Scholars have explored the potential benefits of digitization, including improved efficiency, transparency, and citizen engagement (Bertot, et al 2010; Bangero, 2025). However, the literature also highlights the challenges faced by public bureaucracies in leveraging digital technologies, particularly in developing countries (Heeks, 2002; Avgerou, 2008). One of the key challenges facing public bureaucracies in the age of digitization is the need for significant investments in digital infrastructure. This includes not only the physical infrastructure of computers, servers, and networks but also the development of digital skills and literacy among public servants (Sanz-Ponce & González-Bertolín, 2018). However, many developing countries, including Nigeria, face significant challenges in developing and maintaining digital infrastructure (Henry, Alsohaily & Sousa, 2020). Another challenge facing public bureaucracies in the age of

digitization is the need for institutional reforms. This includes not only the development of new policies and regulations but also the creation of new institutional structures and processes (Kim, Choi, & Lew, 2021). However, institutional reforms can be difficult to implement, particularly in countries with weak governance and corruption (Rothstein, 2011).

The literature also highlights the importance of digital literacy and skills among public servants. Digital literacy is critical for public servants to effectively use digital technologies and to provide high-quality services to citizens (OECD, 2019). However, many public servants in developing countries, including Nigeria, lack the necessary digital skills and literacy (Birdsall, 2018). In Nigeria, the adoption of digital technologies in public bureaucracies has been slow and uneven. The country has made significant progress in developing its digital infrastructure, including the development of a national broadband plan and the creation of a ministry of communications and digital economy (Ofoma, 2021). However, the country still faces significant challenges in developing and maintaining digital infrastructure, particularly in rural areas (Henry, Alsohaily & Sousa, 2020).

Furthermore, the literature highlights the need for a holistic approach to digitization in public bureaucracies. This includes not only the development of digital infrastructure and the creation of new institutional structures and processes but also the development of digital skills and literacy among public servants (Kim, Choi, & Lew 2021). However, the adoption of digital technologies in public bureaucracies also poses significant challenges, particularly in developing countries like Nigeria (Wynn, Adejumo, & Vale, 2024). Nigeria, with a large and growing population, faces significant development challenges, including poverty, inequality, and inadequate access to basic services such as healthcare, education, and sanitation (Opeyemi, et al, 2022). The country's public bureaucracies play a critical role in addressing these challenges, but they are often hindered by inefficiencies, corruption, and inadequate resources (Mohammed, 2023). The digitization of public services offers a potential solution to these problems, but it also requires significant investments in digital infrastructure, capacity building, and institutional reforms (Izuogu, et al, 2023).

Despite the potential benefits of digitization, Nigerian public bureaucracies face significant challenges in leveraging digital technologies to improve service delivery. These challenges include inadequate digital infrastructure, limited technical capacity, and institutional barriers to innovation (Ajah, & Chigozie-Okwum, 2019). Furthermore, the country's public bureaucracies are often characterized by bureaucratic red tape, corruption, and inadequate accountability, which can hinder the effective adoption and use of digital technologies (Shenkoya, 2024). This study seeks to investigate the challenges of sustainable service delivery in Nigerian public bureaucracies in the age of digitization. It aims to explore the impact of digitization on public service delivery, identify the challenges faced by public bureaucracies in leveraging digital technologies, and examine strategies for promoting sustainable service delivery. The study will contribute to the literature on public administration and digitization, providing insights for policymakers, practitioners, and scholars seeking to promote sustainable service delivery in Nigeria and beyond.

2. Literature Review

Conceptual clarification

The Concept of Public Bureaucracy

Public bureaucracy refers to the governmental structure and processes used by government agencies to implement

policies, provide public services, and manage public resources (Olsen, 2006). The concept of public bureaucracy is rooted in the principles of Max Weber's theory of bureaucracy, which emphasizes the importance of efficiency, effectiveness, and accountability in governmental management. A bureaucracy is a distinct governmental form of administration. According to the sociologist and pivotal scholar of bureaucracies Max Weber (1921) a bureaucracy in its purest form has a jurisdiction defined in law or by administrative regulations; has a hierarchical structure; is managed through written and traceable directives; is specialized; requires a full-time occupation; and is governed by general, known, and stable rules (Smith, 2013, p. 956). Of equal importance, the bureaucracy shapes demand and expectations about its officials' selection, training, remunerations, and careers.

Concept of Digitization

Digitization is the core of the third revolution. It is all about converting analog things into series of 0s & 1s digits, making the fundamental element universal. Digitalization marks the way to the fourth revolution with means to process the 0s & 1s into meaningful value for convenient consumption. Digitalization improves specific processes (Brennen, & Kreiss, 2016). Digital Transformation crosses the borders between governments and systems permitting the combination of all sorts of diverse digital and digitalization solutions. It helps build or select the best solutions to specific needs and even conveniently and seamlessly combine them with each other for enhanced value, because the fundamental element is so universal that it covers digital content and context (Reis, 2020). This unification of things improves the processes and functionality that we may not have conceived before. From NDE perspective, digitization translates almost every method into capture of text, signal, image, video, or volumetric data in digital form; workflow, analysis, and reporting in digitalized manner; and leveraging the outcomes as digital feedback loops to optimize life cycle cost or product design in the spirit of digital transformation (Gobble, 2018). This digital transformation will eventually lead to a complete digital twin incorporating all digitalization solutions into one virtual eco-system. All for the benefit of the customer. Digital transformation means that every government should focus on its core competency and give everybody in the state the choice to digitally transform their business to their needs, because now they can engage using universally acceptable string of digits (Vasilev, et al, 2020). This mindset will allow improvement of processes across governmental boarders by establishing open interfaces and data transparency. More in short than midterm customers will require service which they can embed into their digitally transformed environment.

Sustainable Service Delivery

Sustainable service delivery refers to the provision of public services in a manner that meets the present needs of citizens without compromising the ability of future generations to meet their own needs (Braimah, Amponsah, & Asibey, 2016). This concept integrates the principles of sustainability, service delivery, and public administration. Sustainable Service Delivery has the following dimensions: environmental Sustainability which minimizing the environmental impact of service delivery, such as reducing energy consumption, waste, and pollution. Social Sustainability involve ensuring that services are accessible, equitable, and responsive to the needs of diverse citizen groups (Bennett, 1998). Economic Sustainability involve managing resources efficiently, reducing costs, and generating revenue to ensure the long-term viability

of services and Institutional Sustainability which involve fostering a culture of transparency, accountability, and continuous improvement within public organizations (Millard, 2017).

Key characteristics of Sustainable Service Delivery include; Citizen-Centric where services are designed and delivered with the needs and preferences of citizens in mind. Services are coordinated and integrated across different levels of government and sectors. Services leverage technology, innovation, and best practices to improve efficiency and effectiveness. Services are flexible and responsive to changing citizen needs and environmental conditions. By adopting a sustainable service delivery approach, public organizations can ensure that services are delivered in a manner that is environmentally, socially, economically, and institutionally sustainable, ultimately contributing to improved citizen well-being and quality of life (Furlong & Bakker, 2010).

Theoretical framework

Diffusion of Innovation Theory

Chen, Gillenson, and Sherrell (2020), contend that this theory effectively predicts both the likelihood and extent of new innovation adoption. It highlights five crucial attributes of innovation: compatibility, relative advantage, complexity, trialability, and observability. The attribute of relative advantage refers to the perceived superiority of an innovation over the existing idea or practice it replaces, significantly influencing its adoption. Catalini and Tucker (2016), highlight the vital role of early technology adopters in the dissemination of new innovations. Their choices to adopt or reject a technology greatly influence its broader acceptance. For instance, blockchain technology has grown from a niche innovation to a widely acknowledged and secure platform, with various industries now exploring its use to enhance system security. This theory aims to explain the decision-making process in adopting new technologies, the factors affecting the adoption rate, and the different categories of adopters.

Since adoption is influenced by relative advantage, compatibility, complexity, observability, and trialability, the Diffusion of Innovation Theory can be applied to public bureaucracies in Nigeria's digital age. Efficiency and transparency are two advantages of digitization, but there are drawbacks as well, such as inadequate funding, resistance to change, and a lack of ICT infrastructure. Partnerships, infrastructure development, change management, and training and capacity building are some of the tactics for providing services in a sustainable manner. Public bureaucracies can successfully implement and maintain digital innovations by being aware of these factors, which will improve service delivery and citizen engagement.

By applying the theory in this research we can better understand the challenges and opportunities associated with adopting digital technologies in public bureaucracies, ultimately informing strategies for sustainable service delivery in Nigeria.

3. Methodology

Research design.

This study integrates a correlational cross-sectional survey and phenomenological approaches in a convergent parallel design. The survey investigated the extent to which digital technology is applied in tax administration at Adamawa State Internal Revenue Service in Yola while the phenomenological design offered a detailed overview of the state of digitalization in the institution and the challenges involved in leveraging the technology in services delivery. In order to provide a thorough grasp of the research topic, this study uses a mixed-methods approach that combines phenomenological designs and cross-

sectional surveys. A representative sample is guaranteed by using Mugenda and Mugenda's formula for calculating sample size, and key informant interviews provide qualitative depth and expert insights. In the end, this design produces rich and contextual data by facilitating triangulation, improving validity, and offering a nuanced investigation of the research question.

Target Population

Ajagbe, (2015), describe the intended population for a study as those who are expected to be at the heart of the research focus. In this study, the target population comprised 61,496 clients obtained from the online record of the Adamawa State Internal Revenue Service, along with 10 department heads from a total of 14 departments, and 5 members of the digital staff.

Sampling Procedure and Sample Size

As stated by Mugenda and Mugenda (2016), sampling involves selecting a subset of individuals from a larger population to serve as representatives for the entire group in a study. To determine the appropriate sample size for this research, the formula recommended by Mugenda and Mugenda (2016) was be applied. $n = \frac{Z^2pq}{12}$ Using this formula, the sample size is calculated to be 196 participants.

Table 1

Informants for KII

In formant	Position	Location
1	Head of ICT Department	Yola North
2	Head of ICT Department	Song
3	Head of ICT Department	Mubi North
4	Head of ICT Department	Numan
5	Head of ICT Department	Mayo Belwa

Source: Researchers, 2024

Research Instruments

For the survey research design, the investigators utilized questionnaires to gather data from clients, department heads and ICT officers at Adamawa State Internal Revenue Service in Yola. While for the phenomenological design a structured interview questions were sent via email to five (5) heads of ICT department in the organization the interview questions aimed at identifying the institutional, the infrastructural, and the economic and social challenges of adopting digital technology in Adamawa State Internal Revenue Service in Yola.

Data Collection Procedure

Before starting the field study, the researchers obtained an approval letter from the management of Adamawa State Internal Revenue Service in Yola to authorize access to respondent's email address for the data collection process. The researchers then utilized survey monkey to reach out to the sampled respondents based on the records obtained from the organization. While the key informants were reached through their official emails as provided by the organization.

Validity and Reliability Analysis

Validity is when an instrument measures what it's supposed to measure; data need not only to be reliable but also true and accurate.

Validity Analysis

Wiersman (2015), described validity as the degree to which an instrument accurately measures the intended construct or phenomenon. To ensure the study's validity, the researchers took several steps. First, the instrument was crafted to be clear, understandable, and logically organized, thereby enhancing its

face validity. Additionally, the researcher consistently observed the same variables among all participants in the selected group. Finally, the instrument's content was reviewed and validated by two experts to ensure it aligned with the study's objectives, thereby confirming its content validity.

Reliability Analysis

Mugenda and Mugenda (2016) defined reliability as the degree to which a research instrument consistently yields the same results or data across repeated trials, noting that random error can impact reliability, with higher levels of random error leading to lower reliability. In this study, the test-retest method was used to evaluate the reliability of the instruments. The research instruments were initially administered to a group of students during the pilot study at the federal polytechnic Mubi, and their responses were recorded. After a two-week interval, the same instruments were given to the same group again, and the results from both administrations were compared for consistency. The correlation between the scores from the two testing periods was determined, and a reliability index was calculated using a coefficient level of 0.80. A significance level of 0.85 indicated that the research tools were reliable, meeting the standards set by Creswell (2015).

For the qualitative instruments used in this investigation a thorough validation process was used to guarantee their reliability and credibility. To confirm findings, the researcher used triangulation, utilizing a variety of data sources and techniques, including key informant interviews and in-depth interviews. In order to improve the accuracy and authenticity of the data, the researcher also carried out member checking, in which participants examined and verified the transcripts and interpretations. In order to ensure the reliability and confirmability of the study, the researcher also kept a thorough audit trail, recording each stage of the investigation, and participated in peer debriefing with experts to examine and comment on the methodology and results.

The data gathered from the survey research was analyzed through quantitatively specifically using descriptive and inferential statistics. Questionnaire responses were analyzed using SPSS version 20. Data organization and examination employed basic frequencies and percentages. Cross-tabulations explored digital resource adequacy, effectiveness, inefficiency, and absence. Descriptive statistics, including frequencies and percentages, summarized study results. Means and standard deviations assessed digitalization's impact on service delivery via the Likert scale. Analyzed data was presented through tables, graphs, plots, and prose, categorizing findings across various digitalization and public service delivery aspects. While the data generated from the structured interview were analyzed thematically.

Ethical Considerations

The research study emphasized obtaining informed consent from participants and safeguarding the confidentiality of gathered data. Adhering to Kothari's (2015) recommendations, clear and comprehensive communication about the study's particulars with participants was crucial. The researcher acquired documented informed consent and enforced protocols to uphold anonymity and confidentiality.

4. Results and Discussion

Descriptive statistics

Status of Resources used in Digital Service Delivery in Adamawa State Internal Revenue Service

The research sought to assess the respondents' stance regarding the utilization of portals and websites for different purposes at Adamawa State

Internal Revenue Service. The specific findings are outlined in

Table 2: Agreement on the usage of portals and websites in Adamawa State Internal Revenue Service

Statement	Yes	No	Me	St d
The portals enable citizens to apply online for Tax Identification Number	190 (96%)	8 (4%)	4.23	.706
The portals facilitate online application for Vehicle Registration.	108 (55%)	80(45%)	4.52	.719
Online financial services, such as payments and treasury receipt and invoice, are provided through the portals.	168(85%)	30 15%)	4.68	.764
The portals enable citizens to verify their Tax Clearance Certificate.	188(95%)	10(5%)	4.51	.745
The portals are designed to be user-friendly and easily accessible.	170(86%)	28(14%)	4.76	.812
The portals experience high user engagement and provide prompt and efficient services to users.	195(98%)	3(25%)	4.67	.839
The portals enable citizens to obtain Tax information .	188(95%)	10(5%)	4.38	.798
The portals are designed and equipped with Tax Calculator	170(86%)	28(14%)	4.21	.841
The portals enable citizens to generate a Duly signed Tax clearance certificate.	195(98%)	3(25%)	4.76	.765

(Source field data, 2024)

The study investigated the use of portals at Adamawa State Internal Revenue Service for E-payment, Application for Tax Identification Number, Verification of Tax clearance certificate, Tax information, Tax calculator and generation of Tax clearance certificate. The findings revealed that a majority of respondents, 190 (96%), agreed the portals enable citizens to apply online for Tax Identification Number (TIN), while 8 (4%) disagreed, resulting in a mean score of 4.23 and a standard deviation of 0.706. Further analysis on the portal's facilitation of online application for vehicle registration. Showed that 108 (55%) agreed and 80 (45%) disagreed, with a mean of 4.52 and a standard deviation of 0.719. Concerning online financial services such as payments and treasury receipt and invoice via the portal, a substantial majority of 168 (85%)

respondents favored their utilization, while 30 (15%) expressed disagreement, with an average score of 4.68 and a standard deviation of 0.764.

The study also indicated substantial agreement on the portals' capability to enable citizens to verify their Tax Clearance Certificate with 188 (95%) in favor and 10 (5%) against, achieving a mean of 4.51 and a standard deviation of 0.745. Regarding the user-friendliness and accessibility of the portals for both Clients and staff, there was strong agreement, with n=170 (86%) in favor and n=28 (14%) against, featuring a mean of 4.76 and a standard deviation of 0.812. Additionally, the findings showed high user engagement and efficient service delivery through the portals, with n=195 (98%) agreeing and n=3 (2%) disagreeing, marked by a mean of 4.67 and a standard deviation of 0.839.

Another set of results on the portals enabling citizens to obtain tax information similarly high levels of agreement with n=188 (95%) and disagreement at n=10 (5%), with a mean of 4.38 and a standard deviation of 0. 798.The findings further suggest that the portals at Adamawa State Internal Revenue Service are The portals are designed and equipped with tax Calculator, with 170 (86%) in agreement and 28 (14%) in disagreement, resulting in a mean score of 4.21 and a standard deviation of 0.841. Furthermore, the results indicated the portals enable citizens to generate a duly signed Tax clearance certificate, with 195 (98%) agreeing and 3 (2%) disagreeing, recorded with a mean of 4.76 and a standard deviation of 0.765. These results imply that portals and websites are utilized for various purposes at Adamawa State Internal Revenue Service. It was found that the use of these portals and websites significantly influences public service delivery at Adamawa State Internal Revenue Service.

Inferential statistics correlational analysis

Status of Resources used in Digital Service Delivery in Adamawa State Internal Revenue Service

The study aimed to determine the connection between resource status and service delivery. The findings of the inquiry are presented in Table 3

Table 3: Status of Resources and Service Delivery

Service delivery	Status of resources	Pearson Correlation	.476**
		Sig. (2-tailed)	.000
		N	198

**. Correlation is significant at the 0.05 level (2-tailed).

As shown in Table 20, the research reveals a moderately positive and statistically significant relationship between resource status and service delivery in Adamawa state internal revenue service ($r = 0.476$; $p < 0.05$). This suggests that the condition of resources impacts service delivery in Adamawa State Internal Revenue Service.

Regression Coefficients

The research conducted a regression analysis to assess the impact of resource status, access to digitized services, extent of digitalization, and challenges associated with digitization on service delivery in Adamawa State Internal Revenue Service. The model summary was presented in Table 4.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change
1	881[a]	.776	. .786	.3071	000

In this study, the R-squared value was 0.786, indicating that the four independent variables resource status, access to digitized services, extent of digitalization, and challenges associated with digitization jointly explain 78.6% of the variability in service delivery within Adamawa State Internal Revenue Service. The remaining 21.4% of the variability is attributed to other factors.

Table 5: Regression Coefficients

Model	Unstandardized Coefficients		Coefficients		
B		Std. Error	Beta		
1 (Constant)	.087	.173		.206	.747
Status of resources	.386	.181	.543	5.368	.037

Table 5 presents the comprehensive results of the significance test the hypothesized research model. The interpretations of the findings align with the following regression model:

$Y= \beta0 + \beta1X1+ \varepsilon$

$Y= 0.087+ 0.386X1 + \varepsilon$

As per the intercept (β0), when all other independent variables remain constant, service delivery in Adamawa State Internal Revenue Service, was at 0.087. Additionally, with all other independent variables held constant, an increase of one unit in resource status would correspond to a 0.386

Status of resources in digitized program and service delivery in Adamawa State Internal Revenue Service

The results of the study revealed a moderately positive and statistically significant correlation between resource status and service delivery ($r = 0.476$, $p < 0.05$). This suggests that the condition of resources has a significant impact on service delivery in the organization. The regression analysis further explored the impact of resource status, access to digitized services, extent of digitalization, and challenges associated with digitization on service delivery. The results showed that the four independent variables jointly explain 78.6% of the variability in service delivery (R-squared = 0.786). This indicates that the variables included in the model are strong predictors of service delivery. Specifically, the regression coefficients revealed that resource status has a significant positive impact on service delivery ($\beta = 0.543$, $p = 0.037$). This suggests that improving the condition of resources would lead to enhanced service delivery in Adamawa State Internal Revenue Service.

Challenges for adopting Digital Technologies by Adamawa State Internal Revenue Service

Theme 1: Institutional Challenges

Nigerian public bureaucracies encounter a number of institutional obstacles that impede efficient digitization and long-term service provision. Institutional challenges that impede digitalization and sustainable service delivery hinder the effectiveness of Nigerian public bureaucracies. Three interrelated sub-themes bureaucratic red tape, lack of institutional framework, and inadequate capacity combine to create a complex web of issues that not only impede the adoption of digital technologies but also compromise the general responsiveness and efficiency of Nigerian public bureaucracies, which in turn affects

citizen satisfaction and trust in government services.

Bureaucratic Red Tape: The evidence generated from the interview conducted indicated that the organization is characterized by a slow-moving bureaucracy, which hinders the effective delivery of digital services. In this study the responses from both Informant 4 and Informant 5's interview responses emphasize organizational structure and regulatory compliance issues, highlighting the complex ways that bureaucratic red tape impedes the delivery of digital services.

For instance, as argued by an informant: *Bureaucratic red tape represents a significant hindrance to the effective delivery of digital services in our organization. In my experience, our organizational structure can sometimes lead to a slow and cumbersome decision-making process. With multiple layers of approval and a rigid hierarchy, it can take a long time to get new digital initiatives off the ground. Additionally, our organizational culture can be risk-averse, which can lead to an overemphasis on following established procedures rather than embracing innovation and experimentation. This can result in a lack of agility and flexibility in our digital service delivery, making it difficult for us to respond quickly to changing customer needs and technological advancements*. (***Informant 4)***

While another informant asserted that: *Bureaucratic red tape indeed hinders the effective delivery of digital services in our organization, particularly when it comes to regulatory and compliance issues. For instance, our organization is subject to a range of regulations and standards related to data privacy, security, and accessibility. While these regulations are important, they can sometimes create unnecessary barriers to innovation and experimentation in digital service delivery. For example, the need to comply with strict data protection regulations can limit our ability to leverage new technologies and data analytics to improve customer experience. Furthermore, the complexity of these regulations can lead to a lack of clarity and consistency in our digital service delivery, resulting in frustration for both our customers and employees*. (***Informant 5).***

Based on the above the findings, there are two main ways that bureaucratic red tape appears: through organizational structure, which slows down decision-making and makes people less willing to take risks, and through regulatory and compliance issues, which obstruct innovation and experimentation in the provision of digital services.

These results are consistent with the body of research on bureaucratic red tape, which contends that in public sector organizations, inflexible organizational structures and onerous regulations can inhibit creativity and adaptability (e.g., Bozeman, 2000; Pandey & Scott, 2002). The focus on risk aversion and organizational culture is also consistent with research showing how important institutional and cultural factors are in determining organizational behavior (e.g., Schein, 2010).

Lack of Institutional Framework: the results from the interview further suggest the absence of a clear institutional framework for digital governance and service delivery creates confusion and overlaps among government agencies. All of the interview responses point to the various ramifications of not having an institutional framework for digital governance and service delivery, highlighting issues with policy and governance, partnerships and collaboration, and capacity building and skill development.

Digital services are less effective when there is a lack of a clear institutional framework because it causes confusion,

overlaps, and inconsistencies in their delivery. These problems include siloed decision-making, insufficient resource allocation, limited capacity building, and hampered partnerships. In this regard an informant responded that: *The lack of an institutional framework is a significant challenge in delivering effective digital services in our organization. We lack a clear governance structure and policies that guide our digital transformation efforts. This has resulted in a lack of standardization, inconsistent decision-making, and inadequate resource allocation. Without a clear framework, it's difficult to ensure that our digital services are aligned with our organizational goals and objectives. Furthermore, the lack of policies and guidelines has led to a culture of siloed decision-making, where different departments and teams are working in isolation, rather than collaboratively, to deliver digital services.* (***Informant 2)***

In yet another Response an informant has this to say: *The lack of an institutional framework hinders our ability to deliver effective digital services because it limits our capacity to build the necessary skills and expertise. Without a clear framework, we struggle to identify the skills gaps and training needs of our staff. This has resulted in a lack of digital literacy among some of our employees, which can lead to resistance to change and a lack of adoption of new digital technologies. Furthermore, the lack of a framework has made it challenging to develop a clear talent management strategy, which has resulted in a lack of continuity and consistency in our digital service delivery.* ***(Informant 1)***

while another one opined that: *The lack of an institutional framework hinders our ability to deliver effective digital services because it limits our ability to form strategic partnerships and collaborations. Without a clear framework, we struggle to identify potential partners and collaborators, and to develop the necessary agreements and contracts to support these partnerships. This has resulted in a lack of access to new technologies, expertise, and resources that could enhance our digital service delivery. Furthermore, the lack of a framework has made it challenging to develop a clear partnership strategy, which has resulted in a lack of consistency and coherence in our digital service delivery. (**Informant 5).***

Every response from the interviews highlights the different consequences of not having an institutional framework for digital governance and service delivery, emphasizing problems with partnerships and collaboration, capacity building and skill development, and policy and governance. These results are consistent with previous research that highlights the value of institutional frameworks in directing initiatives related to digital transformation (e.g., Janowski, 2015; Estevez & Janowski, 2013). The difficulties noted are consistent with research showing that in order to support digital government initiatives, clear governance structures, policies, and capacity building are required (e.g., Gil-Garcia & Pardo, 2005). The focus on collaboration and partnerships is also consistent with studies on how inter-organizational relationships can improve the delivery of digital services (e.g., Luna-Reyes et al., 2014).

Inadequate Capacity: Based on the results obtained from the structured interview most of the employees in the organization lack the necessary skills and training to effectively design and deliver digital services. The interview responses collectively highlight the multifaceted nature of inadequate capacity in hindering effective digital service delivery, emphasizing both technical capacity and human capacity challenges. Inadequate capacity manifests in two primary ways: technical capacity constraints, including

understaffing and outdated infrastructure, and human capacity limitations, including lack of digital skills and inadequate change management, ultimately resulting in suboptimal digital service delivery and resistance to change.

Response 1: Focus on Technical Capacity

*Inadequate capacity is a significant challenge in delivering effective digital services in our organization. Specifically, we lack the necessary technical expertise and infrastructure to support the development and delivery of digital services. For example, our IT department is understaffed and lacks the necessary skills to design and implement complex digital solutions. Additionally, our legacy systems and infrastructure are outdated and incompatible with modern digital technologies. This has resulted in a lack of scalability, flexibility, and reliability in our digital service delivery, making it difficult to meet the evolving needs of our customers. (**Informant 3)***

Response 2: Focus on Human Capacity and Change Management

*Inadequate capacity is a major hindrance to the effective delivery of digital services in our organization, particularly when it comes to human capacity and change management. While we have invested in some digital technologies, we have not adequately prepared our staff to effectively use these tools and adapt to the changing digital landscape. Many of our employees lack the necessary digital skills and competencies, and we have not provided sufficient training and support to help them develop these skills. Furthermore, we have not effectively managed the cultural and organizational changes required to support digital transformation, resulting in resistance to change and a lack of adoption of new digital technologies. (**Informant 4).***

These findings align with existing literature emphasizing the importance of both technical and human capacity in supporting digital government initiatives (e.g., Gil-Garcia & Pardo, 2005; Scholl, 2005). The challenges identified resonate with studies highlighting the need for investments in digital skills development, training, and change management to support digital transformation efforts (e.g., Estevez & Janowski, 2013; Luna-Reyes et al., 2014).

Theme 2: Infrastructure Challenges

Limited Digital Infrastructure: The evidence generated from the interview conducted indicated that organization's digital infrastructure, including internet connectivity, data centers, and payment systems, is underdeveloped and unreliable. The interview responses collectively highlight the multifaceted challenges posed by limited digital infrastructure, emphasizing issues with network and connectivity, hardware and software, and data management and security. The underdeveloped and unreliable digital infrastructure hinders effective digital service delivery, manifesting in specific challenges such as slow internet speeds, lack of scalability, data inconsistencies, and security vulnerabilities, ultimately compromising the organization's ability to meet customer needs and ensure data protection.

Response 1: Focus on Network and Connectivity Issues

*Limited digital infrastructure has hindered the effective delivery of digital services in our organization, particularly in the areas of network and connectivity. Our organization's network infrastructure is outdated and lacks the necessary bandwidth to support the increasing demand for digital services. This has resulted in slow internet speeds, frequent downtime, and an inability to support the use of cloud-based applications and services. Furthermore, our lack of reliable connectivity has made it difficult to implement digital services that require real-time data exchange and synchronization. (**Informant 1)***

Response 2: Focus on Hardware and Software Limitations

Limited digital infrastructure has hindered the effective delivery of digital services in our organization, particularly in the areas of hardware and software. Our organization's hardware and software systems are outdated and lack the necessary capacity to support the increasing demand for digital services. This has resulted in a lack of scalability, flexibility, and reliability in our digital service delivery, making it difficult to meet the evolving needs of our customers. Furthermore, our lack of modern hardware and software has made it challenging to implement digital services that require advanced analytics, artificial intelligence, and machine learning. ***(Informant 5).***

Response 3: Focus on Data Management and Security

Limited digital infrastructure has hindered the effective delivery of digital services in our organization, particularly in the areas of data management and security. Our organization's data management systems are fragmented and lack the necessary integration to support the increasing demand for digital services. This has resulted in a lack of data consistency, accuracy, and reliability, making it difficult to make informed decisions and deliver personalized digital services. Furthermore, our lack of robust data security measures has made it challenging to protect sensitive customer data and prevent cyber threats. ***(Informant 2)***

These findings align with existing literature emphasizing the critical role of robust digital infrastructure in supporting digital government initiatives (e.g., Scholl, 2005; Estevez & Janowski, 2013). The challenges identified resonate with studies highlighting the need for investments in digital infrastructure, including network and connectivity, hardware and software, and data management and security, to support effective digital service delivery (e.g., Gil-Garcia & Pardo, 2005; Luna-Reyes et al., 2014).

Power Supply: The evidence generated from the interview conducted indicated that the organization's erratic power supply hinders the effective operation of digital services and infrastructure. The interview responses collectively highlight the severe consequences of erratic power supply on the organization's digital services and infrastructure, emphasizing issues with unplanned downtime, equipment damage and maintenance, and data integrity and security. The erratic power supply has a multifaceted impact, causing disruptions to digital services, damaging equipment, increasing maintenance costs, and posing significant risks to data integrity and security, ultimately compromising the organization's operations, reputation, and ability to deliver services.

Response 1: Focus on Unplanned Downtime

*The organization's erratic power supply significantly hinders the effective operation of digital services and infrastructure. The frequent power outages and fluctuations in voltage cause unplanned downtime, resulting in disruptions to our digital services. This not only affects our ability to deliver services to customers but also leads to data loss, corruption, and equipment damage. Moreover, the unpredictability of the power supply makes it challenging for our IT team to plan and schedule maintenance, upgrades, and backups, further exacerbating the issue. (****Informant 2).***

Response 2: Focus on Equipment Damage and Maintenance

The erratic power supply has a devastating impact on our digital infrastructure, causing equipment damage, reducing its lifespan, and increasing maintenance costs. The power fluctuations and outages lead to

*overheating, power surges, and electrical shocks, which can damage our servers, storage systems, and network equipment. This results in costly repairs, replacements, and maintenance, which divert resources away from other critical areas of the organization. Furthermore, the frequent equipment failures and maintenance activities disrupt our digital services, affecting our customers and reputation. (**Informant 4).***

Response 3: Focus on Data Integrity and Security

*The organization's erratic power supply poses a significant risk to the integrity and security of our digital data. The power outages and fluctuations can cause data corruption, loss, or theft, compromising the confidentiality, integrity, and availability of our digital assets. This is particularly concerning in our line of work, where data is sensitive and critical to our operations. The power supply issues also make it challenging for us to implement robust data backup and disaster recovery strategies, leaving us vulnerable to data-related risks and threats. (**Informant 3).***

These findings align with existing literature emphasizing the critical importance of reliable power supply for digital infrastructure and services (e.g., Scholl, 2005; Estevez & Janowski, 2013). The challenges identified resonate with studies highlighting the need for robust infrastructure, including power supply, to support effective digital government initiatives and ensure data security and integrity (e.g., Gil-Garcia & Pardo, 2005; Luna-Reyes et al., 2014).

Theme 3: Financial Challenges

Limited Budget: The evidence generated from the interview conducted indicated that the organization's budget for digital service delivery is limited, hindering the development and maintenance of digital infrastructure and services.

Response 1: Focus on Insufficient Funding for Digital Transformation

*The organization's limited budget for digital service delivery is a significant constraint on our ability to develop and maintain digital infrastructure and services. The budget allocated for digital transformation is insufficient to cover the costs of modernizing our legacy systems, investing in new technologies, and hiring the necessary talent to support our digital ambitions. As a result, we are forced to prioritize and make difficult trade-offs, which can lead to delays, cost overruns, and a lack of innovation in our digital service delivery. (**Informant 2).***

Response 2: Focus on Inadequate Resource Allocation

*The limited budget for digital service delivery hinders our ability to allocate resources effectively. With a constrained budget, we are unable to invest in the necessary hardware, software, and personnel to support the development and maintenance of our digital infrastructure and services. This leads to a lack of scalability, flexibility, and reliability in our digital service delivery, making it difficult to meet the evolving needs of our customers. Furthermore, the inadequate resource allocation can result in burnout and decreased morale among our IT staff, who are expected to do more with less. (**Informant 5).***

Response 3: Focus on Opportunity Costs and Trade-Offs

The organization's limited budget for digital service delivery forces us to make difficult trade-offs and sacrifices. With a constrained budget, we are unable to invest in new digital initiatives and projects, which can lead to missed opportunities and a lack of innovation in our digital service delivery. The limited budget also forces us to prioritize short-term cost savings over long-term strategic investments, which can result in a lack of sustainability and scalability in our digital infrastructure and services. Ultimately, the limited budget hinders our ability to deliver high-quality digital services that

*meet the evolving needs of our customers. (**Informant 4**).*

High Cost of Internet: The evidence generated from the interview conducted indicated that the high cost of internet services in Nigeria limits access to digital services, particularly for low-income citizens.

Response 1: Focus on Affordability and Digital Divide

*The high cost of internet services is a significant barrier to accessing digital services, particularly for low-income clients. In many cases, the cost of internet services is prohibitively expensive for low-income individuals and households, making it difficult for them to access essential digital services such as online banking, healthcare services, and educational resources. This perpetuates the digital divide, where those who are already disadvantaged are further excluded from the benefits of digital technologies. As a result, low-income clients are forced to rely on alternative, often more expensive, methods of accessing services, which can exacerbate poverty and inequality. (**Informant 2**).*

Response 2: Focus on Limited Digital Literacy and Skills

The high cost of internet services not only limits access to digital services but also perpetuates limited digital literacy and skills among low-income clients. When individuals and households cannot afford internet services, they are less likely to develop the digital skills and literacy needed to effectively utilize digital services. This creates a vicious cycle, where limited access to internet services reinforces limited digital literacy and skills, making it even more difficult for low-income clients to access and benefit from digital services. As a result, low-income clients are often forced to rely on intermediaries or third-party services, which can be expensive and inefficient. (***Informant 4***).

Response 3: Focus on Economic and Social Impacts

*The high cost of internet services has significant economic and social impacts on low-income clients, limiting their access to digital services and perpetuating poverty and inequality. When low-income individuals and households cannot afford internet services, they are excluded from accessing essential digital services, such as online job markets, educational resources, and healthcare services. This can lead to reduced economic opportunities, limited social mobility, and poor health outcomes. Furthermore, the high cost of internet services can also perpetuate social isolation and exclusion, as low-income clients are unable to connect with family, friends, and community members through digital channels. (**Informant 3**).*

Theme 4: Social Challenges

Digital Literacy: The evidence generated from the interview conducted indicated that many of the clients lack the necessary digital literacy skills to effectively access and utilize digital services.

Response 1: Focus on Digital Literacy Gaps

*I strongly agree that many of our clients lack the necessary digital literacy skills to effectively access and utilize digital services. Our organization has observed that many clients struggle with basic digital skills, such as navigating online platforms, using digital forms, and accessing digital information. This digital literacy gap can lead to frustration, exclusion, and a lack of access to essential services. To address this issue, our organization has started providing digital literacy training programs for clients, which cover basic digital skills, online safety, and digital citizenship. (**Informant 4**).*

Response 2: Focus on Socio-Economic Factors

The notion that many clients lack digital literacy skills is indeed a concern, but it's

*also important to recognize the underlying socio-economic factors that contribute to this issue. Many of our clients come from low-income backgrounds, have limited access to education and technology, and may not have had the opportunity to develop digital skills. Additionally, some clients may be older adults or have disabilities that make it difficult for them to access and use digital technologies. To address these challenges, our organization is working to provide accessible and inclusive digital services that cater to the diverse needs of our clients. (**Informant 2).***

Response 3: Focus on Human-Centered Design

*I agree that digital literacy skills are essential for clients to access and utilize digital services effectively. However, I also believe that the design of digital services themselves can often be a barrier to access. Many digital services are designed with a "one-size-fits-all" approach, without considering the diverse needs and abilities of clients. To address this issue, our organization is adopting a human-centered design approach, which involves co-designing digital services with clients and stakeholders to ensure that they are accessible, usable, and meet the needs of all clients, regardless of their digital literacy skills. (**Informant 5).***

Trust and Confidence: The evidence generated from the interview conducted indicated that citizens' trust and confidence in digital services are low due to concerns about security, privacy, and reliability.

Response 1: Focus on Security and Privacy Concerns

*I agree that citizens' trust and confidence in digital services are low due to concerns about security, privacy, and reliability. The increasing frequency and severity of cyber-attacks, data breaches, and identity thefts have created a sense of unease among citizens. Moreover, the collection and use of personal data by digital services have raised concerns about privacy and surveillance. To address these concerns, our organization is prioritizing the development of robust security measures, such as encryption, secure authentication, and regular security audits. We are also committed to transparency and accountability in our data handling practices. (**Informant 4).***

Response 2: Focus on Reliability and Performance

*The notion that citizens' trust and confidence in digital services are low is indeed a concern. While security and privacy concerns are significant, I believe that reliability and performance issues also play a critical role. Digital services that are slow, unavailable, or difficult to use can erode trust and confidence quickly. Our organization is addressing these concerns by investing in robust infrastructure, scalable architecture, and rigorous testing and quality assurance processes. We are also committed to providing clear and transparent communication about service availability, performance, and maintenance. **(Informant 3).***

Response 3: Focus on Transparency, Accountability, and Citizen Engagement

I agree that citizens' trust and confidence in digital services are low due to concerns about security, privacy, and reliability. However, I believe that transparency, accountability, and citizen engagement are equally important factors. Citizens want to know how their data is being used, how their concerns are being addressed, and how they can participate in the design and development of digital services. Our organization is committed to transparency and accountability in our digital service delivery. We are engaging citizens through participatory design processes, providing clear and accessible information about our services, and establishing robust mechanisms for feedback and complaint resolution. (***Informant 3).***

Theme 5: Economic Challenges

Economic Downturn: Evidence from the interview conducted confirmed the notion that Nigeria's economic downturn has reduced government revenue, limiting the budget for digital service delivery.

Response 1: Focus on Reduced Budget Allocation

*I agree that Nigeria's economic downturn has had a significant impact on government revenue, which in turn has limited the budget for digital service delivery. The reduced budget allocation for digital services has forced our organization to prioritize and make difficult trade-offs, often at the expense of critical digital initiatives. This has resulted in delayed or cancelled projects, reduced investment in digital infrastructure, and a lack of resources to support the development and maintenance of digital services. To mitigate these challenges, our organization is exploring alternative funding models, such as public-private partnerships and donor funding, to support our digital service delivery initiatives. (**Informant 2).***

Response 2: Focus on Opportunity Costs and Long-term Consequences

*The notion that Nigeria's economic downturn has reduced government revenue, limiting the budget for digital service delivery, is indeed a concern. However, I believe that the opportunity costs and long-term consequences of underinvesting in digital service delivery far outweigh the short-term budgetary constraints. By failing to invest in digital infrastructure and services, we risk exacerbating existing social and economic inequalities, hindering economic growth and development, and reducing our competitiveness in the global digital economy. Our organization is advocating for a more strategic and sustainable approach to digital service delivery, one that prioritizes investment in digital infrastructure and services as a critical enabler of economic growth and development. **Informant 4).***

Inflation: High inflation rates in Nigeria have increased the cost of living, making it difficult for citizens to access digital services.

Response 1: Focus on Affordability and Digital Divide

*I agree that high inflation rates in Nigeria have increased the cost of living, making it difficult for citizens to access digital services. The rising costs of basic necessities have reduced the disposable income of many Nigerians, making it challenging for them to afford digital services such as internet access, mobile phones, and digital devices. This has exacerbated the digital divide, where those who are already disadvantaged are further excluded from the benefits of digital technologies. Our organization is exploring ways to make digital services more affordable and accessible to all citizens, regardless of their income level. **(Informant 5).***

Response 2: Focus on Economic Instability and Uncertainty

*The notion that high inflation rates in Nigeria have increased the cost of living, making it difficult for citizens to access digital services, is indeed a concern. However, I believe that the underlying economic instability and uncertainty are equally important factors. The high inflation rates have created an environment of uncertainty, making it difficult for citizens to plan for the future and invest in digital services. Our organization is working to develop digital services that are adaptable to changing economic conditions and can help citizens navigate uncertainty. (**Informant 2).***

Response 3: Focus on Impact on Vulnerable Populations

High inflation rates in Nigeria have disproportionately affected vulnerable populations, such as low-income households, women, and children. The increased cost of living has reduced their

ability to access digital services, which are essential for accessing information, education, healthcare, and economic opportunities. Our organization is committed to developing digital services that are inclusive and equitable, and that prioritize the needs of vulnerable populations. We are exploring innovative solutions, such as subsidized digital services, digital literacy programs, and partnerships with local organizations, to ensure that digital services are accessible to all citizens, regardless of their economic status. (***Informant 5).***

Discussion

The findings of this study have implications for policy and practice. Firstly, the study highlights the importance of investing in resources to improve service delivery. This includes investing in digital infrastructure, training staff, and providing adequate funding. Secondly, the study suggests that addressing challenges associated with digitization, such as inadequate internet connectivity and lack of digital literacy, is crucial for improving service delivery. Overall, the study provides evidence that resource status is a critical factor in determining service delivery in Adamawa State Internal Revenue Service. The findings of this study can inform policy decisions and interventions aimed at improving service delivery in the organization.

5. Conclusion and Recommendation

Conclusion

The Nigerian digital economy offers immense opportunities for improving public service delivery, enhancing transparency and accountability, and promoting economic growth. However, the challenges of public service delivery in the Nigerian digital economy are complex and multifaceted. This study has highlighted the institutional, infrastructural, financial, social, and economic challenges that hinder the effective delivery of digital services in Nigeria. To address these challenges, this study recommends the establishment of a clear institutional framework for digital governance and service delivery, investments in digital infrastructure, capacity building for public servants, and measures to promote digital literacy and build trust and confidence in digital services. Additionally, the study recommends policies to promote economic growth, address inequality and exclusion, and support entrepreneurship and innovation in the digital economy.

The successful implementation of these recommendations will require a collaborative effort from government agencies, private sector organizations, civil society groups, and citizens. By working together, Nigeria can harness the potential of the digital economy to improve public service delivery, promote economic growth, and enhance the quality of life for its citizens. Finally, this study contributes to the literature on digital governance and public service delivery in developing countries, highlighting the need for a nuanced understanding of the challenges and opportunities of digital service delivery in the Nigerian context. The findings of this study can inform policy and practice in Nigeria and other developing countries seeking to leverage the potential of the digital economy to improve public service delivery. In conclusion, the challenges of public service delivery in the Nigerian digital economy are complex and multifaceted. Addressing these challenges will require a comprehensive approach that involves institutional reforms, investments in digital infrastructure, capacity building, and social and economic interventions.

Recommendations

Establish a Clear Institutional Framework: Develop a clear institutional framework for digital governance and service delivery to avoid confusion and overlaps among government agencies.

Strengthen Capacity Building: Provide regular training and capacity-building programs for public servants to enhance their digital literacy and skills.

Promote Inter-Agency Collaboration: Foster collaboration among government agencies to ensure seamless integration of digital services.

Invest in Digital Infrastructure: Invest in the development of robust digital infrastructure, including internet connectivity, data centers, and payment systems.

Improve Power Supply: Address the issue of erratic power supply to ensure reliable operation of digital services and infrastructure.

Explore Alternative Funding Sources: Explore alternative funding sources, such as public-private partnerships, to support digital service delivery initiatives.

Reduce Cost of Internet: Implement policies to reduce the cost of internet services and increase access to digital services.

Promote Digital Literacy: Implement programs to promote digital literacy among citizens, particularly in rural and marginalized communities.

Build Trust and Confidence: Implement measures to build trust and confidence in digital services, such as transparency, accountability, and security.

Address Inflation: Implement policies to address inflation, which can reduce the cost of living and increase access to digital services.

References

Ajzen, I., & Fishbein, M. (2019). Theory of reasoned action. In R. A. Baron, N. R. Branscombe, & M. K. Ryan (Eds.), Social psychology (pp. 173-194).

Ajah, I. A., & Chigozie-Okwum, C. C. (2019). Prospects of ICT for digital growth and national development in Nigeria. *African Research Review*, *13*(3), 192-203.

Ajagbe, A. M., Sholanke, A. B., Isiavwe, D. T., & Oke, A. O. (2015). Qualitative inquiry for social sciences. In *International Conference on African Development Issues (CU-ICADI)* (pp. 319-325).

Avgerou, C. (2008). Information systems in developing countries: a critical research review. *Journal of information Technology*, *23*(3), 133-146.

Bangero, H. B. (2025). Best practices in e-government communication: Lessons from the local Governments' use of official facebook pages. *Government Information Quarterly*, *42*(1), 102010.

Bennett, A. (1998, August). Sustainable public/private partnerships for public service delivery. In *Natural Resources Forum* (Vol. 22, No. 3, pp. 193-199). Oxford, UK: Blackwell Publishing Ltd.

Bertot, J. C., Jaeger, P. T., & Grimes, J. M. (2010). Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. *Government information quarterly*, *27*(3), 264-271.

Birdsall, N. (2018). *The Dilemma of the African Development Bank: Does Governance Matter for the Long-Run Financing of the MDBs?* (Vol. 498). Washington, DC: Center for Global Development.

Braimah, I., Amponsah, O., & Asibey, M. O. (2016). The effectiveness of the local management systems of rural water facilities for sustainable service delivery: a case study of the Sekyere East District, Ghana. *Sustainable Water Resources Management*, *2*, 405-418.

Brennen, J. S., & Kreiss, D. (2016). Digitalization. *The international encyclopedia of communication theory and philosophy*, 1-11.

Catalini, C., & Tucker, C. (2017). When early adopters don't adopt. *Science*, *357*(6347), 135-136.

Chen, L., Gillenson, M. L., & Sherrell, D. L. (2020). Diffusion of innovation theory. Journal of Business Research, 106, 241-248

Furlong, K., & Bakker, K. (2010). The contradictions in 'alternative'service delivery: governance, business models, and sustainability in municipal water supply. *Environment and Planning C: Government and Policy*, *28*(2), 349-368.

Gillenson, M. L., & Sherrell, D. L. (2002). Enticing online consumers: an extended technology acceptance perspective. *Information & management*, *39*(8), 705-719.

Gobble, M. M. (2018). Digitalization, digitization, and innovation. *Research-Technology Management*, *61*(4), 56-59.

Heeks, R. (2002). Information systems and developing countries: Failure, success, and local improvisations. *The information society*, *18*(2), 101-112.

Henry, S., Alsohaily, A., & Sousa, E. S. (2020). 5G is real: Evaluating the compliance of the 3GPP 5G new radio system with the ITU IMT-2020 requirements. *IEEE Access*, *8*, 42828-42840.

Izuogu, C. U., Njoku, L. C., Olaolu, M. O., Kadurumba, P. C., Azuamairo, G. C., & Agou, G. D. (2023). A review of the digitalization of agriculture in Nigeria. *Journal of Agricultural Extension*, *27*(2), 47-64.

Kim, S., Choi, B., & Lew, Y. K. (2021). Where is the age of digitalization heading? The meaning, characteristics, and implications of contemporary digital transformation. *Sustainability*, *13*(16), 8909.

Kim, J., Lee, J., & Lee, Y. (2014). A study on the factors affecting the adoption of digital technologies in public organizations. Journal of Public Administration Research and Theory, 24(3), 631-654.

Millard, J. (2017). Technology innovations in public service delivery for sustainable development. *Government 3.0–Next Generation Government Technology Infrastructure and Services: Roadmaps, Enabling Technologies & Challenges*, 241-282.

Mohammed, S. D., Adamu, B. B., Karaye, Y. I., Abdullahi, M., Ibrahim, N. A., Hashim, A. A., & Abubakar, A. (2023). Digitalization of Tax Administration As Emerging Global Best Practice: An Assessment of Digitalization of Tax Administration By States in Nigeria. *POLAC International Journal of Economics and Management Science*, *9*(2), 164-175.

Mugenda, O., & Mugenda, A. (2003). Research methods. Africa Centre for Technology Studies.

Mugenda, O. M., & Mugenda, A. G. (2016). Research methods: Quantitative and qualitative approaches. African Centre for Technology Studies

OECD. (2019). *An OECD learning framework 2030* (pp. 23-35). Springer International Publishing.

Ofoma, C. (2021). Digitalization driven public service and service delivery: The Nigeria's

experience. *Journal of Public Administration, Finance and Law*, *10*(22), 73-80.

Olsen, J. P. (2006). Maybe it is time to rediscover bureaucracy. *Journal of public administration research and theory*, *16*(1), 1-24.

Opeyemi, A., Ojeka, S., Samuel, F., Olokoyo, F., & Damilola, E. (2022). Tax reforms, digitalization and government revenue in Nigeria. *Asian Economic and Financial Review*, *12*(9), 800.

Reis, J., Amorim, M., Melao, N., Cohen, Y., & Rodrigues, M. (2020). Digitalization: A literature review and research agenda. In *Proceedings on 25th International Joint Conference on Industrial Engineering and Operations Management–IJCIEOM: The Next Generation of Production and Service Systems 25* (pp. 443-456). Springer International Publishing.

Rothstein, B. (2011). *The quality of government: Corruption, social trust, and inequality in international perspective*. University of Chicago Press.

Sanz-Ponce, R., & González-Bertolín, A. (2018). La educación sigue siendo un "tesoro". Educación y docentes en los informes internacionales de la UNESCO. *Revista iberoamericana de educación superior*, *9*(25), 157-174.

Shenkoya, T. O. (2024). Digital transformation: an investigative study of the performance of digitalization in governance. *International Journal of Organizational Analysis*.

Smith, D. N. (2013). Charisma disenchanted: Max Weber and his critics. In *Social Theories of History and Histories of Social Theory* (pp. 3-74). Emerald Group Publishing Limited.

Vasilev, V. L., Gapsalamov, A. R., Akhmetshin, E. M., Bochkareva, T. N., Yumashev, A. V., & Anisimova, T. I. (2020). Digitalization peculiarities of organizations: A case study. *Entrepreneurship and Sustainability Issues*, *7*(4), 3173.

Wiersma, U. J. (2016). The four stages of the employment interview: Helping interviewers put two and two together. In *Evidence-based HRM: a Global Forum for Empirical Scholarship* (Vol. 4, No. 3, pp. 232-239). Emerald Group Publishing Limited.

Wynn, M. G., Adejumo, D., & Vale, V. (2024). Digitalization and country image: Key influencing factors (a case example of Nigeria). *Journal of Policy and Society*, *2*(2), 1-16. moderation. *Leadership & Organization Development Journal*, *45*(1), 64-81.

Zhao, H., Chen, Y., & Liu, W. (2023). Socially responsible human resource management and employee moral voice: Based on the self-determination theory. *Journal of Business Ethics*, *183*(3), 929-946.