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E-Governance Initiatives and Financial Management in the Nigerian Public Sector: An Integrated Conceptual Framework for Enhancing Transparency and Efficiency

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ABSTRACT

Public Financial Management (PFM) reforms in Nigeria have increasingly embraced digital innovations to enhance transparency, efficiency, and accountability in fiscal governance. This study develops a conceptual framework for restructuring Nigeria's PFM system, focusing on four interdependent pillars: Digital Financial Systems, Transparency and Accountability, Capacity Building, and Infrastructure and Security. The adoption of digital financial systems such as the Treasury Single Account (TSA), Integrated Personnel and Payroll Information System (IPPIS), and Government Integrated Financial Management Information System (GIFMIS) has shown potential to improve fiscal discipline and reduce financial irregularities. However, the effectiveness of these systems depends on strong governance structures, well-trained personnel, and secure digital infrastructure. Transparency and accountability mechanisms, exemplified by Nigeria's Open Treasury Portal, are crucial in curbing corruption and fostering public trust but require enhanced enforcement and citizen engagement. Capacity building is essential for equipping public sector personnel with the necessary skills to manage digital financial tools effectively to address ongoing human capital deficiencies. Infrastructure and security are also fundamental to ensuring the sustainability of digital PFM reforms, particularly in mitigating cybersecurity threats and bridging ICT infrastructure gaps in underserved regions. This study adopts a qualitative research approach, relying on the critical analysis of existing documents and policy reports. It follows a grounded theory methodology, which is effective for analyzing complex governance structures and financial management reforms. Through a critical analysis of these interdependent elements, the study argues that a holistic and integrated approach as opposed to a siloed approach is vital for achieving sustainable PFM reforms in Nigeria. The study concludes by recommending targeted policy interventions to enhance institutional efficiency, strengthen governance mechanisms, and promote a resilient public financial management system.

Keywords: Public Financial Management, Digital Financial Systems, Fiscal Governance, Transparency, Capacity Building, Nigeria

INTRODUCTION

E-governance has become a pivotal factor in transforming public sector financial management, offering significant opportunities to enhance transparency, accountability, and efficiency (Cuadrado-Ballesteros, Santis, & Bisogno, 2021). Similarly, Alshehri et al. (2012) and Dawes (2009) assert that e-governance has created new opportunities for governments to serve and inform stakeholders with improved quality, accountability, and efficiency. In Nigeria, where financial mismanagement and corruption have plagued the public sector for decades, e-governance is essential for promoting fiscal discipline, reducing fraud, and optimising the use of public resources

(Jaiyeola & Musumhi, 2023; Adams and Paul, 2023; Paul and Adams, 2024). Corruption in Nigeria has a long history, with approximately $400 billion misappropriated between 1960 and 1999, and an additional $182 billion lost due to illicit financial flows between 2005 and 2014 (Hoffmann & Patel, 2017). These figures indicate that if not addressed, corruption could account for up to 37 percent of Nigeria's GDP by 2030 (Isgogo & Abdullahi, 2024). In response to these challenges, Jaiyeola and Musumhi (2023) report that the Nigerian government has implemented several e-governance initiatives aimed at enhancing public financial management. These systems include the Government Integrated Financial Management Information System (GIFMIS), which automates financial processes to improve efficiency and transparency; the Treasury Single Account (TSA), designed to consolidate government revenues into a single account to promote accountability and mitigate leakages; and the Integrated Payroll and Personnel Information System (IPPIS), which seeks to eliminate ghost workers and ensure accurate and timely payment of personnel.

Additionally, the Biometric Verification Number (BVN), introduced by the Central Bank of Nigeria, plays a vital role in reducing fraud and bolstering security in the banking sector. While these programmes have demonstrated some success in curbing financial mismanagement, challenges persist, including infrastructural gaps, deficits in capacity building, and the need for better intergovernmental coordination. The potential of e-governance to enhance public financial management lies in its capacity to combat corruption, optimise resource allocation, and foster public trust in government operations. Previous research has shown that countries that have embraced digital governance significantly improve fiscal transparency, accountability, and the efficient use of public resources (Isgogo & Abdullahi, 2024). Furthermore, Rivero del Paso, Pattanayak, Uña, and Tourpe (2023) assert that the digital transformation of public financial management can refine fiscal operations by automating processes, minimising human errors, and increasing transparency regarding macro-fiscal policies such as revenue generation and cash flow management. This study builds on these findings and proposes a conceptual framework for enhancing Nigeria's public financial management through an integrated framework of four pillars. The four key pillars identified by the framework are infrastructure and security, capacity building, transparency and accountability, and digital financial systems. The framework asserts that digital tools alone are insufficient to bring about significant improvements. Instead, they must be complemented by robust governance frameworks, skilled human capital, and secure infrastructure.

In light of these considerations, the study seeks to explore the impact of digital financial systems, such as TSA, IPPIS, and GIFMIS, on fiscal discipline, transparency, and efficiency in Nigeria's public financial management, and to identify the challenges hindering their full implementation. It also assesses how transparency and accountability initiatives, such as Nigeria's Open Treasury Portal, enhance public trust and financial management while examining the role of governance, digital systems, capacity building, and infrastructure in addressing fiscal irregularities. Furthermore, it investigates how capacity building, including digital literacy and ethical training, bridges the skills gap among Nigerian civil servants, and how the interconnection between capacity building, ICT infrastructure, technology, and governance enhances the effectiveness and sustainability of public financial management reforms. Additionally, the paper analyses how ICT infrastructure and cybersecurity measures enable the effectiveness of public financial management reforms in Nigeria and how their integration with governance, capacity building, and digital systems impacts the sustainability of these reforms. Addressing these issues is crucial, as more than 60 percent of e-government projects in developing countries fail to meet desired outcomes—35 percent fail completely and 50 percent partially (Samsor, 2021). These failures are largely attributed to a lack of an integrated and holistic approach to e-governance (Elkadi, 2013).

This study adopts a qualitative research approach, relying on a critical analysis of relevant documents, policies, and existing literature. It follows a grounded theory methodology to inductively develop a conceptual framework that addresses the complex interrelationships in Nigeria's e-governance and public financial management landscape. The rest of the paper is structured as follows: Section 2 presents the theoretical and conceptual framework guiding the study. Section 3 discusses the methodology in more detail. Section 4 presents the analysis of each of the four pillars of the proposed framework. Section 5 discusses the key findings and their implications for policy and practice. Section 6 concludes the paper with recommendations for enhancing Nigeria's public financial management through an integrated e-governance approach.

METHOD

This study adopts a **qualitative research approach**, employing **documentary analysis** to critically evaluate Nigeria's public financial management reforms within the context of e-governance. The goal is to develop a **conceptual framework** that integrates digital systems, governance, transparency, and capacity building to enhance fiscal discipline and accountability.

Data Collection and Sources

The study relies on documentary analysis of publicly available sources. A total of 48 documents were reviewed, selected based on their relevance to public financial management, e-governance systems, and transparency initiatives in Nigeria.

- Inclusion criteria were:
- Published between 2014 and 2024 (to reflect post-implementation periods of TSA, IPPIS, and GIFMIS).
- Focused on Nigeria's public sector financial reforms.
- Contained substantial analysis of e-governance or digital public financial systems.
- From credible sources: academic journals, official government portals, World Bank, IMF, African Development Bank, and civil society organisations.

Types and sources of documents analysed (**Table 1**) include:

Table 1. Types and sources of documents analysed

Document Type	Number	Source Examples
Government reports	12	Budget Office of the Federation, OAGF, NITDA
Policy documents	6	National e-Government Master Plan, PFM reform strategies
Academic journal articles	16	Scopus, JSTOR, ResearchGate, Google Scholar
Institutional reports	8	World Bank, IMF, UNDP, AfDB
Audit and performance reports	3	Office of the Auditor General, BudgIT
Civil society publications	3	Tracka, Connected Development (CODE), SERAP

Analytical Approach

The analysis followed a **grounded theory methodology** (Charmaz, 1980), allowing for inductive reasoning from reviewed materials. Each document was systematically coded using **qualitative content analysis**, focusing on recurring themes related to:

- Digital system efficiency (e.g., TSA, IPPIS, GIFMIS performance)
- Transparency and accountability (e.g., Open Treasury Portal use, audit trails)
- Capacity building and human capital challenges
- ICT infrastructure and cybersecurity readiness
- Inter-agency coordination and systemic governance issues

Using **open coding**, initial categories were developed, followed by **axial coding** to relate categories into broader themes. From this process, **four dominant patterns emerged** that formed the basis of the conceptual framework:

i. **Infrastructural dependency**: The effectiveness of digital tools is strongly dependent on broadband infrastructure, electricity, and cybersecurity.

ii. **Human capital gap**: Poor ICT literacy and lack of ethical training in civil service undermine reforms.

iii. **Fragmented systems and governance**: Lack of harmonisation among digital systems causes duplication and inefficiency.

iv. **Transparency improves fiscal control**: Portals like the Open Treasury promote accountability and public monitoring.

These patterns helped refine the four pillars of the framework - infrastructure and security, capacity building, transparency and accountability, and digital financial systems - and their interdependence in improving public financial management. The documentary analysis was conducted between January and April 2025. Each document was reviewed using a data extraction matrix to ensure consistency in identifying key information under each of the four objectives.

LITERATURE REVIEW: E-GOVERNANCE

Electronic governance (e-governance) refers to the use of information and communication technology (ICT) applications to deliver various government services (Malodia, Dhir, Mishra, & Bhatti, 2021). It is a critical tool for improving government management worldwide (Sanmukhiya, 2019). It involves the application of ICT in areas such as public service delivery, decision-making, administration, and financial management, with the goals of enhancing efficiency, accountability and transparency (Lim & Yigitcanlar, 2022). In Nigeria, several e-governance initiatives have been implemented. These include the Treasury Single Account (TSA) introduced in 2012 and fully implemented in 2015 (Obara et al., 2022), the Integrated Payroll and Personnel Information System (IPPIS) introduced in 2006 and fully implemented in 2007 (Paul & Oluwaseun, 2020), and the Integrated Financial Management Information System (GIFMIS) introduced in 2012 (Ogbonna & Friday, 2015). Partially, they have demonstrated the potential to address financial mismanagement and corruption (Eke & Enowoghmwenma, 2024). These systems aim to streamline government revenue collection, reduce leakages and ensure accountability in public financial management. However, the successful implementation of these initiatives requires a more integrated approach that aligns ICT applications with financial management principles and public administration practices. Despite extensive research on e-governance globally, significant gaps remain in integrating knowledge from diverse domains such as information systems and financial management. This fragmented approach hinders the development of comprehensive frameworks that address local challenges, particularly in countries like Nigeria. Developing an integrated conceptual framework for e-governance and financial management in the Nigerian public sector could enhance transparency, efficiency, and the overall effectiveness of public service delivery (Malodia et al., 2021).

THEORETICAL FRAMEWORK

Systems theory is a multidisciplinary framework that investigates phenomena holistically. It emphasises the interconnectedness of components within natural, social, and scientific systems (Capra & Luisi, 2014). Unlike traditional analysis, which focuses on individual parts, systems thinking centres on the interactions and relationships between components, highlighting the importance of their collective behaviour over isolated properties (Bashan & Kordova, 2021; Arnold & Wade, 2015). This perspective underscores that system elements are "rationally connected" and work toward a shared purpose (Mele, Pels, & Polese, 2010). To fully understand a phenomenon, one must go beyond analysing its parts and adopt a holistic view that captures its overall functionality (Laszlo & Krippner, 1998). A practical application of systems theory can be seen in public financial management (PFM) reforms, where interconnectedness is critical for success. A systemic approach to PFM emphasises the integration of four key pillars: digital financial systems, governance, capacity building, and infrastructure. These pillars function as a cohesive whole, with the performance of each influencing and enhancing the others. Senge (1990) corroborates that fragmented or isolated efforts are less effective than integrated, holistic strategies. In the Nigerian context, this interconnectedness is evident in challenges faced by past PFM reform efforts. Initiatives such as the Treasury Single Account (TSA) and the Integrated Payroll and Personnel Information System (IPPIS) have struggled due to inadequate infrastructure, insufficient technical expertise, and weak governance frameworks. For example, transparency initiatives often falter when digital platforms are unreliable

or inaccessible, undermining their potential to foster accountability. These challenges illustrate how the lack of integration disrupts the overall system. This aligns succinctly with systems theory's assertion that effectiveness relies on the relationships and interactions between components. By adopting a systemic approach, PFM reforms can address these interconnected issues collectively, ensuring that digital systems, governance, and capacity-building efforts are mutually reinforcing. This holistic perspective exemplifies the principles of systems theory, demonstrating how a comprehensive understanding of interconnected components can enhance outcomes in complex systems (Capra, 1997; Senge, 1990).

THE CONCEPTUAL FRAMEWORK

This conceptual framework lays the groundwork for understanding and fixing the enduring issues within Nigeria's public financial management (PFM) system. Nigeria's PFM system has long been plagued by corruption, inefficiency, a lack of transparency, and inadequate accountability (Ijewereme, 2015). To effectively address these issues, this framework presents a comprehensive e-governance model that integrates four essential pillars:

- Infrastructure and Security (Enablers)
- Transparency and Accountability (Government)
- Digital Financial Systems (Technology)
- Capacity Building (Human Resources)

Each of these interconnected pillars plays a critical role in ensuring the effectiveness of public financial reforms and improving the overall management of public funds. Their interdependence suggests that success in one area is contingent upon progress in the others. For example, while digital financial systems such as the Integrated Payroll and Personnel Information System (IPPIS) and the Treasury Single Account (TSA) can automate financial procedures, their efficacy depends on the ability of public employees to use them effectively and on the availability of secure and dependable infrastructure. Consequently, the conceptual model proposes that meaningful enhancements in Nigeria's PFM system require a comprehensive, multifaceted strategy. Each pillar contributes directly to the desired outcomes, and only through an integrated approach can sustainable improvements in financial transparency, efficiency, and accountability be realised.

A diagrammatic presentation of this framework follows in the next section.

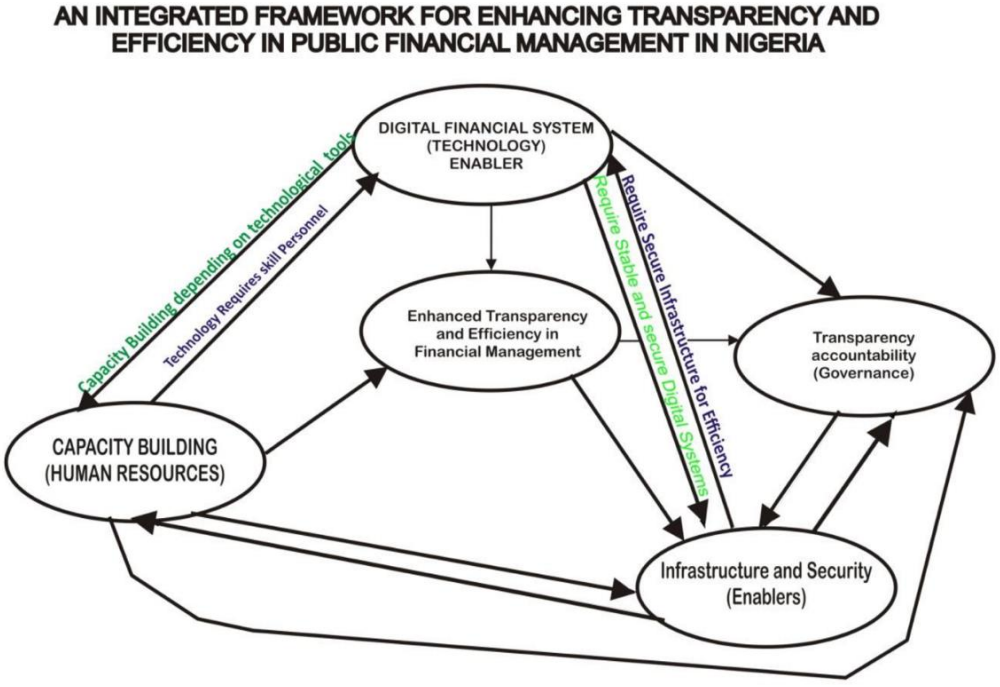

Figure 1. Framework

Note: The arrows illustrate the dynamic and mutual relationship among the pillars, showing the systemic perspective.

Digital Financial Systems (Technology): The goal of the Digital Financial Systems pillar is to simplify public financial management procedures through the deployment and integration of digital tools (Malhotra, 2023). Typical of such is the utilisation of systems that automate the management of public finances in Nigeria, such as the Government Integrated Financial Management Information System (GIFMIS), the Integrated Personnel and Payroll Information System (IPPIS), and the Treasury Single Account (TSA) (Effiong, Oro, Ogar, Imong, Jacob, & Rim, 2017). These systems have been shown to increase openness, lower administrative expenses, and improve the accuracy of financial data (Owusu Antwi, Adelakun, & Eziefule, 2024). These platforms improve public administrators' decision-making by giving them access to real-time data on public finances, which leads to more effective financial management. However, implementing these systems comes with its unique set of difficulties. According to Paul & Grace (2020), challenges include data breaches, system failures, and technological deficiencies in underserved or rural areas. For example, TSA needs strong cybersecurity measures, a regular internet platform, and efficient human capital development to safeguard sensitive financial data, though it unifies government funds into a single account, limiting unauthorised spending (Akujuru & Enyioko, 2017). Therefore, the technology alone is not enough to ensure the effective deployment of digital financial systems. Other interrelated pillars, especially the Infrastructure and Security pillar, are equally essential to guarantee the systems' sustainability, accessibility, and security.

Transparency and Accountability (Governance): A key component of the Transparency and Accountability pillar is the effective use of digital financial systems. Since it guarantees that financial data is available, auditable, and subject to public examination, transparency is essential to good governance, especially in public financial management. Public accountability is increased by the use of digital platforms, which make it easier to standardise financial reports and statements that are accessible to both citizens and oversight organisations (Eliana, Astuti, Ivana, Suryafatma, & Juned, 2023). Moreover, by making financial transactions transparent and traceable, transparency acts as a deterrent to corruption. Enhanced oversight and increased citizen engagement, made possible by this greater visibility, contribute to a more accountable government.

Capacity Building (Human Resources): The pillar of capacity building underscores how crucial it is to train public sector workers to manage digital technologies and monitor financial management processes. When new technology is introduced without adequate orientation, misuse and inefficiency may result. Consequently, capacity building becomes crucial for both promoting digital literacy and guaranteeing that public employees are capable of using these technologies in practical financial management situations (Nikou, De Reuver, & Mahboob Kanafi, 2022). Training programmes that cover both fundamental management skills and specialised digital capabilities are necessary to develop a highly qualified workforce in public finance management (Organisation for Economic Co-operation and Development [OECD], 2024). Employees in Nigeria's public sector require ongoing professional development to keep up with changing financial regulations and technological advancements. Strengthening these skills enables public servants to adapt to changes and improve the performance of public financial management systems, hence improving service delivery and guaranteeing the effective use of electronic financial tools such as TSA and GIFMIS. Furthermore, capacity building promotes the overarching goals of the other pillars. For example, trained professionals are required to manage transparency efforts and understand data provided by digital financial systems. As a result, without a planned investment in human resource development, the benefits of technical improvements in public finance management may be underutilised, highlighting the pillars' interdependence.

Infrastructure and Security (Enablers): The Infrastructure and Security pillar establishes the technological and physical framework necessary for other pillars of public financial management to function effectively. Financial management systems like the Treasury Single Account (TSA) and the Integrated Payroll and Personnel Information System (IPPIS) depend on a secure and reliable infrastructure. This includes not only robust internet connectivity and data storage capabilities but also physical infrastructure to ensure access to digital tools in both urban and rural settings. Cybersecurity, a critical component of this pillar, protects sensitive financial data from unauthorized access and cyberattacks (Saeed et al., 2023). As Nigeria increasingly adopts digital financial management technologies, safeguarding against cyber risks is paramount to maintaining the integrity of financial systems. Moreover, addressing the digital divide is essential for ensuring that the benefits of digital financial

systems extend to underserved and rural areas. Public-private partnerships are pivotal in building and maintaining this infrastructure. Collaborating with the private sector enables the government to leverage resources and expertise, ensuring that secure digital platforms and technological access are in place for effective public financial service delivery. Based on this foundation, the conceptual framework for restructuring Nigeria's public financial management system underscores a multidimensional approach. It emphasizes the interdependence of key pillars: Digital Financial Systems, Transparency and Accountability, Capacity Building, and Infrastructure and Security. Progress in any one of these areas amplifies advancements in the others, fostering a resilient and efficient system for managing public finances. This interconnected framework highlights the need for targeted reforms that address current inefficiencies while leveraging each pillar's strengths.

The Four Pillars: A Critical Analysis

The Central Goal: Enhanced Transparency and Efficiency in Financial Management: Transparency and efficiency are key to any good PFM system. Transparency ensures that financial information is accessible, promoting accountability and trust in governance. Efficiency is concerned with properly allocating and utilising resources to achieve desired results. According to Lawson (2015), nations with transparent and efficient PFM systems exhibit greater budgetary discipline and economic resilience. In Nigeria, recurring issues such as fiscal leakages, inadequate resource allocation, and weak supervision mechanisms underscore the importance of this key goal (Federal Ministry of Finance, Budget and National Planning, 2021). The central position of this aim in the framework emphasises its vital relevance and how all pillars work together to attain it. Reforming public financial management (PFM) systems in Nigeria requires a systemic approach that recognizes the interconnectedness of four essential pillars: digital financial systems, transparency and accountability, capacity building, and infrastructure and security. Each pillar complements the others, collectively enabling an efficient and transparent PFM system. This section critically examines these pillars and their interplay, drawing on relevant theoretical insights and empirical evidence.

Digital Financial Systems (Technology): A Transformative Tool: Digital financial systems are central to modern PFM reforms, enabling fiscal discipline and efficiency. Nigeria's Treasury Single Account (TSA), Integrated Personnel and Payroll Information System (IPPIS), and Government Integrated Financial Management Information System (GIFMIS) illustrate the transformative potential of technology. Udoikah et al. (2024) highlight how the TSA reduced fiscal leakages by centralizing revenue management, while Micah & Moses (2018) report that IPPIS eliminated payroll fraud by over 80% through the detection of "ghost workers." However, the effectiveness of digital systems is contingent on robust infrastructure, skilled personnel, and governance frameworks. For instance, poor internet connectivity in rural areas undermines the implementation of these digital financial systems (Abdulbasit, 2024). Additionally, entrenched resistance from interest groups highlights the need for strong institutional support and enforcement mechanisms. Thus, digital systems cannot operate in isolation; their success depends on the seamless integration of all four pillars as depicted in the diagram.

Transparency and Accountability (Governance): Building Public Trust: Transparency and accountability provide the ethical foundation for PFM reforms, ensuring that public resources are managed openly and responsibly. Initiatives such as Nigeria's Open Treasury Portal aim to enhance financial visibility, enabling citizens to monitor resource allocation and utilization. However, limited public awareness and weak enforcement mechanisms have hindered the portal's effectiveness. In contrast, Molobela (2025) demonstrates that countries with well-implemented transparency platforms, such as South Africa, have seen improvements in public trust and civic engagement. The interplay between governance and other pillars is critical. Digital financial systems, for example, rely on transparent governance structures to address fiscal irregularities. Karkacier & Ertaş (2017) found that independent audits reduce financial irregularities by 30% when supported by robust institutional frameworks. However, without adequate training (capacity building) or secure infrastructure, transparency initiatives risk being undermined. Strong governance frameworks must therefore facilitate the integration of technology and human resources to foster accountability and trust.

Capacity Building (Human Resources): Bridging the Skills Gap: The capacity of human resources is pivotal to the success of PFM reforms. As Inakefe et al. (2023) argue, digital literacy is a critical enabler of e-governance initiatives. Yet, Adeyemi and Bello (2020) reveal that only 30% of Nigerian civil servants are adequately trained to use digital tools. This skills gap limits the operational effectiveness of digital systems and undermines transparency initiatives. Capacity building must go beyond technical training to incorporate ethical principles.

Rwanda's integration of ethics training into capacity-building programs serves as a model for Nigeria (Federal Government of Nigeria, 2025). By prioritizing both technical and ethical competencies, Nigeria can empower public servants to effectively operate digital systems while adhering to principles of accountability. Importantly, this pillar is deeply connected to infrastructure; without reliable ICT infrastructure, training programmes may not achieve their desired impact. Thus, capacity building should be integrated with investments in technology, infrastructure and governance.

Infrastructure and Security (Enablers): The Foundation of Success: Infrastructure and cybersecurity are foundational enablers that support all other pillars of PFM reform. Reliable ICT infrastructure ensures the accessibility and functionality of digital financial systems, while robust cybersecurity measures safeguard these systems from external threats. The African Development Bank (2022) underscores the importance of broadband penetration, yet Nigeria's rate, at 45% as of 2023, remains inadequate (NCC, 2023). This digital divide disproportionately affects rural areas, further exacerbating implementation challenges. Moreover, weak cybersecurity measures pose significant risks. Deloitte (2021) reports that cyber threats undermine stakeholder confidence in e-governance. A case in question is the recent attacks on Nigerian government platforms (Lewis, 2023) that suggest the urgency of developing a national cybersecurity strategy. Importantly, infrastructure and security are not standalone issues; their effectiveness depends on strong governance, trained personnel, and interoperable digital systems. For example, capacity building must include cybersecurity training, while governance structures must prioritize investments in infrastructure and enforce security protocols.

CONCLUSION

The integrated framework provides a robust and empirically validated roadmap for addressing Nigeria's challenges in public financial management. By emphasizing the interconnectedness of digital financial systems, transparency and accountability, capacity building, and infrastructure, the framework ensures a holistic approach to reform. The success of this framework depends on coordinated implementation, sustained political commitment, and investments in infrastructure and human resources. Drawing on global best practices and empirical evidence, this framework has the potential to transform Nigeria's public financial management system, fostering accountability, efficiency, and trust in governance. However, this study is not without limitations. The reliance on secondary data and documentary analysis may limit the depth of insights on the lived experiences and operational challenges faced by practitioners within Nigeria's public financial management system. Additionally, the rapidly evolving nature of digital technologies and governance reforms means that findings may require continual updating to remain relevant. Future research could address these gaps by incorporating empirical fieldwork, such as interviews and surveys with key stakeholders in Nigeria's public sector, to gain a more nuanced understanding of implementation dynamics. Comparative studies examining similar reforms in other developing countries could also provide valuable lessons to further refine the framework. Moreover, exploring the long-term impact of capacity-building initiatives and cybersecurity investments on PFM sustainability would contribute to strengthening Nigeria's reform trajectory.

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